



دانشگاه علوم پزشکی مشهد

Mashhad University of  
Medical Sciences



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## **Abstract Book**

### **2<sup>nd</sup> International Congress Nutrition: From Laboratory Research to Clinical Studies**

October 4-6, 2023

Mashhad, Iran

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Prof. Mahmoud Mohammadzadeh  
Shabestari

**Honorary President of the  
Congress**  
Prof. Angelo Azzi

**Scientific Secretary**  
Prof. Majid Ghayour-Mobarhan

**Executive Secretary**  
Dr. Hamid Reza Rahimi



Prof. Mahmoud Mohammadzadeh Shabestari  
President of Mashhad University of Medical Sciences and president of  
NLRCS congress

### **Message of president of the Congress**

In the Name of God, the Merciful, the Compassionate

This is an absolute honor and pleasure for Mashhad University of Medical Sciences to host the second International NLRCS congress “Nutrition: From Laboratory Research to Clinical Studies”, during 4-6 October 2023.

In this congress, the latest scientific findings are presented by well-known specialists in the fields of Health and Nutrition Sciences from Iran and many other countries. We strongly believe that this three-day congress would be an immense opportunity to share the state-of-the-art science that can be applied for improving public health through better understanding basic sciences and human nutrition.

My colleagues and I in the executive and scientific committees of the congress sincerely hope this event provides the required academic ground for increasing the knowledge of the dear participants.

Yours Sincerely,

**Prof. Mahmoud Mohammadzadeh Shabestari**  
**President of Mashhad University of Medical Sciences and president of**  
**the Congress**





Prof. Angelo Azzi  
Honorary president of NLRCS

### **Message of Honorary president of the Congress**

I am delighted to be here today as we celebrate the 2nd International Congress of Nutrition in Mashhad. This city, known for its rich history in religious learning, is a fitting place for our gathering. Mashhad is not only a center for Islamic arts and sciences but also home to the tomb of Imam Reza, the eighth Shia Imam.

Our meeting brings together experts, researchers, and enthusiasts from around the world, all driven by a shared passion for advancing knowledge in nutrition. Iran, with its cultural wealth, provides a perfect setting for our discussions.

As we delve into the world of nutrition, let's remember that food isn't just about sustaining us physically; it plays a crucial role in our overall well-being, connecting people across borders.

The Congress theme that can be summarized as "Nourishing Our Future" captures our collective mission. Over the next days, we will explore innovative ideas, research breakthroughs, and practical solutions that will shape the future of nutrition. Together, we aim to unlock the power of food to promote health and improve the quality of life globally.

Collaboration and inclusivity are crucial on this journey. The diverse perspectives and expertise in this room showcase our commitment to embracing different approaches and cultural contexts. By fostering open dialogue, we create a space for groundbreaking discoveries.

I encourage each of you to actively participate, engage in discussions, and forge new connections. Let us use this opportunity to exchange knowledge, challenge each other, and inspire collective action. Working together, we can overcome challenges and create a healthier future.

May this Congress be a catalyst for innovations, leading to evidence-based practices and policies. Let us embrace curiosity, push boundaries, and think



creatively to build a healthier, happier and more peaceful world through the power of nutrition.

I wish you all a productive and memorable Congress, filled with enlightening conversations and enduring friendships. Together, let us embark on this incredible journey of discovery and make a lasting difference in the field of nutrition.

Thank you, and enjoy this remarkable event.

**Prof. Angelo Azzi**  
**Honorary president of the Congress**





**Prof. Majid Ghayour-Mobarhan**  
Scientific Secretary of the Congress



**Dr. Maryam Alinezhad-Namaghi**  
Deputy Scientific Secretary

### **Message of Scientific Secretary of the Congress**

Dear Friends and Colleagues,

I feel honored and privileged to Scientific Secretary of the second international congress of NLRCS, "Nutrition, from the Laboratory Research to Clinical Studies" hosted by the International UNESCO Center for Health-related Basic Sciences and Human Nutrition.

The 2015 Incheon declaration confirmed that "Education is a catalyst for developing skills, values, and behaviors which contribute to a healthy lifestyle". Our aim at the International Center for Science, High Technology and Environmental Sciences at Mashhad University of Medical Sciences is about UNESCO's slogan, "Education for Health and wellbeing".

Our objective is to encourage knowledge exchange to achieve high-quality education in health and nutrition in society. We are also committed to enhancing our relationships with international organizations such as WHO and UNESCO to share our valuable experiences with other nations. Holding this international conference is in this regard. We intend to focus on a wide variety of nutritional topics which will be a bridge from cellular and molecular studies in modern laboratories to medical practice to enrich our attendees' points of view.

We are pleased to invite scientists, researchers, practitioners, nutritionists, dieticians, public health experts, sports nutritionists, and food industry researchers to exchange ideas and be informed about the latest research developments. It is my pleasure to invite you to experience the beautiful metropolitan city of Mashhad which was officially named the capital of Islamic culture in Asia back in 2017 by the Islamic Educational, Scientific and Cultural Organization (ISESCO). We are looking forward to giving you the warmest welcome.

**Prof. Majid Ghayour-Mobarhan**  
**Scientific Secretary of the Congress**





**Dr. Hamid Reza Rahimi**  
Executive Secretary of the Congress



**Dr. Ramin Rezaee**  
Deputy Executive Secretary

### **Message of Executive Secretary of the Congress**

We welcome you and appreciate your participation in the congress. The congress, which is held on October 4-6, 2023 in Mashhad, Iran, is organized mainly by the International UNESCO Center for Health-Related Basic Sciences and Human Nutrition, and Mashhad University of Medical Sciences. Mashhad University of Medical Sciences (MUMS) is pleased to be the host of the existing event. NLRCs congress is a showcase of the advances in the nutrition sciences. We will arrange for an attractive and exciting scientific program that will reflect the most recent advances in nutrition sciences. At the same time, the NLRCs congress serves important roles in networking between scientists globally. Importantly, the NLRCs congress also has provided the opportunity for training young scientists and integrating them into the large scientific community. We are dedicated to making NLRCs Congress 2023 a forum for all researchers to interact with peers in the field. Mashhad is also a lively, friendly, and open city with many attractions. These attractions along with the friendly atmosphere will make sure that scientific interactions and communications will thrive at NLRCs congress 2023. We are looking forward to hosting you and making NLRCs Congress 2023 a memorable Persian experience.

**Dr. Hamid Reza Rahimi**  
**Executive Secretary of the Congress**



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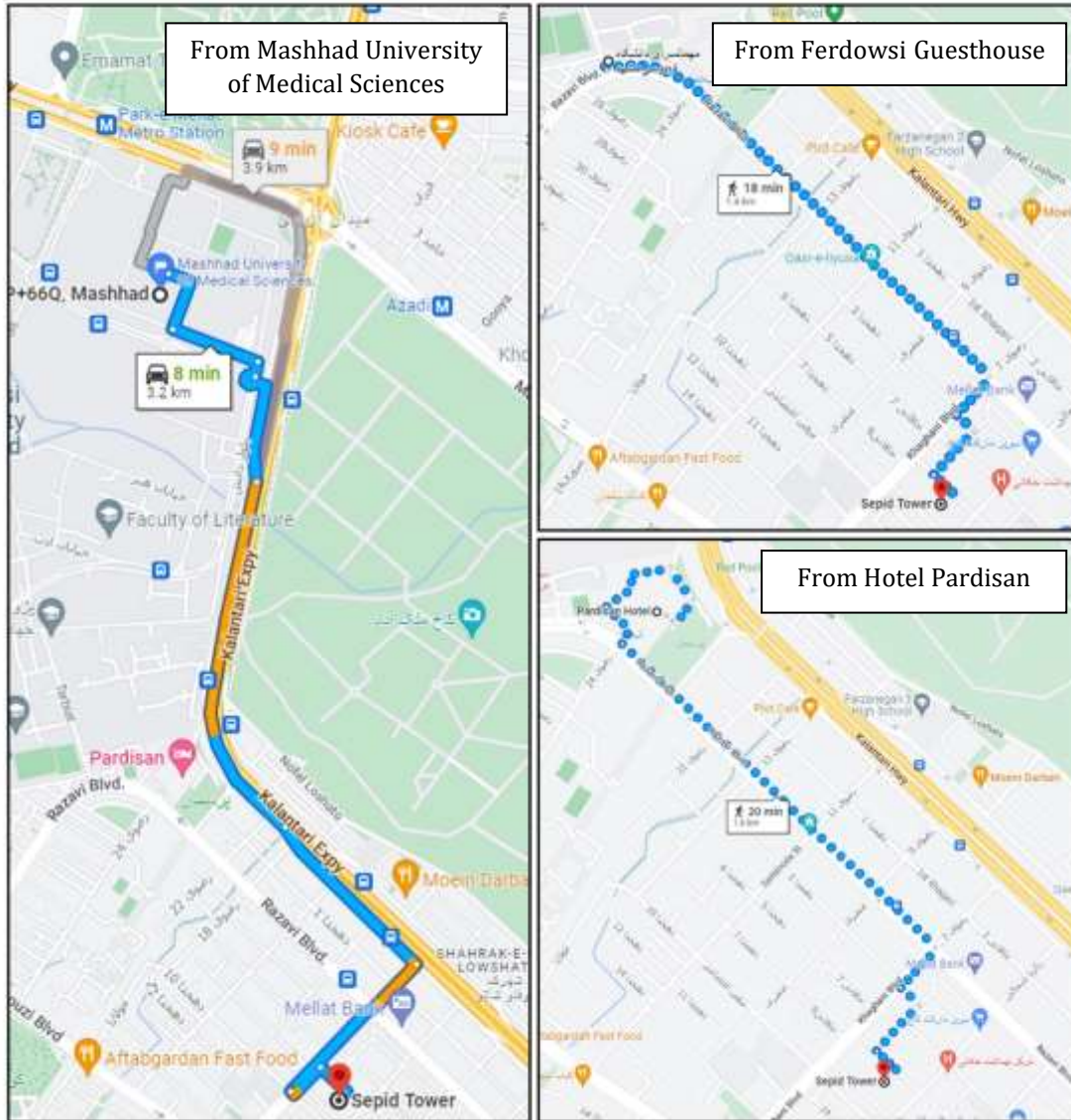
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	<p>The <b>Educational Institution of Rahrpouyandegan</b> has a specialized department of foreign languages, proudly providing specialized educational services focusing on foreign languages, including English, Arabic, French, German, Turkish, Swedish, Italian, and Russian.</p> <p>The department of international tests includes: IELTS, TOEFL, EPT, GRE, DUOLINGO</p>
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	<p><b>Islamic Azad University of Mashhad Medical Sciences</b> was established in 1988 and became independent from Islamic Azad University of Mashhad in September 1999. This unit pursues its activity with eight medical fields at the professional doctorate level and paramedicine at the undergraduate level in three faculties, the Medical Innovation Research Center and the Center for the Development of Medical Equipment and Health Technologies, as well as providing medical services in Aria and 22 Bahman hospitals. and currently with more than 3000 students, it is known as the second scientific hub of the east of the country and also one of the pioneers in the field of education, research and treatment.</p>
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	brilliant step towards realizing the food health of the society and be the leader in creating positive changes in people's knowledge and attitude by relying on the principle of healthy living.
	<p><b>Amitis Nik Daro Company</b></p> <p>Address: No. 53, Kish St., No. 53, Didar St., 1st Floor, not reaching the Jahan Mozat Crossroad, Haqqani Highway, Tehran</p> <p>Phone: 02191304900</p> <p>Email: info@amitismed.com</p>
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**Including invited speakers, oral and poster presentations**



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## Invited Oral Presentation

### **Oxidative stress: What is it? Can it be measured? Where is it located? Can it be good or bad? Can it be prevented? Can it be cured?**

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The meaning, the appropriate usage and the misuse of the terms oxidative stress, oxidative eustress, and oxidative distress have been evaluated. It has been realized that the terms oxidative stress and oxidative damage are often used inappropriately as synonyms. The usage of the term eustress (intended as good stress) is unsuitable to indicate signaling by reactive molecular an event that can be finalistically considered either good or bad, depending on the circumstances. The so defined oxidative distress is an oxidative damage but not an oxidative stress. What is measured and defined as oxidative stress is in fact an oxidative damage. Damaging oxidations and signaling oxidant events (good or bad) can be present, also simultaneously, in different and multiple location of a cell, tissue or body and the measure of an oxidant event in body fluids or tissue specimen can only be the sum of non-separable events, sometimes of opposite sign. There is no officially approved

therapy to prevent or cure oxidative stress or oxidative damage

### **Challenges in scientific publishing**

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Why publishing an article? To publish is to establish contact with professionals to improve the human condition; without publication, the existence of new diagnostic discoveries and treatments would not be available worldwide. Scientific progress needs that the best scientists be selected and this occurs on the objective basis of written/published information. Without a record of good publications in all science domains, the of a scientist would be made on non objective grounds. Consequently, publishing is selecting the best possible knowledge to be made available without barriers, making knowledge at the basis of science progress. The questions that a research should be confronted with are several. First and of great importance is the choice the journal in which the result should publish. Hey Joel that is easily available worldwide it's low or no price would be ideal. However, the chosen journal must have a reputation of seriousness, in the selection of the best articles and having them evaluated by appropriate reviewers. Such an evaluation is done by bibliometric parameters such as for instance the popular impact factor. Please parameters have been and are somewhat criticized, but until now



no better substitute for them has been found. One has to be aware of the existence of different publishing models such as for instance Open Access versus traditionally publication model.

Most important is that the article to be submitted should not be lending on the so-called Predatory Journals, who need paper flow to provide cash flow and just use ethically dubious forms of recruiting and evaluating articles. When submitting a paper, have the English corrected: sloppy language is understood as sloppy science. Use the style according to the journal recommendations and suggest good referees not friends. No fake suggested referee addresses. no plagiarism and no double submissions. After receiving a response, criticize the reviewers, if necessary and feel free to Interact with the editor-in-chief.

### **Genetic susceptibility to cardiovascular disease: Findings of the MASHAD cohort study**

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The prevalence of cardiovascular disease (CVD) and its risk factors is high in the north-eastern city of Mashhad in Iran. The Mashhad stroke and heart atherosclerotic disorder) MASHAD cohort study aimed to evaluate risk factor prevalence and impact and explore some newer biomarkers of CVD risk. The study started recruitment in 2010 and was completed in 2020, with 3 yearly

follow-ups. More than 9700 individuals were recruited using a stratified cluster random sampling design. After excluding 1006 individuals lost to follow-up, 233 subjects had a CVD event (119 unstable angina, 74 stable angina, 40 cases of myocardial infarction). Adiposity was common at baseline and was associated with several important CVD risk factors. Dyslipidemia was also common and associated with CVD outcomes. A polymorphic haplotype of the angiotensin-like protein-3 (ANGPT3) gene (the rs10789117) was associated with a reduced risk of CVD and several CVD risk factors, including serum cholesterol uptake capacity (CUC), a measure of high density lipoprotein (HDL) function. The CC genotype of the rs1748195 polymorphism of the ANGPT-3 gene was associated with a lower likelihood of a positive angiogram, whereas the GG genotype was associated with a higher serum CUC activity.

**Keywords:** Genetic polymorphisms, ANGPT-3, MASHAD cohort study, CVD risk factors

### **Nutrition and incidence of cardiovascular diseases: Recent results of a 10-year cohort study**

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Cardiovascular diseases (CVDs) are the leading cause of morbidity and mortality. An estimated 17.9 million people died from CVDs in 2019. Given the importance of nutrition as one of the critical modifiable risk factors for CVDs, we aimed to investigate the foods, food groups, and nutrients associated with the increased risk of CVDs in our population. The study population (n=9704) was from the MASHAD cohort study (2007-2017). All participants were admitted to the second phase and followed up for 10 years and were evaluated for probable CVD events. Multiple Cox regression and Logistic regression (LR) in SPSS, and Decision tree (DT) in SAS were applied for data analysis. Regarding food items in adults aged 35-50 years, artificial sweeteners and poultry had a significant positive effect, and salads had a significant inverse effect. In adults aged 50-65 years, cakes and cookies, dietary beverages, pickles, and processed meats beverages significantly increased the odds of CVDs. Regarding food groups fruits and vegetables significantly decreased the risk of CVDs in the total population, as the highest tertile of fruits and vegetables, compared to the lowest tertile, decreases the CVD risk by 28%. By controlling the effect of age, sex, BMI, and physical activity level (PAL) in the model, the middle tertile of carbonated beverages intake compared to the lowest tertile, increased the CVD risk by 41%. In conclusion, dietary factors can influence the odds of CVDs, so nutrition policymakers and planners in government and institutions

should take action to modify the nutritional risk factors of CVDs.

**Keywords:** Cardiovascular diseases, Nutrition, Diet.

## **The importance of artificial intelligence in nutrition**

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The dynamic convergence of Artificial Intelligence (AI) with nutrition signifies a transformative step in health and dietary research. Data mining (DM) is foundational for AI and Machine Learning (ML), aiding knowledge discovery by extracting valuable insights from vast data. Such data, like medical archives and clinical registries, grows rapidly and comes with uncertainties. Using AI on healthcare datasets can lead to new diagnostic models. ML reveals relationships in large datasets, advancing our understanding of disease and treatment responses. ML and AI's capabilities in handling vast and multifaceted data sets enable a comprehensive understanding of individual nutritional needs based on genetics, lifestyle, and even real-time health metrics. Moreover, AI's predictive analytics can forecast potential health risks based on dietary habits, offering early intervention opportunities. Beyond its use in offering image-based dietary assessments, AI can also be utilized in providing personalized nutrition, fitness suggestions, and



generating complete dietary menus. As AI and Big Data's importance grows, a deeper understanding is crucial for public health and nutrition. In summary as AI continues to evolve, its role in nutrition is set to become indispensable, offering avenues for healthier and more informed dietary choices for individuals and communities at large.

### **Unveiling of the Iranian database (online site) for children and adult reference interval**

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Health-related criteria for accurate interpretation of laboratory test results are called Reference Interval. Medical evaluation and proper care of children depends on the reference interval (RI). At present, the reference intervals available in used laboratory kits, while the reference intervals for individuals, especially in children, should be measured locally for each region. Lack of accurate reference intervals may lead to inappropriate interpretation of test results and physician misdiagnosis. Therefore, patients may be exposed to unnecessary invasive tests or more pain and anxiety. In addition, this process is expensive and leads to a significant increase in health care costs. If it is possible to increase the accuracy of interpretation of the results by determining

the reference intervals for each region and different age group and gender. After determining the reference intervals, it is necessary to make this information widely and easily available to doctors and laboratory science specialists, pathologists, biochemists and specialist doctors in all groups so that proper coordination can take place between them. It has been abundantly seen that currently medical and laboratory users use databases of laboratory reference intervals of other countries to accurately determine the reference interval of a laboratory marker in a specific age or gender category.

In this proposal, the goal is to collect a database of reference intervals of laboratory markers in Iranian infants and adults. At first, the reference intervals of existing markers that were published in international articles were collected and different markers were extracted along with the working method and sample size and the study in which it was conducted and some other necessary information. The above items were extracted from published articles and entered into the Excel database file. Then data harmonization was done, or the so-called clean data is done. At this stage, the database is ready to be displayed in the online database. The software team designed the site and online database according to the defined requirements and required workflow. And then using dynamic site design, Excel database information was placed on the site. The site should be designed dynamically so that it can provide



fast search for users even in high data volume. Also, due to the fact that updating the database at regular intervals and with regard to new articles is inevitable, the changes were also designed dynamically.

### **Reference interval harmonization: Harnessing the power of big data analytics to harmonize reference intervals across populations and analytical platforms**

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Several national surveys have reported wide variation in reference intervals across healthcare centres in certain regions, even those using the same analytical platform and reagents for the same assay. There is a high risk of inappropriate test result interpretation when reference intervals are not appropriately harmonized. The Canadian Society for Clinical Chemistry (CSCC) Working Group on Reference Interval Harmonization was established in 2015 to develop evidence-based harmonized/common reference intervals (hRIs) and support their implementation in laboratories across Canada. Harnessing the power of big data, laboratory results were collected across populations and testing platforms to derive common adult RIs for 16 biochemical markers. A novel comprehensive approach was established, including: (1) analysis of big data from

community laboratories across Canada; (2) statistical evaluation of age, sex, and analytical differences; (3) derivation of hRIs using the refineR method; and (4) verification of proposed hRIs across nine laboratories with different instrumentation using serum and plasma samples collected from healthy Canadian adults. Harmonized RIs were calculated for all assays using the refineR method, except free thyroxine. Derived hRIs met proposed verification criterion across nine laboratories and five manufacturers for alkaline phosphatase, albumin (BCG), chloride, LDH, magnesium, phosphate, potassium (serum), total protein (serum). Further investigation is needed for select analytes due to lower verification in one or more laboratory (albumin (BCP), calcium, total CO<sub>2</sub>, total bilirubin, sodium) or concern regarding too wide hRIs (alanine aminotransferase, creatinine, TSH). In this presentation, we will discuss the work completed by the Working Group on Reference Interval Harmonization in Canada, challenges encountered, and future plans to support implementation.

### **An introduction to the Iranian National Obesity Registry (IRNOR)**

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The worldwide prevalence of overweight and obesity has doubled since 1980 to the extent that nearly a third of the world population is now classified as overweight



or obese. Obesity represents a major health challenge because it substantially increases the risk of multiple chronic diseases, thereby contributing to a decline in both quality of life, work productivity, life expectancy, and an increase in healthcare costs. The Iranian National Obesity Registry (IRNOR) was initiated in 2017 to ideally evaluate the prevalence of overweight and obesity, the etiologies, clinical course, complications, and effective treatment methods. IRNOR is open to anyone 18 years or older who has a BMI of 25 or more. In the initial phase (2017-19), variables were validated by the Delphi method, and a data dictionary was defined. The registry website was developed. About 1000 patients were registered, and data were analyzed to find and correct the defects and system bugs. In the second phase (2019-20), about 3500 patients were registered, and 3-12 months follow-up was performed for about 1000 participants. In the third phase, which is in progress, we are in correspondence and contracting with other universities and administrative organizations in Iran, and consequently provincial and national health centers. Thereby, conducting online learning webinars and registering 6000 patients from different parts of Iran and follow 2000 patients during 3-12 months are the goals of the project ahead. Translating the findings of this registry into practice, can lead to enhancing public health policy and practices, and developing national guidelines for prevention and treatment of obesity.

## Attempts and experiences of different countries in achieving sustainability in food security

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Many countries and groups of countries, have taken action and adopted strategies in an attempt to attain sustainability in food security or, at least, one of its components – food availability, accessibility (physical, economic and cultural accessibility) and utilization. Many factors with direct or indirect effects on food security sustainability have been taken into consideration in these attempts – UN Sustainable Development Goals (SDGs), national food and agriculture systems, climate change, population growth, public food/dietary choices, natural resources, and food and nutrition literacy of the people. The emphasis on one or more of these factors varies depending on the country/group of countries. For example in Bangladesh the emphasis has been on subsidizing food items and attaining self-sufficiency in particularly plant foods and fish, while in China the emphasis is more on promoting healthy diets, sustainable agricultural production, climate change mitigation, and the reduction of food waste/loss to enhance agri-food system's resilience.

In South Africa national policy-makers have tried to adopt policies to ensure there is



sustainable innovation in farming through hydroponics, conservation agriculture, biological farming, and safer use and disposal of agrochemicals, whereas in Australia a national goal has been increasing the availability of food through increased production, improving trade, and increasing food accessibility for the poor, etc. On the other hand, in I.R. Iran basically ensuring food security is considered vital for sustainable total national development (subsidies and government food aid programs, etc), with due consideration of climate change, food loss and waste, sanctions, global increase in food prices, food and nutrition literacy, etc.

In some countries emphasis is put on international collaborations and in others on preserving the environment. For example, in Latin America and the Caribbean the national macro-policies include formation of a regional working group, with the collaboration of FAO and WFP, with special attention to sustainability and resilience of agrifood systems, and in Tanzania and Vietnam the importance of adopting strategies to preserve the environment processes and the importance of food security as part of sustainability and vice versa have been emphasized. In the Nordic countries, on the other hand, policy-makers emphasize basically “Strengthening the

sustainability of food systems” at the national, as well as local levels.

In conclusion attaining food and nutrition sustainability would depend basically on the national macro-policies and strategies; there is no single policy for all countries. Broadly speaking, based on global experience it can be said that the main challenges to be addressed for sustaining food security in any country are as follows: 1. providing people with adequate food; 2. dealing with the rising costs of agriculture and food technology; 3. eliminating rural poverty; 4. considering the environmental problems and the effect of climate changes and ways to minimize them.

**Keywords:** Sustainability, Food Security

## **Modulation of NRF2 in Diabets**

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Oxidative stress (OS) plays an important role in many diseases but very often, it is not clear if it is among the causes or the consequences of the pathological conditions. In the last two decades, it has become clear that the main in vivo mechanism of action of antioxidants is not related to the direct scavenging of free radicals (reactive oxygen, nitrogen or sulphur species) but to the activation of the nuclear factor erythroid 2-related factor 2 (NRF2), the master regulator of endogenous antioxidant enzymes.

Recently, it has been clarified that NRF2 plays a very significant role not only in the





antioxidant response and xenobiotic detoxification but also in the regulation of genes involved in proteosomal and autophagic function, iron, lipid and carbohydrate metabolism and DNA repair.

From the pharmacological point of view, the picture is particularly complex because in diabetes and other diseases NRF2 can play a protective or pathogenic role depending on the timing and duration of its activation.

Despite the presence of several contradictory publications, in type 2 diabetes, the most common form of diabetes, the activation of NRF2 before the development of diabetic outcomes seems to be beneficial. However direct electrophilic activators of NRF2 can have several off-target effects and better drugs capable of disrupting the NRF2-KEAP1 binding should be developed.

**Keywords:** NRF2, Diabetes, Oxidative stress, Antioxidant response, Pharmacological modulation

### **Development of nanoMicellar formulation of curcumin (SinaCurcumin) with improved oral bioavailability: Preclinical and human clinical results**

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Curcuminoids, comprising curcumin, demethoxycurcumin (DMC) and bisdemethoxycurcumin (BDMC), are bioactive phytochemicals with numerous pharmacological effects; such as, antioxidant, anti-inflammatory, anti-tumor, analgesic, anti-arthritis, immunoregulatory, and lipid-modifying activities. Oral biological availability of curcuminoids is low due to the low aqueous solubility and rapid metabolism. In order to improve the oral bioavailability, nanomicellar curcuminoid formula (SinaCurcumin) with enhanced pharmacokinetic properties were prepared and characterized. The mean diameter of nanomicelles was around 10 nm and encapsulation efficiency of curcuminoids in nanomicelles were 100%. Nanomicellar curcuminoid was stable in simulated gastric fluid and simulated intestinal fluid for at least 4 hours. The oral absorption of SinaCurcumin was at least 59 times more than the conventional powder of curcumin in mice. The safety and efficacy of SinaCurcumin has been shown as a supplement in clinical trials in the treatment of different diseases; such as, Osteoarthritis, ulcerative colitis, metabolic syndrome, fatty liver, multiple sclerosis, amyotrophic lateral sclerosis, and covid 19. The nanomicellar platform could be used for the delivery of other hydrophobic compounds and



nutrients like lipid-soluble vitamins (e.g. A, D, E, K) to increase their oral bioavailability.

## **Probiotic, synbiotic supplementation during critical illnesses: Review of recent evidences**

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Gut flora which its optimal balance and composition is associated with enhanced immunity, is reported to be disrupted during critical illnesses. Dysbiosis of gastrointestinal tract (GIT) during stress phase response may lead to bacterial overgrowth, translocation and facilitated colonization. The aforementioned items predispose the patient to poor clinical outcomes, and immune related comorbidities including systemic inflammatory response syndrome and sepsis. Dysbiosis therapy using probiotic, synbiotic supplementation during critical illnesses may lead to health beneficial effects including prevention of ventilator-associated pneumonia and nosocomial pneumonia, decreasing hospital and Intensive Care Unit (ICU) length of stay, duration of mechanical ventilation and incidence of diarrhea. However, the usage of these products did not affect the mortality rate and other clinical outcomes in previous studies. Notably, adult studies reported no adverse incident following probiotic/synbiotic administration in ICU;

while studies in children are not adequate. Finally, gut microbiome homeostasis of critically ill patients can be improved by probiotic, synbiotic supplementation leading to beneficial effects, but more multicenter large population-based studies especially in pediatric patients are needed to achieve conclusive results on recommended strains, dosage, treatment duration, indications, and cost effectiveness of the aforementioned products.

**Keywords:** Critical care, Probiotics, Synbiotics

## **Dietary acid Load in end stage renal disease**

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In patients with end-stage renal disease (ESRD), metabolic acidosis causes body disorders associated with increased mortality. Treatment of metabolic acidosis in patients on hemodialysis involves adding bicarbonate to dialysate to treat metabolic acidosis. However, adding bicarbonate rapidly and excessively to correct acidosis during hemodialysis, is potentially life-threatening. In order to prevent such complications, the serum bicarbonate level prior to dialysis should be maintained at more than 22 mEq/L, based on the recommendation by the Kidney Disease Outcomes Quality Initiative (KDOQI). The quantity of acid produced in the body can be



affected by diet and nutrients. Among the foods that produce non-volatile acids in the blood are animal proteins and grains that contain sulfur-containing amino acids. Alkali ( $\text{HCO}_3$ ) is also produced in the body by vegetables and fruits, that are usually high in potassium. Therefore, "Dietary Acid Load" (DAL) has been suggested to determine a food's ability to produce acid in the body, which can be assessed based on food intake using two indices : Potential Renal Acid Load (PRAL) and Net Endogenous Acid Production (NEAP). In fact, identifying the association between dietary factors and acidosis in hemodialysis patients contributes to maintaining pre-dialysis serum bicarbonate levels above 22 mEq/L, thereby preventing the complications of rapidly correcting their acidosis on dialysis. In this review we aimed to describe the relationship between DAL and pre-dialysis serum bicarbonate levels in patients under hemodialysis.

**Keywords:** Dietary acid load, Renal disease

## **The assessment of nutritional indices in esophageal cancer patients**

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**Introduction** Malnutrition is challenging in gastrointestinal cancer patients. This study assessed the nutritional status, and related

factors among patients diagnosed with esophageal cancer. **Methods** This was a cohort study among newly diagnosed esophageal cancer patients referred to oncology center. We assessed the demographic, malignancy and treatment characteristics, anthropometric indices, a Patient-Generated Subjective Global Assessment (PG-SGA) tool, body composition, dietary intake, nutritional-related complications, physical activity, health-related quality of life (HRQoL), and level of depression, anxiety, and stress using DASS21. **Results** We included a total of 189 patients with a median age of  $67.1 \pm 12$ . The mean PG-SGA score was  $13.2 \pm 6$ . 79% had severe malnutrition (PG-SGA score >8). Significant weight loss was detected in 70%. Also, 40% of cases had reduced muscle mass. The mean energy and protein intake was  $17.7 \pm 10$  Kcal/kg.day and  $0.57 \pm 0.4$  gr/kg.day, respectively. The most common nutritional-related complications were dysphagia (84.8%), constipation (62.1%), esophageal pain (48.4%), and primary anorexia (31.6%). According to HRQoL scoring, the mean emotional functioning was  $65.5 \pm 26.0$ ; Physical functioning,  $79.7 \pm 25.8$ ; role functioning,  $82.3 \pm 25.2$ ; cognitive functioning,  $88.9 \pm 16.7$ ; social functioning,  $81.0 \pm 24.1$  and global functioning was  $48.2 \pm 25.3$ . The mean depression score was  $8.5 \pm 7$ ; the anxiety score, was  $10.7 \pm 9$ , and the stress score was  $8.7 \pm 8$ . The median Karnofsky score was 80 (70-90). The mean MET-



minutes/week of the subjects was 1008.8, representing moderate physical activity. Conclusion This study shows a high malnutrition prevalence among esophageal cancer patients, even at diagnosis. Therefore, the early nutritional care process should be considered for all patients.

**Keywords:** Esophageal cancer, Nutritional assessment, Nutritional status.

## **The role of dietary patterns and diet quality indices in predicting the risk of metabolic syndrome: A comprehensive review**

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Metabolic Syndrome (MetS) is a major public health problem that has a significant adverse impact on quality of life, health expenditures, and mortality worldwide. Focusing on various aspects of the individuals' dietary quality can be very helpful in accurately identifying the role of diet in the occurrence and development of MetS. A literature search was comprehensively performed using PubMed, Web of Knowledge, and Scopus databases, to find all eligible observational studies with cross-sectional, case-control, or prospective designs that investigate the association of various dietary patterns or dietary quality

indices with risk of MetS. The studies that met the eligibility criteria were included. Some of these studies used the factor analysis method and the a priori dietary approach to determine the dietary patterns in the population. However, some others had extracted the diet quality of individuals via a posteriori methods such as using the Mediterranean diet(MD), dietary approach to stop hypertension(DASH) diet, healthy eating index(HEI), dietary inflammatory index(DII), and diet quality index(DQI). A comprehensive review of the results of studies suggested that a plant-based prudent/healthy dietary pattern, characterized by high consumption of whole grains, fruits, vegetables, legumes, nuts, seafood, and low-fat dairy was related to decreasing the risk of MetS. Also, accumulation evidence revealed that greater adherence to a diet with high scores of DASH, MD, HEI, and DQI can be inversely linked to MetS presence and progression. However, an animal-based western/unhealthy diet with pro-inflammatory characteristics that are recognized by high consumption of red and processed meat, fast foods, sweetened beverages, refined grains, and high fat and salty foods are associated with an increased risk of MetS.

**Keywords:** Dietary pattern, Diet quality, Mediterranean diet, DASH diet, Dietary inflammatory index, Healthy eating index, Metabolic syndrome



## The effect of nanocurcumin supplementation on clinical outcomes, oxidative stress parameters and inflammatory factors in critically ill patients with sepsis

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Sepsis is a severe reaction and excessive immune response to infection, which can lead to tissue damage, organ dysfunction, and death. This study aimed to investigate the protective effect of nano-curcumin (NC) on inflammatory factors, oxidative stress indices, and clinical outcomes in patients with sepsis. In one randomized clinical trial, 40 patients with sepsis aged 18–55 years, received 160 mg of NC supplement or placebo via a nasogastric tube for 10 days. Sequential organ failure assessment (SOFA) was evaluated on days 1 and 10. Serum levels of inflammatory factors, and oxidative stress indices were measured before the beginning of the intervention and on days 5 and 10. Length of hospital stay, mortality rate, and mechanical ventilation (MV) duration was compared between groups. There were significant improvements in the procalcitonin, Interleukin (IL)-6, IL-18, IL1 $\beta$ , IL-10, tumor necrosis factor-alpha, and malondialdehyde, nuclear-related factor-2, catalase, superoxide dismutase, and total antioxidants capacity in the NC group on day

10 were significantly lower than the placebo group. The duration of MV in the NC group was remarkably lower than the placebo group. Also, the SOFA score significantly decreased in the NC compared to the placebo group. No significant difference was observed in the mean serum levels of high-sensitive C-reactive protein, glutathione peroxidase level, duration of the intensive care unit stay, and mortality rates between the study groups. Our study indicated that supplementation with NC may be a promising treatment strategy for critically ill patients with sepsis.

**Keywords:** Sepsis, Nano-Curcumin, Critical illness, Organ dysfunction, Inflammatory factors, Oxidative stress

## Introduction to interprofessional education

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Interprofessional is defined in Meriam Webster dictionary as follows: “Occurring between or involving two or more professions or professionals.

An interprofessional team consists of team members from two or more different professions (e.g., nurses and physicians, physicians and community health workers, social workers and psychologists, nutritionists and dieticians, pharmacists and respiratory therapists) who learn with, from, and about each other to facilitate effective collaboration.



Interprofessional Education (IPE) in healthcare means students learn from each other. It can improve patient safety and strengthen healthcare teams. Consequently, "Interprofessional education occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes. Consequently, healthcare professionals as a part of an interprofessional team can communicate important information about their patients. By working together, they can support each other and breaking down the silos of different disciplines that results in increases team confidence and encourages companionship.

On the other side, as part of the competency framework, interprofessional collaboration is "working together to deliver the highest quality of care", while interprofessional education is defined as "learning about, from, and with each other". Thus, the missed link seems to be Interprofessional learning (IPL) which could be considered as a process in which different professionals learn from each other through interaction to develop collaborative practice.

In a nutshell, in order to work interprofessionally in clinical settings, students should achieve some competencies under supervision of their tutors in interprofessional atmosphere. So, it seems necessary to revise curricula accordingly.

**Keywords:** Interprofessional, Education, Nutrition

## **Grading the evidence: A key step in guideline development**

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Developing guidelines is a complex process that requires collaboration between health professionals and methodologists. This involves designing PICO questions, finding and grading evidence, and assessing the strength of recommendations for health interventions. While there are numerous methods for this process, the Grading of Recommendation Assessment, Development and Evaluation (GRADE) system has overcome some of the shortcomings of other grading systems. GRADE has a clear separation between the quality of evidence and strength of recommendation, with explicit and comprehensive criteria for both downgrading and upgrading the quality of evidence. However, grading studies on nutritional interventions can be more complicated, requiring a deeper consideration of confounding variables and biases. The potential impact of nutrition in combination with other significant risk or protective factors should be investigated more precisely using the GRADE methodology.

**Keywords:** GRADE, guideline, evidence, quality, recommendation



## A global review of dietary guidelines for healthy population

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Dietary guideline as a practical tool is proposed to supply public nutrition, health and agricultural policies and nutrition education programs to reserve healthy dietary behaviours. They advise foods and dietary patterns to provide the required nutrients and promote overall health and prevent chronic diseases in general population. Dietary guidelines have some characteristics including development by governmental institutions for different age, sex and physiologic status; based on scientific evidence; country-specific; purpose to prevent chronic lifestyle diseases; present as the basis for public education. Food pyramids and food plates are usually prepared for public education of dietary guidelines solve a country's public problems and nutrition priorities. According to a joint WHO/FAO consultation, since the 1998 over 100 countries have developed or adopted dietary guidelines due to their nutrition status, food availability, culinary cultures and dietary habits worldwide. Some guidance appears across countries and recommend to consume a variety of foods, some foods in higher proportion than other, to consume fruits and vegetables, legumes, and animal-source foods; and to limit sugar, fat, and salt. Guidelines on dairy, red meat,

fats and oils, and nuts are more variable. Although WHO global guidance recommends consumption of nuts, whole grains, and healthy fats, these messages are not universally echoed across countries. Dietary guidelines are increasingly including content to address the relationship between dietary intake and environmental sustainability. Dietary guidelines development and revision warrants increased attention to ecological impacts of diets and guidance incorporating sustainability; and enhanced handling of sociocultural factors including economic disparities, rapid dietary transitions toward junk/ultra processed food consumption, and differences in dietary patterns of social minority groups such as indigenous people.

**Keywords:** Dietary guideline, food dietary behaviour

## Comprehensive data collection in disease registries

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Disease registries, by definition, are databases that are set up to collect and store information on patients with a specific disease. The data elements that are collected in a disease registry may vary depending on the type of disease and the purpose of setting up the registry. Researchers use these data to analyze the disease trends, the effectiveness of treatment methods, and the management of the disease and to adopt prevention and control strategies.



The types of data that are commonly collected in registries include: demographic information of patients (such as age, sex, race/ethnicity, place of birth and place of residence), medical history of patients (such as physical findings, screening, occupation and history of other diseases) and specific information of the disease of interest in the registry (such as disease characteristics, disease stage, drugs and treatments received, and disease outcomes such as death and complications).

Not all data collected in a disease registry are equally important and prioritized. Therefore, the data collected in registries are also classified into basic, essential and additional data according to their importance and priority.

Basic data are the main features related to the diagnosis of the disease that are the basis for inclusion of the patient into the registry system such as: diagnostic information of the patient and type and stage of the disease and also demographic information of the individual such as age, sex and race/ethnicity. This information is used to describe the disease, including the distribution and trend of occurrence of the disease in different populations, and is the main (and sometimes only) data collected in some population-based registries such as population-based cancer registries.

Essential data is a higher level of data that is used to provide the necessary evidence for evaluating services and interventions related to the disease. The most important data in this group are data related to treatment methods and outcomes of the

disease (especially death and complications). Linking the disease registry system to other databases such as the death registry system or the electronic patient record or drug databases can make it possible to collect data in this group at a low cost.

Additional data in the disease registry system are mainly collected for research purposes. Information related to family history, lifestyle-related risk factors such as smoking and alcohol consumption, and environmental exposures are included in this category. Often, disease registry systems that are launched for extensive research and at the frontier of knowledge on a specific disease in level 3 university centers collect a wide range of data that mostly fall into this category.

As a result, it should be said that launching a disease registry system without paying attention to the quality and comprehensiveness of the data collected has limited value. The quantity and quality of the information obtained from the disease registry depends on the quality and comprehensiveness of the data collected. On the other hand, collecting information requires spending money and collecting useless information can be a waste of money. Therefore, choosing the type of data that is collected in a disease registry system should be done intelligently and with considering the objectives of the registry system. It should be





noted that disease registry systems that are launched with research purposes should include all 3 types of data mentioned (basic, essential, and additional) so that they face less limitations for answering complex and multidimensional clinical questions at the edge of science.

## **Nutrition day in Iran: Results for 13 years of data collection**

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NutritionDay (nDay) is a global audit to fight hospital malnutrition which was started in 2004 with the support of the Austrian Society for Clinical Nutrition and financially supported by ESPEN since 2006. A specific nDay standard questionnaire is used for nutritional assessment among hospital wards, intensive care units, oncology patients, and nursing homes. Also, the outcome evaluation is done 30-60 days after the nDay. This project in Iran was conducted in hospital wards, Intensive care units, and nursing homes in Mashhad and Tehran, during the years 2009-2022. Overall, Iran nDay was conducted in 7 hospitals in over 90 wards and over 2000 patients and residents during the last 13 years. In 2022, the validity and reliability study of the Persian version of

the nDay questionnaire was conducted. The overall prevalence of malnutrition was 35% and didn't have a particular trend during 13 years. The highest prevalence of malnutrition was related to the wards of hematology, gastroenterology, burning, pulmonary, and surgery, During 13 years. Patients in wards of hematology, gastroenterology, internal medicine, and surgery had the lowest food intake in the last week before hospitalization and the lowest food intake on nDay was related to surgery, neurology, rheumatology, and burn wards. Also, Hematology, gastroenterology, transplantation, and internal medicine wards had the highest prevalence of unintentional weight loss. It was shown that decreased food intake on nDay is significantly associated with higher mortality risk ( $P<0.001$ ).

## **Long-term association of Ramadan fasting and non-communicable disease**

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**Introduction:** This study aimed to evaluate the long-term association of Ramadan fasting and non-communicable diseases (NCDs) incidence (cardiovascular disease



(CVD), hypertension (HTN), diabetes mellitus (DM), and depression).

**Method:** This retrospective cohort study was conducted on subjects from the MASHAD (Mashhad stroke and heart atherosclerotic disorder) study. A validated Ramadan fasting questionnaire was used to evaluate the Ramadan fasting basic information and nutritional habits. Subjects were categorized into three groups: healthy individuals, newly diagnosed, and people with NCDs from the beginning of the study.

**Result:** A total of 8769 individuals (40.8% male, 57.44±8 years) enrolled in the study. CVD was significantly higher among subjects who had no experience of fasting ( $P=0.027$ ). Moreover, the report of maternal fasting during fetal life was significantly associated with DM incidence ( $P=0.018$ ). However, there was no relationship between maternal fasting and CVD, HTN, and depression. Regarding Ramadan fasting complications, the report of a heart attack was significantly higher among CVD, HTN, and depressed patients ( $P<0.001$  for all). Stroke incidence during Ramadan was more frequent in the CVD and HTN groups ( $P=0.004$  and  $P<0.001$  respectively). Loss of consciousness was reported as more common in CVD, diabetic, and depressed patients ( $P=0.022$ ,  $P<0.001$ , and  $P<0.001$  respectively). Also, CVD, hypertensive, diabetic, and depressed patients had significantly higher experiences

of severe hypoglycemia during Ramadan ( $P<0.001$  for all).

**Conclusion:** Ramadan fasting may be related to lower CVD incidence. Also, maternal fasting during pregnancy may be related to diabetes incidence. CVD, HTN, DM, and depressed patients are more exposed to Ramadan fasting complications.

## Sustainable food security and its association to chronic diseases

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Food Security (FS) is defined as continuous people access to enough and proper food, to have a healthy and active life which includes: 1. Availability of nutritional enough and healthy food 2. Ability and confidence about intaking acceptable food, from socially acceptable sources. In addition, food insecurity (FI) is defined as limited or insecure availability of enough and healthy food or, limited ability of getting food by the community acceptable methods.

Direct estimation of family FS is based on questioning family nutrition responsible person, to check if she worries about quantity and quality of herself and her family eaten food. USDA, CCHIP and Radimel-Cornel questionnaire are mostly used. The USDA 18-items questionnaire has been used in many studies in Iran. In addition, indirect methods to evaluate FI in the community, are also used.



FI is in association to many diseases and problems; in Iran following issues have been reported by studies: child stunting, pregnancy pre-eclampsia, depression in mothers having small children, women overweight, cancer, lower IQ in pupils, osteoporosis, diabetes, arthritis rhomatoid, some skin diseases, myocardial infarction, digestional disfunction, acne in secondary school girls, and pre-mense syndrome in young girls.

FI prevalence in different countries reported to be between 10 to 73% and in Iran, the prevalence has been reported to be between 30 to >50% in different studies. In FI studies, different variables have been associated to the probability of family FI, including: family size, parental education and occupation, family income and the number of occupied people in the family, the situation of house owning, and the family head age. The existence of FI has been associated to less family consumption of meat, fruit and veg, dairy products and rice, but has been associated to higher consumption of bread and egg.

Although variables like age, sex and family size are not changeable and some other variable like education and place of living are hardly changeable, but some other variables like type of occupation, number of occupied people in the family, family income and nutritional education are affecting family FS very much and so, it is necessary that country policy makers plan to improve such

variables to reduce FI resulting reduction of non-communicable diseases in the country.

**Keywords:** Food Security, Sustainable, Chronic Disease

## **Nutritional strategies to optimize conditioning in athletes**

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Achieving peak athletic conditioning is a multifaceted endeavor that necessitates a holistic approach, with nutrition playing a pivotal and central role in enhancing training-induced adaptation. This abstract offers an extensive examination of the fundamental role of nutrition in elevating both athletic performance and conditioning. It delves deep into the intricate interplay of macronutrients, micronutrients, dietary timing, and hydration, providing a comprehensive overview of how these elements support the attainment of peak athletic conditioning.

To reach the peak of athletic conditioning, it is imperative to make precise and deliberate choices in nutrient selection, addressing the intricate requirements of energy metabolism, muscle recovery, and overall physiological well-being. This review underscores the profound significance of tailoring nutritional strategies to provide the distinctive and individual needs of athletes. The individualized approach stands as a cornerstone in promoting training-induced



adaptation, ultimately resulting in substantial improvements in athletic performance.

In conclusion, we advocate a practical and hands-on approach, encouraging coaches, sports scientists, and athletes to prioritize the meticulous development and execution of custom-tailored nutritional strategies. Such strategies have the potential to accelerate the process toward peak athletic performance, recognizing that even the most minor advantage can carry paramount importance in the highly competitive realm of sports. By embracing nutrition as an integral pillar of athletic success, athletes embark on a transformative path toward unlocking their full potential and achieving unrivaled excellence in their respective fields.

**Keywords:** Athletic Conditioning, Nutrition, Training-Induced Adaptation, Macronutrients Individualized Strategies

## **Muscles atrophy, after sports injury**

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Skeletal muscle serves as a reservoir of proteins in our body and plays a vital role in movement, assisting gestures, maintaining metabolic balance, and generating heat. As a result, changes in muscle mass can have an impact on overall metabolism, movement, eating, and breathing. However, in addition to physical conditions like immobilization,

various pathological conditions such as chronic diseases, cancer, long-term infections, and aging can disrupt the balance between protein synthesis and degradation in skeletal muscle, leading to muscle wasting and atrophy. Skeletal muscle atrophy is characterized by weakened, shrinking muscles and a decrease in muscle mass and fiber size at a microscopic level. Muscle function is influenced by different systems that regulate the function of contractile proteins and cell components. Ongoing research is shedding light on the complex network of factors that control and coordinate these processes. Understanding these mechanisms will help identify targets for therapeutic interventions in muscle loss associated with both genetic and non-genetic diseases, as well as improve quality of life during the aging process. Given the significant economic and social impact of muscle atrophy, it is crucial to develop effective prevention and treatment strategies. Exercise is widely recognized as the most effective therapy for skeletal muscle atrophy, although it is not suitable for all patients. Several potential treatments for skeletal muscle atrophy have been identified and evaluated in clinical trials, but they have not yet been approved for use. Nowadays, functional foods, as potential modern medicines, are used to treat various kinds of atrophy conditions. This talk provides a brief



review of the mechanisms and treatment strategies for skeletal muscle atrophy after sports injuries and also the new researches that have been conducted in the nutrition department of Mashhad Medical School in this regard.

## **Conclusions of the scientific symposium on sustainable food security and chronic diseases**

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The relationship between food and the risk of various diseases, including infectious and non-infectious diseases, is not hidden from anyone. These days, the relationship between food insecurity and chronic diseases has become more important. Therefore, we should pay special attention to food security like the rest of the world.

Khorasan Razavi province have second ranks in terms of population and fourth ranks in terms of size in the country. Ensuring the food security of this population with different ethnicities, cultures and economic deciles has always been one of the concerns of activists in the executive field, academic circles, and all stockholders. According to De Martonne's classification, the climate of the province is 12% very dry, 62% dry and 26% semi-arid.

The evaluation of the food availability physically, in Razavi Khorasan Province shows that this province ranks 2<sup>nd</sup> in the production of livestock products, 7<sup>th</sup> in horticultural products, and 3<sup>rd</sup> in agricultural products. Also, in the economic access, based on the surveys completed in 2010 (Sampat study) and 2015, it was relatively safe food provinces among the provinces of the country. The food security of the country and the province is strongly affected by the economic fluctuations of recent years, but it has been done to provide suitable and sustainable food in low-income and low-privileged areas. According to the study of food security in Iran (2016), 40 % of all Razavi Khorasan people were insecure food. But now more food insecurity is predicted.

In conclusion, it is necessary to pay more attention to the following important matters regarding the food security in the province and Iran. Climate changes and drought, high inflation of food items, food wastage in the production and processing of agricultural products, and finally the high population of marginalized people, especially in Mashhad with the highest amount of marginalized people in Iran, and the resulting nutritional risks.

**Keywords:** Sustainable, Food Security, Chronic Diseases

## **Dietary guidelines in non-communicable diseases**

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Non-communicable diseases (NCDs) are responsible for high burden of diseases worldwide, and the number of DALYs attributed to NCDs is expected to grow significantly over the next decades. Simultaneously, the diagnosis methods and treatments of NCDs are improving which is associated with higher life-expectancy of these patients. However, physiological changes (or metabolic derangements) as a results of disease per se and treatments beside malnutrition in these patients can potentially mitigate the efficacy of medical interventions. Therefore, various evidence-based dietary guidelines were developed to translate scientific knowledge and opinion into dietary recommendations for multi-disciplinary teams including those involved in identification, prevention and treatment of malnutrition in these patients. The guidelines aim to promote the concept of adequate nutrient intakes and thereby to promote the efficacy of treatments. In the current symposium, we aim to have an overview over the current dietary guidelines for various NCDs.

**Keywords:** dietary guidelines, chronic diseases, disease prevention, treatment.

## Functional food could improve redox status and clinical outcomes in neurological patients

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Evidence shows that the pathogenesis of neurological disease like Parkinson's disease (PD), Multiple Sclerosis (MS) and Stroke patients is influenced by oxidative stress, inflammatory process as well as gut microbiota dysbiosis. Functional food with antioxidative, anti-inflammatory and gut microbiome changing properties could improve the metabolic, pathologic and mental balance and consequently clinical outcomes. In a recent RCT, we investigated the effect of 12 weeks of synbiotic supplementation on redox status, mood states, quality of life and clinical scores of PD patients. Synbiotic supplementation increased TAC while reduced MDA, and oxidative stress index ( $p < 0.001$ ). Depression scale was also decreased in the synbiotic compared with the control group. Well-being and cognitive impairment domains of PDQ-39 significantly improved. In another RCT on patients with RR-MS, the effect of 1500 mg ginger supplementation on disability, physical and psychological quality of life (QoL), neurofilament light chain (NfL), interleukin-17 (IL-17), matrix



metalloproteinase-9 (MMP-9), and neutrophil to lymphocyte ratio (NLR) were assessed in a 12-week intervention. Significant reduction in the EDSS, the MSIS-29 physical scale, the MSIS-29 psychological scale ( $p < 0.001$  for all), NfL, IL-17, and NLR ( $P < 0.05$  for these) were obtained. However, MMP-9 changes were not significant between the groups. In a new triple-blind intervention on post-ischemic stroke patients, 12-week supplementation with 1000 mg royal jelly could improve oxidative stress, antioxidant capacity, QoL, inflammatory mediators, cognitive function and clinical outcomes significantly ( $p < 0.05$ ). In conclusion, consumption of functional food could be considered as an effective adjuvant therapy for patients with major prevalent neurological diseases. Multicenter trials on more participants with different doses of functional foods using more specific biomarkers are warranted to draw a wider picture of their clinical applications.

### **Climate change and food security in Iran: Applied system thinking modelling**

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All of four dimensions of food security is affected by global warming. Meanwhile there are many drivers that contribute to food security. Therefore, we applied System Dynamics Model (SMD) that was designed based on system thinking approach. Through SMD, the nonlinear relationships between drivers of food security under climate change in Iran was mapped and the impacts of the substantial extreme events (drought, flood) on food security was projected up to 2050 by machine learning via iThink software. Current scenario revealed that food security component was decreased by climate change in future, hence food security would be threatened in Iran. Consequently, SMD presents different food security' scenarios to policy making under future global warming uncertainties and will be useful to perform holistic viewpoint of food sustainable security for policy makers in Iran.

**Keywords:** Global Warming, Food Security, System Thinking, System Dynamics, Iran.

### **Evidence-based policy making in the food and nutrition system of Iran**

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The National Food and Nutrition Security Document 1411-1402 was prepared and approved in the seventeenth session of the Supreme Council of Health and Food Security at the beginning of 1402. In this ten-year national document, strategies, actions, and programs in various fields of food security and nutrition, and the responsibilities that each executive body has, have been compiled with the cooperation of food security experts in relevant agencies, Food system, and scientific and research centers of the country.

Despite the implementation of several multilateral interventions and, in some cases, integrated policies, inequality in the field of food and nutrition remains a concern. However, with significant improvements in the institutional structure of food and nutrition policy-making, the country's journey from "nutrition science" to "evidence-based policy-making" is still underway. To achieve this goal, there is a need for joint efforts and cooperation between scientists, policymakers, and other stakeholders. However, given the numerous challenges, there is still a need for more work in this area. To effectively address these issues, it is suggested that multi-sectoral representation in joint work should be transformed into inter-sectoral integration based on interdisciplinary and inter-sectoral research at policy and integrated operational agenda for all sectors involved. This process should also encourage the participation of civil society, women, the private sector, and the industry.

**Keywords:** Food and Nutrition Security, Policy –Making, Food System

## **Explainable artificial intelligence in healthcare**

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Explainable Artificial Intelligence (XAI) is a critical advancement in healthcare technology, offering practitioners a profound understanding of the decision-making processes employed by Artificial Intelligence (AI) models. Unlike conventional black-box AI systems that often confound interpretation, XAI seeks to elucidate the inner workings of AI models, providing comprehensible explanations for their conclusions and forecasts. This transparency is pivotal in establishing trust and validating AI-driven results within the healthcare sector. In the healthcare arena, XAI boasts a multitude of applications. One prominent use is in medical diagnosis, where AI models analyze extensive patient data, including medical images, laboratory tests, and clinical records. XAI systems assist physicians by furnishing explicit explanations for their findings, enhancing diagnostic accuracy and timeliness. Additionally, XAI finds utility in patient monitoring and personalized treatment. Through the examination of comprehensive patient data encompassing genetic





information, lifestyle patterns, and treatment histories, explainable AI models discern personalized treatment alternatives, substantiated by clear rationale. Furthermore, XAI extends its benefits into the realm of nutrition. It empowers individuals to make informed and personalized dietary choices by presenting transparent and interpretable insights. These insights span personalized nutrition recommendations, nutrient analysis, meal planning, weight management, diet tracking, and nutritional education. Collectively, the integration of explainable AI into healthcare holds significant promise in cultivating a transparent, accountable, and trustworthy AI-driven medical landscape. By furnishing interpretable insights, healthcare professionals can collaboratively harness AI's full potential while safeguarding patient safety and prioritizing ethical considerations.

## **Heavy metal contamination of foods and its impact on human health**

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Today, heavy metal pollutants are one of the health and environmental issues in most countries of the world. Heavy metals such as lead, mercury, arsenic, cadmium and nickel have a greater impact on human health. These metals after entering the body are not

metabolized and not excreted and accumulate in the tissues, causing various diseases and complications, including cancers. Heavy metals enter the food chain of humans and animals through various ways. Sewage, waste from factories, garbage and dust are the usual ways of entering heavy metals to foods. Contamination of food with heavy metals is not only achieved by human activity, but also it is possible to contaminate food naturally, for example, contaminated soils. According to the available statistics, the incidence of food poisoning in developing countries is 13% higher than in industrialized countries. Heavy metals in environment can reduce the benefits of eating fruits, vegetables and foods with animal origin. A healthy diet requires a rational consumption of foods. However, mechanisms by which these heavy metals exhibit their action on human health are not well elucidated. In addition, reducing the risk associated with the use of food polluted with heavy metals is a priority that requires a well-planned approach.

**Keywords:** Heavy metal, food, human health, risk assessment

## **Presenting a joint project with WHO in relation to the policy changes needed in the food and nutrition system of Iran in order to move a sustainable diet**

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The urgency to transition towards a more sustainable diet has become critical in certain regions, particularly in Iran, where accelerated climate change and heightened vulnerability are pressing concerns. This research aims to examine available data regarding the necessary modifications in the current Iranian dietary practices to enhance sustainability. Additionally, it assesses the extent to which existing policies in the country have addressed this imperative shift. The systematic search encompassed renowned databases like PubMed, Scopus, Web of Science, as well as Iranian scientific search engines including Scientific Information Database and Magiran, spanning from January 1990 to July 2021. A total of 11 studies and policy analyses were meticulously scrutinized. The findings emphasize the imperative to elevate the consumption of dairy, fruits, vegetables, cereals, poultry, and legumes, while diminishing the intake of bread, rice, pasta, red meat, eggs, fats, sugars, and confectioneries in the Iranian diet. Notably, considerable efforts and investments have

been dedicated to policies and strategies targeting the reduction of sugar, salt, and trans-fatty acids, thereby enhancing the health-related sustainability of the Iranian diet. A range of policies and programs have been implemented to combat non-communicable diseases (NCDs) by curbing access to unhealthy food options, aligning with the health-oriented dimension of a sustainable diet. However, there is a notable absence of explicit focus on the ecological facet of a sustainable diet within the country's food and nutrition policy documents. Fostering an environment conducive to a sustainable diet necessitates the formulation and execution of policies and initiatives aimed at enhancing public awareness, supporting research endeavors to generate evidence and identify viable alternatives, and devising and implementing interventions/programs to promote and facilitate both healthy and sustainable dietary practices.

**Keywords:** sustainable diet, dietary change, environmental footprint, nutrition, Iran

## **Investigating the factors of success and failure of diseases and health outcomes registries**

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**Introduction:** Registry systems for diseases and other health outcomes provide



important resources for medical research and present tools for public health monitoring and care quality improvement. Considering the complexity of registry programs, success and failure are possible in different situations. A huge deal of costs has been spent on projects that have failed while imposing higher cost after implementation due to the poor performance. Evaluation of disease registry and health outcomes programs is possible by identifying the success and failure factors of such programs. Therefore, the present study was aimed to investigate the success and failure factors of registry programs for disease and health outcomes at Mashhad University of Medical Sciences.

**Methods:** This research is an applied work in terms of purpose and is descriptive cross-sectional in terms of nature and method. In the first part of the research, by a systematic review of the texts, the factors for success and failure of the registry programs were extracted. In the second part of the study, a qualitative study was conducted based on a semi-structured interview with managers of the health and health outcomes programs to extract the success and failure factors. Here, data were analyzed by MAXQDA 2018 software using the content analysis method. In the third section, using the hierarchical analysis, the importance of the factors was determined from the viewpoints of managers and executives of registry programs for disease and health outcomes.

Then, they were prioritized using Expert choice V.11 software.

**Results:** In the literature review, 11 studies were ultimately included. Factors extracted at this stage included managerial, technical, organizational, economic, behavioral, educational, legal, and cultural factors and 15 managers were interviewed in total. Participants included 9 men and 6 women. Data analysis resulted in the extraction of 11 main factors including technical factor, organizational factor, strategic factor, behavioral factor, managerial factor, political factor, cultural factor, legal factor, economic factor, educational factor, and ethical factor. According to the results of the interview, the managerial factor had the highest frequency of success and failure (43 cases) and the sub-factor of "training the data registrars" from training factor and the sub-factor of "allocating appropriate budget" from economic factor as well as the sub-factor of "high volume of information" from the managerial factor had the highest frequency each with 8 replicates. During the prioritization of factors by the analytic hierarchy process (AHP), the data of 14 questionnaires with valid inconsistency rates were analyzed. The results of data analysis show that the economic factor with the score of 0.164 is the most important followed by the managerial factor (0.142), technical factor (0.131), strategic factor (0.112), organizational factor (0.102), education factor (0.094), behavioral factor (0.089), legal factor (0.088), and ethical



factor (0.077) from the perspective of managers and officials of registry programs of health and health outcomes.

**Conclusion:** The main extracted success and failure factors included organizational, behavioral, cultural, managerial, technical, economic, educational, legal and ethical factors. Amongst, some factors, such as economic and managerial factors had particular importance and were more emphasized. The results of this study can be used in decision making by managers and policymakers of registry programs of health and health outcomes to design and implement successful programs. Designers and developers of these programs can use the results of this research to evaluate the success of existing registries. On the other hand, presenting the success and failure factors of registry programs of disease and health outcomes can help decision-makers in this field to consider the factors affecting their success prior to implementing these systems and to prevent the failure of these programs.

**Keywords:** Registry, health information systems

## **Management of obesity: Advances and challenges**

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While use of body mass index (BMI) is very important to screen obesity, it is important to take into account the importance of central adiposity associated with a lot of metabolic disorders which has contributed to significant morbidity and mortality. With multiple criticisms of how we define and approach obesity in clinical practice and scientific research, there are also multiple approaches for management of obesity. However, with good progress in the management of diseases closely integrated with excess body weight, the treatment of obesity itself has proven largely resistant to therapy. To establish obesity management programs, the main argument defining obesity as a chronic illness rather than a risk factor is the distinct pathophysiology that leads to excess fat accumulation coupled with homeostatic mechanisms. The altered biological mechanisms may explain insufficient short-term behavioral interventions compared to long-term approaches of weight loss. With current safe and effective pharmacological, surgical, and lifestyle therapies, challenges remain in the widespread implementation of these interventions.

## **Keywords: obesity, central adiposity, BMI**

## **An overview of the biosensors application in food safety and pathogens detection**

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Food contaminated with pathogens is one of the main causes of human diseases all over the world. In general, bacteria, parasites and viruses, which have a major impact on the global economy and especially on health and social welfare indicators, cause most contaminations in food. Therefore, it is important to identify and prevent the occurrence of food-borne microbial diseases, and as a result, it is very important to expand and upgrade diagnostic systems with high speed and accuracy in improving food safety. So far, various methods have been investigated to identify and evaluate the number of pathogenic microorganisms in different food samples. However, most of the traditional methods include the preparation of food samples, which is a laborious, time-consuming process that requires equipment and is not suitable for on-site identification. Therefore, it is very important to develop fast, sensitive, selective and more accessible diagnostic methods in the identification of pathogens. Recently, biosensors based on nanoparticles or biomolecules have been investigated as new and advanced approaches to replace traditional methods, which are among the fast and applicable methods for identifying pathogens. The term nanosensor is derived from the word nano, and the sensor can be defined as a tool for monitoring physical and chemical phenomena, which is used to transmit information related to any biological, chemical or physical parameter

in the case of nanoparticles with a maximum size of 100 nm. Nanosensors are designed based on various mechanisms and techniques, four classes of transducer-based nanosensors are explained for identifying food pathogens, and they include electrochemical, optical, piezoelectric, and microfluidic nanosensors. Advances in nanotechnology by using nanoscale materials and structures to increase the performance and accuracy of biosensors and nanosensors have opened new frontiers in the development of new methods of identifying pathogens. The food industry's demand for fast, accurate and easy-to-use devices, especially for the detection of foodborne pathogens, has encouraged the increasing research progress of miniaturization and the application of nanomaterials in the fabrication of nanosensors and the detection of foodborne pathogens, which have many advantages compared to Traditional methods, are time-consuming and have laboratory equipment. With the current progress and speed of comprehensive research in the discovery of new nanomaterials, new mechanisms have been introduced over the years to improve nanosensors in terms of performance, sensitivity, accuracy and efficiency for food analysis.

**Keywords:** nanosensor, food pathogen, biosensor, food safety



## The effects of omega 3 fatty acids on the serum concentrations of pro inflammatory cytokines and depression status in patients with bipolar disorder: A randomized double-blind controlled clinical trial

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**Background:** The inflammation accelerates the progression of bipolar disorder. Supplementation of anti inflammatory supplements in adjuvant with medications may alleviate disorder signs. This study aimed to investigate the effects of omega 3 fatty acid supplementation on the serum concentrations of pro inflammatory cytokines and depression status in patients with bipolar disorder.

**Materials and Methods:** This randomized clinical trial study was conducted in Zahedan city in 2021. Patients with bipolar disorder (n = 60) were grouped into two groups: omega 3 fatty acid supplement group (n = 30, 15 men and 15 women) and placebo one using a permuted block stratified randomization. The patients in the omega 3 group received 2 g of omega 3 fatty acids daily for 2 months while patients in the placebo group received 2 g soft gels daily in the same form. Depression score and the

serum concentrations of tumor necrosis factor  $\alpha$  (TNF  $\alpha$ ) and interleukin 6 (IL 6) and high sensitivity C reactive protein (hs CRP) were assessed before and after the study.

**Results:** Depression score and the serum concentrations of TNF  $\alpha$ , IL 6, and hs CRP were decreased after intervention in the omega 3 fatty acid group also compared with the placebo group (P < 0.001). The results also show a positive correlation between the serum concentrations of TNF  $\alpha$ , IL 6, and hs CRP with depression scores (P < 0.001).

**Conclusion:** Prescription of omega 3 fatty acids can decrease inflammatory parameters and help to decrease depression in patients with bipolar disorder. This supplement can be used along with medications for decreasing the inflammatory markers in these patients.

**Keywords:** Bipolar disorder, depression, inflammation, interleukin 6, omega 3

## Tehran lipid and glucose study: A national legacy in cardiometabolic health

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The Tehran Lipid and Glucose Study (TLGS) is a landmark study that was designed in



1997 as the first non-communicable disease (NCD) cohort of Iran. The study has periodic examinations and follow-ups of over 15000 people, 3-80 years of age, every 3 years, which provides a great opportunity to find the trend and trajectory of various risk factors in a country in nutrition transition.

The results of TLGS have emphasized the association of dietary patterns and anthropometric indices with cardiometabolic risk factors, and finding the trajectory of such indices during the life course is among the novelties of this study. In the TLGS, following the collection of baseline and follow-up data, a community-oriented lifestyle modification has been implemented, which has been effective in decreasing the incidence of type 2 diabetes and in diminishing the prevalence of metabolic syndrome. TLGS has also conducted studies involving genomics and biomarkers of NCDs and has performed the first whole-genome sequence version and announced the Iranian Reference Genome Research Project. Accordingly, some gene-dietary pattern interactions have been detected in our population regarding susceptibility to metabolic disorders. Having information on genomes and metabolomics of this cohort with 25 years of phenotypic findings could disclose many aspects of personalized medicine.

Despite the challenges of conducting a cohort study in a developing country, TLGS has provided valuable insights into cardiometabolic issues, including cardiovascular and diabetes risk and

prediction models, metabolic syndrome, and dietary patterns. The findings of TLGS are relevant to public health and can inform lifestyle interventions.

**Keywords:** Lipid and Glucose Study. Tehran. Cohort

### **Preliminary findings of the Persian birth cohort in Isfahan**

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The primordial prevention of non-communicable diseases is supported by the scientific evidence on Developmental Origins of Health and Diseases (DOHaD), and it underscores the importance of health promotion interventions from early life. Birth cohorts play an essential role in generating basis and advancing the knowledge regarding different aspects of DOHaD. The Prospective Epidemiological Research Studies in IrAN (PERSIAN) Birth cohort is a multi-center birth cohort aiming to study various factors of DOHaD in Iranian population. The enrolment of PERSIAN birth cohort participants was in five cities of Iran, and here we present some preliminary findings of this study in Isfahan. Inclusion criteria for participation in Birth Cohort in Isfahan were pregnant Iranian women who have lived in Isfahan for at least one year, and did not have any history of infertility,



those in the first trimester of pregnancy and those who intended to give birth in hospitals of Isfahan city. Of the main factors assessed in this study were dietary habits of mothers, breastfeeding, complementary feeding, and dietary habits of children. Significant association existed between maternal dietary patterns, weight gain during pregnancy, maternal blood levels of some essential and toxic elements and environmental pollutants with neonatal birth size and further growth and development of their children. We also found an inverse interaction between maternal dietary fat intake and breast milk omega-3 fatty acids with infant weight at 4 and 12 months of age. Future findings of this undergoing cohort will provide comprehensive information about primordial prevention of chronic diseases.

**Keywords:** Birth cohort, Growth and Development, Risk factors, Pregnancy, Primordial prevention

## Golestan cohort study nutritional studies summary and conclusions

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**Background:** Golestan Cohort study (GCS) is a the largest prospective study with valid and reliable food frequency questionnaire compared to 24 h recalls and biochemical measurement in the Middle East. In this study, we assessed the risk of dietary items with cancer, cardiovascular and all-cause mortality.

**Methods:** A total of 50,045 participants aged  $\geq 40$  years were recruited from Golestan Province, Iran, from 2004 to 2008 and actively followed for a median of 16 years. At enrollment, nutritional data were collected by face-to face interview using a 116-item food frequency questionnaire that was specifically designed and validated for this population. All participants are being followed up annually by means of telephone calls. Deaths were reported by family members, local health workers through annual telephone calls, followed by a physician visit and completion of a verbal autopsy questionnaire, Adjusted Cox models were used to estimate hazards ratio (HR) and 95% confidence intervals (CI) for overall and cause-specific mortality, using the lowest quintile as a reference group.

**Results:** The results of GCS Nutritional and dietary studies were published in 35 papers mainly in Q1 Journals. Fruits, Fiber, Vegetables, Poly Unsaturated fatty acids, Nuts, seeds, legumes, flavonoids, calcium and dairy products, turmeric, pepper, cinnamon, and saffron were classified as healthy foods. Sodium Intake, trans fatty acids, red and processed meat, Sugar sweetened beverages were classified as unhealthy food.

**Conclusions:** The health policies in Iran are currently focused on lowering unhealthy diet. Attention should also be focused on increasing healthy diet components.

**Key words:** Golestan, Nutrition, Cohort





## Mashad study summary and conclusions

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The MASHAD study designed as a longitudinal study of 9704 adults, living in three regions of Mashhad, north-eastern of Iran. They were recruited in 2007 and followed up for 10 years. In phase 1, all participants underwent demographic, nutritional, and anthropometric, and laboratory measurements aimed at identifying risk factors associated with CVDs. In the second phase, a long-term 3-years clinical follow-up performed until 2020, with the purpose of better understanding which risk factors are contributed to the development of CVDs.

The second phase of Mashhad cohort study was conducted from 2017 to 2019. All participants of the first phase of this project (n=9704), admitted to the second phase and followed up for 10 years. In addition, 1304 subjects were newly admitted to this study in the second phase. During the period of follow-up, 1703 subjects lost the follow-up due to lack of response, reluctance, lack of access and migration, and also 429 subjects passed away. Finally, 8860 subjects participated in phase.

Two expert team including cardiologist and neurologist, subjects with sustainable records invited and were visited again. The result that confirmed by expertise team showed that 852 CAD, 118 stroke, 146 death by CAD and 39 death by stroke confirmed.

In conclusion, investigation new risk factors of CVD may help to reduce incidence of cardiovascular disease in north of Iran.

**Keywords:** Cardiovascular disease, MASHAD study, cohort

## Enhanced recovery after surgery (ERAS) in liver transplant

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ERAS is a well-accepted strategy in all fields of surgeries to improve final result of surgical procedure and reduce hospital stay and costs. Among all procedures, liver transplant needs special attention due to complexity of the procedure and the patient. Due to novelty of the subject, the ERAS experience in this field is limited and needs to be developed. In this presentation, some of advices especially in the field of nutrition are discussed. Cirrhotic patients should be screened before transplantation and receive suitable regimens before transplant by a multidisciplinary team to maximize calorie and protein balance. Use of probiotics are supported in some evidences but preoperative immunosuppression is not sufficiently recommended. 6 hours fasting for solids and 2 hours for liquids is advised. Carbohydrate loading at patient admission is recommended, at least 2 h before induction of anesthesia. Enteral feeding should be started 12–24 h after LT, and the enteral route is selected according to the patient's tolerance. Parenteral nutrition is accepted if enteral



feeding is not possible. There is no evidence to support use of supplements in liver transplant patients.

## Nutritional support in GI surgeries

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Nutritional support plays an important role in GI surgeries' prognosis. Reduced energy intake after GI surgeries leads to loss of fat, muscle, bone, and other tissues specially in malnourished patients. Moreover, some micronutrients deficiencies may occur, which results in abnormal body functions and complicates the treatment strategies. Perioperative nutritional support can prevent from nutrition related complications and some morbidities and mortalities. Nutritional Supports include oral nutritional supplements, enteral, and parenteral nutrition, and some specialized nutritional supports. Duration of nutritional supports can be from weeks before surgery until several months after it depending on the extend of the surgery, and GI involvement. The composition of this support may include a range of macronutrients and micronutrients based on the procedure, and the primary disease. In conclusion, considering nutritional support in GI surgeries can improve the disease and procedure prognosis.

**Keywords:** nutrition, gastrointestinal, surgery

## Nutrition before and after liver transplantation

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Traditionally end stage liver disease (ESLD) have been linked to sarcopenia, frailty and malnutrition, all associated with increased morbidity and mortality and poor prognosis after liver transplantation (LT). In nonobese ESLD the weight-based daily calorie intake should be 25 to 35kcal/kg. Nitrogen balance should be positive in these patients to increase skeletal muscle mass. In this regards protein intake should be 1.2–1.5 g/kg/day. The historical approach in restricting proteins in these patients may increase morbidity and mortality and the current recommendation is not to restrict protein intake in ESLD .Further in critically ill patients with ESLD higher protein targets of 1.2–2.0 g/kg/day are recommended. Supplementation with branched chain amino acids (BCAA) have not been shown to affect mortality, quality of life, or nutritional parameters in a recent meta analysis of 16 studies. There is contradictory recommendation in published guidelines on BCAA supplementation even in patients with hepatic encephalopathy. Deficiency of fat soluble vitamins (vitamins A, D, E, and



K), water-soluble vitamins (thiamine, folate, vitamin B12), and trace minerals (magnesium, selenium, and zinc) have been reported in ESLD. If assessment cannot be performed regularly, an empiric supplementation is recommended. Prolonged fasting is deleterious in ESLD. Oral intake every 4 h while awake, an early breakfast and late evening snack are mandatory. Exercise programs improve response to nutritional interventions and are vital in the management of sarcopenia and frailty.

### **Investigation the mediatory effect of microbiomes on the relationship between dietary patterns and disease**

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Non-communicable diseases (NCDs) constitute a significant portion of the global health challenges and are responsible for as much as 72% of fatalities across the globe. NCDs, including but not limited to cardiovascular ailments, prevalent cancers, respiratory and musculoskeletal disorders, obesity, diabetes, impaired neurodevelopment, adverse mental health

disorders, frequently lead to significant levels of disability. Diet plays a pivotal role as a primary determinant in the development of numerous NCDs. Recent research has shed light on the essential role played by the human microbiome, the diverse community of microorganisms residing within the human body, in mediating the effects of diet on health and has emerged as a critical factor in modulating human health.

The gastrointestinal tract's role in metabolic disease development and treatment is pivotal. During meals, it relays essential nutrient information to the brain, aiding energy and glucose balance. This communication involves gut-secreted peptides and hormones. These gut-brain signaling mechanisms contribute to metabolic homeostasis, with the gut microbiota playing a significant role in regulating energy and glucose balance within the gut-brain axis. Previous researches elucidate the intricate mechanisms which the microbiome transforms dietary components into bioactive metabolites, affecting host physiology and metabolism. Microbiomes, conversely, play a role in enhancing the host's metabolism, immune response, and overall physiological health by generating biologically active substances like short-chain fatty acids and neurotransmitters. Moreover, previous studies showed alterations in the microbiome can either mitigate or exacerbate the health consequences of specific dietary choices. The potential exists for microbiome-



centered interventions, encompassing probiotics, prebiotics, dietary alterations, and dietary pattern to exert influence over disease risk and subsequent outcomes.

In conclusion, a consistent body of research highlights that following healthier dietary patterns, as assessed through different dietary indices, is linked to a decreased likelihood of non-communicable disease NCDs by mediatory role of microbiomes. Understanding the mediatory role of microbiomes in the intricate interplay between dietary patterns and disease is crucial for advancing personalized medicine and nutrition. Tailored dietary recommendations, informed by an individual's unique microbiome composition, hold great promise for preventing and managing a spectrum of health conditions. These results underscore the importance of considering the microbiome as a key player in the quest for improved health and wellness through dietary choices and emphasize the significance of dietary pattern in fostering long-term well-being and averting NCDs.

**Keywords:** Microbiomes, Dietary patterns, Diseases

### **Comparison of retinopathy of prematurity in infants of mothers with and without administered vitamin D: A clinical trial**

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**Background:** Retinopathy of prematurity (ROP) is the most common cause of blindness in children. Considering the possible role of vitamin D deficiency in ROP, this study was conducted to compare the incidence of ROP in newborns whose mothers received and did not receive vitamin D supplements.

**Materials and Methods:** This single-blind clinical trial was performed in the NICU of the Ghaem hospital of Mashhad, Iran, between March 2019 and April 2020. A total of 93 mothers with a gestational age of < 34 wk with labor pain were randomly divided into intervention (n = 46) and control (n = 47) groups. The intervention group received 50,000 U injection of vitamin D, and the level of vitamin D was then measured in the mothers' sera and neonates' cord blood samples. 4 wk after birth, a retinal examination was performed for ROP.

**Results:** The gestational age (p = 0.534), first-min Apgar score (p = 0.46), newborn birth weight (p = 0.09), mother's age (p = 0.06), mother's vitamin D level (p = 0.52), and newborn's vitamin D (p = 0.16) did not have any statistically significant difference between the two groups. ROP was diagnosed in 53% of the intervention group's newborns and 75% of the control group's (p = 0.04).



**Conclusion:** The results of this study suggest that administering 50,000 units of vitamin D in pregnant mothers with preterm labor signs is associated with a reduced risk of ROP. Therefore, giving vitamin D supplements to mothers with preterm labor signs is recommended to reduce the incidence of ROP in infants.

**Keywords:** Retinopathy of prematurity, Maternity, Gestational age, Vitamin D, Neonates, Premature birth.

### **Strengthening corporate governance in food and nutrition policy through meaningful application of social network analysis**

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Collaborative governance, through involving stakeholders from the private and public sectors, as well as civil society in a formal, consensus-oriented, and deliberative decision-making process through all stages of policy making, is advocated as an important approach in the adoption and

implementation of policies. Participation, as a contentious and ideological concept, is inherently political, tied to control, power, and empowerment. Genuine participation occurs when power and control are shared, and partners can influence the outcomes. Social network analysis (SNA), with a systemic approach, can help examine the structure, balanced distribution of power in political networks, and strengthen participatory structures. By operationalizing participation as a network, this approach can serve as a powerful tool for documenting, analyzing, and monitoring collaborative networks, proposing effective relationships (in terms of quantity and quality).

Building upon findings of a national study that analyzed social networks related to the development of the National Food Assistance Program (2014-2019) in Iran, we identified lack of a network perspective in both the formulation and implementation stages. Not only the extent of influence and power among stakeholders was highly imbalanced, but it also exposed the overall network structure to vulnerability and fragmentation. We advocate meaningful application of social network analysis approach to explore suitable organizational options and relationships for an ideal governance network, as well as evidence-based policy recommendations focusing on the most influential stakeholders to improve governance quality.



**Keywords:** Collaborative Governance, Social network analysis, Nutrition Policy, Iran.

## Common characteristics of successful nutrition programs

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While recognizing that rapid improvements in health and nutrition in developing countries is the result of changes in the underlying social and economic environments, the contribution of specific, deliberate, health- and nutrition-related interventions cannot be ignored. Nutrition programs were established in many countries during 1970s and 1980s. However, a number of useful concepts grew in the 1990s to develop effective community-based nutrition programs (CBNP). This presentation aims to define and analyze success of CBNP in order to provide insight into development and improvement of future programs.

Success or attainment of the program goals, is shown to be the result of many different factors that can be generally categorized into external (the contextual) and internal (technical and structural) factors. Five contextual factors have been suggested as effective in success of CBNPs, including political commitment/policy environment, women's status and education, lack of social exclusion, community organization and participation and literacy, especially among

women. On the other hand, how a program is organized and implemented (Coverage, Targeting, Resource Intensity, and Technology), as well as its sustainability measures (i.e., Training, Supervision, Incentives, and Remuneration) have been identified as important factors in the success of large-scale programs. After all, on going evaluation of program's process, cost-effectiveness and impact are important in its evolution and scaling up.

Through this presentation, major success factors of CBNPs in reducing malnutrition will be discussed with reference to relevant examples in Iran and other countries.

**Keywords:** community-based nutrition programs, program success, Cost-effectiveness

## Strategies to improve sustainable food and nutrition security in Iran

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<sup>1</sup> Secretariat of Supreme Council for Health and Food Security

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life". A sustainable food system is "a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised. Achieving sustainable food security requires simultaneous consideration of a vast range of



environmental, economic, social, and political aspects and their possible interactions. Systematic reviews and meta-analysis, exposure to food insecurity and unhealthy diets was adversely associated with a wide spectrum of key metabolic risk factors, such as obesity, dyslipidemia, hypertension, underweight, overweight, and obesity. These findings highlight the need to address food insecurity as an integral part of diet-sensitive NCDs prevention programs. In Iran based on the results of several studies, suggested strategies to promote sustainable food and nutrition security are including physical and economic access to food, food safety, access to micronutrients, promoting nutrition culture and literacy, access to food and nutrition services and sustainable food production as well as sustainability of basic resources to preserve environment. In the area of food safety, control of pollutants in water, soil and air, correct use of pesticides and chemical fertilizers are among the most important ways to improve health, preventing NCDs such as cancers and sustainable food safety and security.

### **The role of stakeholders in food and nutrition policies**

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Food is an objective instance of a strategic issue which is affected by six external factors including political, economic, social, technological, international and ecosystemic

ones. So, the role of intersectoral cooperation in nutrition and food security has been emphasized. About 2 decades ago, Iran's "Supreme council of Health and Food Security" was established. Excellency president is the Chairman, Ministers of the related ministries are its members and minister of Health is its secretary. The main responsibility of supreme council is to approve major policies of Health and food security. Ten years National food and Nutrition Document which was developed in the year 1400, is a good example of intersectoral collaboration. The objectives are providing a common language and commitment of stakeholders and advocacy for increasing the resources and obligations of improving nutrition and food security in Iran. This document was prepared by consolidating 7 national documents. 23 executive bodies participated in developing this national document. Being health-oriented, paying attention to preserving basic resources and providing the sustainable food basket were emphasized. The national document 1402-1412 includes goals, strategies and national programs in 4 areas of availability, economic and physical access, food safety, utilization and resiliency. The national food and nutrition document has an important role in Consolidation of national security, food governance based on the integration of supply-food-environment, promotion quality of food and provision of nutrition security especially for vulnerable and low-income groups. Secretariat of Supreme Council for Health and Food Security is



responsible for following up and monitor the implementation of the national document by the intersectoral expert committee.

## **Multivariate computer-intensive approaches for indirect derivation of reference intervals**

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Everybody agrees with the need for deriving reference intervals (RI) indirectly from dataset accumulated in the self-organizing mapping (LIS) because of difficulty in conducting so-called direct RI study. The indirect method is expected to requires exhaustive efforts to clean up disorganized, complex mixture of patients' sources data. However, currently advocated indirect methods all rely on a simplified univariate approach of fitting the distribution peaks of test results, as representing "non-disease" group, and extrapolating the RI limits. However, a recent validation study conducted by IFCC, Committee on Reference Intervals and Decision Limits (C-RIDL) revealed that the shapes and locations of peaks in LIS dataset did not match well with those of the dataset from the direct RI study (Clin Chim Acta 2021;520:186-95). Consequently, the RIs by those indirect methods were generally biased. The finding was attributed to insufficient procedures for data-cleansing. To cope with the problem, an entirely new software for indirect derivation

of RIs was developed. It first retrieves LIS dataset by restricting to patients who were tested for  $\geq 16$  major analytes simultaneously, but tested only once within 6M. Then, the precleaned data of all patients were served for self-organizing mapping (SOM) procedure to compute multivariate patterns of test results that were all expressed in SDI (standard deviation ratio) by use of temporary RIs calculated from datasets under cleaning. The SDI patterns were clustered based on similarity distance into  $k \times k$  cells ( $k=6\sim 10$ ). Cells with obvious anomalous patterns or with high average SDI among mutually related tests were excluded. The latter corresponds to latent abnormal values exclusion (LAVE) method. The RIs were recalculated using the cleaner dataset and SOM clustering was repeated using the updated SDI to detect and exclude anomalous patterns. This process was repeated for a total of 4~6 times until optimized RIs were obtained. Age-profiling can be made by stepwise application of the algorithm for a specified age-bin (6–10Y). The performance of the software will be demonstrated using actual LIS datasets. The validity of the derived RI will be shown by comparison to the RIs established by direct method from 3 countries that joined the C-RIDL global multicenter study.

**Keywords:** reference intervals, self-organizing mapping, self-organizing mapping





## **Comprehensive adult and pediatric reference intervals for biochemical markers in a multiethnic Iranian population: The irlar project**

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**Introduction:** The significance of clinical laboratory test results cannot be overstated. Approximately 80% of a physician's medical decisions rely on the data presented in laboratory reports. However, a test result lacks meaningful value unless it is accompanied by the necessary information for proper interpretation. This crucial context is usually conveyed through the inclusion of a reference interval (RI) or a medical decision limit. In contrast to the direct method, which is costly, time-consuming, and challenging due to the definition of health, indirect methods using modern statistical methods are easy to

perform and employ statistical techniques to determine a range of values that encompasses 95% of the population. This approach is appealing because it relies on readily available data in laboratory information systems, leading to significant time and cost savings. Our goal in this national project was to establish RIs for 17 routine laboratory tests using the refineR statistical method.

**Methods:** More than 24 million lab records for 17 biochemical lab tests including FBS, total cholesterol, LDL cholesterol, HDL cholesterol, triglyceride, SGOT, SGPT, ALKP, urea, creatinine, uric acid, total protein, albumin, total bilirubin, direct bilirubin, LDH and TSH from 2015-2015 were collected from 60 outpatient medical laboratories after obtaining approval from the National Institute for Medical Research and Development (NIMAD) and IACLD. Laboratories were selected based on the results of the External quality assessment program (IQAP) conducted by IACLD, ensuring acceptable quality standards. Only those laboratories with high scores in three successive assessments were selected. Data was cleaned for any inconsistency in national code, sex, age, lab name, province, test principle, or test unit. Results that fell outside of predefined criteria for outliers were excluded from the calculation of the reference interval. The central tendency (e.g., mean or median), and variability (e.g., standard deviation or interquartile range) of the results and RIs were then calculated by refineR.

**Results:** Based on test result variation by age and sex, RIs were established for different age groups in both sexes. More specifically, RIs were established for young



children, adolescents, as well as adults. While RIs for some laboratory tests did not vary appreciably by age or sex, there were significant age- and sex-dependent variations in other laboratory tests. Our results demonstrate major variations in RIs in different Iranian provinces and ethnic groups, while established RIs were generally reproducible in four years of data collection. Interestingly, RIs established in the Iranian population for some laboratory tests were to some extent different from those previously reported by other studies, which may stem from different laboratory test methods/principles and/or ethnicity.

**Conclusion:** This is the first major national RI project encompassing a large Iranian population from different provinces with different ethnicities. The results of this national project will help physicians to more accurately interpret laboratory test results in the Iranian population, leading to improved clinical decision making.

**Keywords:** Reference interval, Iranian population, Indirect method, refier, Medical Laboratory

## Malnutrition status in Iranian hospitals

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**Introduction:** Disease-related malnutrition is a prevalent condition in healthcare settings, which is associated with adverse outcomes such as increased rates of

morbidity and mortality, prolonged hospital stay, and extra costs of health care.

**Method:** This study was conducted to assess patients' nutritional status and determine malnutrition risk factors in Iranian university hospitals. Persian Nutritional Survey in Hospitals (PNSI) was a cross-sectional study conducted in 20 universities across Iran. All patients aged 18 to 65 years who were admitted or discharged were assessed by the subjective global assessment (SGA) nutritional tool.

**Results:** In total, 2306 patients were evaluated for malnutrition. Mean values of age and body mass index were 44.7±14 years and 25.2±6 kg/m<sup>2</sup>, respectively. Malnutrition (SGA-B & C) was identified in 23.9% of the patients, 26.2% and 21% of whom were among the admitted and discharged patients, respectively. The prevalence of malnutrition was higher in burns (78%) and heart surgery (58%) patients. Malnutrition was not associated with age (P=0.1). The multivariate analysis presented the male gender (OR=1.023, P<0.001), malignant disease (OR=1.409, P<0.001), length of hospital stay (OR=1.206, P<0.001), and polypharmacy (OR=1.066, P<0.001) as independent risk factors for malnutrition.

**Conclusion:** One out of four patients in the studied university hospitals suffered from malnutrition; thus, appropriate measures should be taken to ease this condition. Male



gender, malignant disease, length of hospital stay, and polypharmacy were identified as independent risk factors for malnutrition.

**Keywords:** Prevalence, Malnutrition, Subjective global assessment

## **Functional food product and challenges for food manufacturers**

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According to the International College of Nutrition and most other agencies, functional foods are defined as those foods which contain certain nutrients or bioactive compounds that can address some physiological mechanism of our body providing a benefit. The food industry has a particular role in developing functional foods by incorporating protective micronutrients in the food matrix. The global market of functional food is estimated to at least US\$33 billion. The production of functional food in Iran should be mainly based on meat, dairy and grains. But the challenge that exists is that the functional food produced can compete with common and non-functional brands in the market. This means that it does not differ in flavor from the usual sample, another challenge is

having a strong management and marketing system also advanced up to date regulators. It is very difficult to convince the investor to produce functional food. Therefore, we must have an accurate design with complete details. The development of functional foods is essential for food companies and includes the design, optimization, and development of different formulations as well as the processing techniques that are applied to food products before they are delivered to the market.

**Keywords:** functional foods, challenges, global market, advanced up to date regulators

## **Treatment strategies for hospital malnutrition**

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**Introduction:** Over a third of hospitalized patients are malnourished upon arrival or during hospitalization. According to the latest report of ESPEN and ASPEN, malnutrition is associated with increased morbidity which can lead to 3.4 times more short-term and long-term mortality, 1.9 times prolonged hospital stays, impaired recovery from illness, 1.4 times more the



risk of readmission, and increased 73% healthcare costs. It is essential and vital to pay attention to the treatment of malnutrition in hospitalized patients. We aimed to assess the treatment strategies for hospital malnutrition.

**Method:** We searched the online databases of Medline/PubMed, ISI Web of Science, EMBASE, Scopus, and Google Scholar for relevant studies published up to September 2023, using relevant keywords. Treatment Strategies for Hospital Malnutrition [including malnutrition, hospital malnutrition, treatment of malnutrition, screening of hospital malnutrition, nutritional support in hospital, nutrition care process, nutrition intervention, nutrition monitoring, and evaluation] were included.

**Result:** Malnutrition has been defined as inadequate intake or uptake of nutrients. Malnutrition leads to loss of fat-free mass, decreased physical and mental function, and impaired clinical outcomes. Malnutrition is often unrecognized and undertreated. Therefore, we need specific treatment strategies for hospital malnutrition. Hospital malnutrition treatment strategies include several steps. The first step is to assess the nutritional status of patients and diagnose malnutrition, which should be evaluated with validated screening tools. In this step, we need to apply specific criteria to

substantiate the diagnosis of malnutrition in the admitted patients, which one of the most practical criteria is the Global Leadership Initiative on Malnutrition (GLIM). After the diagnosis of malnutrition, there is a need for nutritional intervention, which can include fortification of oral feeds with high calorie density foods, or oral nutrition supplements (ONS), or nutritional support in other routes such as enteral, or parenteral nutrition. In the last step, there is a need for nutritional evaluation and monitoring to ensure the effectiveness of the interventions. Therefore, treatment strategies for hospital malnutrition would be completed.

**Conclusion:** Hospital malnutrition has a relatively high prevalence and is associated with short-term and long-term complications in patients. Therefore, it is very necessary to pay attention to specific treatment strategies for the management of hospital malnutrition. Carrying out these treatment measures based on specific and step-by-step strategies can be very effective in the prevention and treatment of hospital malnutrition.

**Keywords:** Malnutrition, Hospital Malnutrition, Treatment of Malnutrition

**Nutritional supplement interventions in managing noncommunicable diseases (NCDs)**

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Non-communicable diseases (NCDs) are of increasing concern for societies, nations, and governments, as increasing the aging population worldwide. The causative factors of NCDs can be classified into lifestyle, environmental/sociological, and genetic factors. Among them, emphasizing lifestyle and the sufficiency of micronutrients is of special importance. Since the nutrient intakes of the aging population are mostly insufficient to optimally support healthy aging, nutritional supplement interventions are essential in managing the risk of NCDs. They comprise n-3 PUFAs, vitamins, and minerals which though their deficiency especially in older adults are related to increased risk of NCDs including type 2 diabetes (T2DM), neurodegenerative disease (ND), cancers, and cardiovascular disease (CVD). Among them even though the interventions by long-chain omega-3 fatty acids (n-3 LCFA) are considered to be preventive against NCDs, their pivotal role is a disguise approach which will be covered in the current speech.

**Keywords:** Non-communicable diseases (NCD), omega-3 fatty acids (n-3 LCFA), Neurodegenerative disease (ND), Molecular distillation (MD), G-protein coupled receptor 120 (GPR120)

### **Thermal processing toxicants in foodstuff**

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Thermal processing contaminants such as acrylamide, furan, and 3-monochloropropane diol (3-MCPD) can be generated during frying, baking, and cooking procedures. Acrylamide is particularly prevalent in fried and baked foods. Untoward effects of acrylamide are primarily attributed to glycidamide, an epoxidic metabolite produced in the liver. In vitro and in vivo, acrylamide and its byproducts have been reported to cause harm to the nervous and reproductive systems and damage the genetic material. The International Agency for Research on Cancer (IARC) classified the chemical as possibly cancer-causing for humans (Group 2A). Furan can be detected in processed foods subjected to heat treatment. Roasted and instant coffee, and processed baby foods are matrices where furan can be present. Furan can potentially cause cancer. 3-MCPD is released from its esterified form during digestion. High-temperature application in the presence of HCl results in 3-MCPD formation in food products when sources like lecithin, glycerin, and glycerides or other sources of 3-MCPD ester are present. IARC considers free 3-MCPD possibly carcinogenic to humans (Group 2B).

**Keywords:** 3-MCPD, oral chronic exposure, acrylamide, furan, carcinogenicity.



## Mass spectrometry-based foodomics for accessing high-level food safety

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Ensuring food safety is one of the important factors for better public health. Due to improper storage and farming, food can be adulterated through health-threatening chemicals including mycotoxins, pesticides, veterinary drug etc. These residues if present in foods can pose severe health threats to the population. Advanced technologies like mass spectrometry-based foodomics is an upfront technology in food safety and testing.

We have recently developed the analytical procedures based on Liquid chromatography coupled with high-resolution mass spectrometry (LC-HR-MS) that can help to detect and quantify the residues of veterinary drugs, pesticides and mycotoxins in food samples with high sensitivity and accuracy. Twenty-three different commodities of food (chicken, mutton, egg, milk, watermelon, lemon,

tomato, potato, apples, banana, carrot, spinach, broccoli, cauliflower, spring onions, pistachio, cashew, pulses, wheat flour, maize flour, chickpeas, rice, and strawberries) were USED TO validate our research findings. Spectral library of 158 veterinary drugs of 16 different classes for their rapid identification in food samples through liquid chromatography-high-resolution-lectrospray ionization-tandem mass spectrometry (LC-HR-ESI-MS/MS) was developed. The targeted identification was done by developing a list of 417 pesticides and 102 mycotoxins, while the un-targeted identification was done using commercially available high-resolution-ESI-MS/MS libraries of NIST-MS search and MS-DIAL software. Concentrations of the drug were obtained to be varying from 0.0805-0.9731 mg/kg in food samples and were found to be exceeded in most of the cases as per the maximum residue levels described by Food and Agriculture Organization (FAO)/ World Health Organization (WHO).

Another obstacle in food safety is the halal authentican. Due to advancement in food technologies, and the consumer demands, a large number of processed and/ or complexed food items are available in the market. This pose a big challenge to the food testing laboratories particularly halal testing laboratories to identify the presence of non-halal ingredients in those samples. Our halal testing laboratory are working on various analytical frontiers to identify the presence of haram ingredients in the complexed



samples using genomics and metabolomics approaches. Recently we have used metabolomics approach for the differentiation of Zabiha and non-Zabiha meet samples utilizing advanced mass spectrometry tools. A rapid analytical method was also developed for the analysis of carminic acid in the samples using calorimetric approach, using Pb<sup>2+</sup> for complex formation. As a result, the sample solution shows a visible change from pink to purple (bathochromic shift) which could also be analyzed through a spectrophotometer at  $\lambda_{max} = 605$  nm. The developed method is applicable for the effective and rapid surveillance of carminic acid in various samples without the use of high-tech instruments.

## Nutrition for sport and exercise

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Nutrition has always been an integral part of the preparation and competition strategies of athletes. As sport and science have evolved, so too has the application of scientific principles to the diet of athletes. As well as providing the nutrients necessary for life, food has effects on many modern lifestyle diseases, and is of increasing relevance in public health. The role of specific nutrients, both macronutrients and micronutrients, in health and disease is the subject of much heated debate, though, and this debate carries over into sports nutrition. Major controversies exist in many important areas: a high carbohydrate diet has been

recommended to athletes for several decades, but some (probably mistakenly) promote a diet that is high in fat and/or protein. Accumulated evidence has led to a widespread belief that dehydration is harmful to performance and that athletes will benefit from a planned drinking schedule that will limit incurred hypohydration, but others suggest that simply drinking when thirsty is all the advice that should be given to those engaged in sport. These examples are part of a long list of important issues where there is little agreement. This situation results in real difficulties for athletes, coaches, team physicians and others who are faced with conflicting advice. Where controversy continues in mainstream nutrition, it is perhaps too much to hope for consensus in sports nutrition, but practitioners should make every effort to ensure that their practice is indeed evidence-based.

**Keywords:** Sport, exercise, performance, nutrition, diet

## The role of dynamic neuromuscular stability exercises with creative multi-skill games in improving functional movement performance and physical activity level among overweight/obese adolescent girls

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The global prevalence of pediatric overweight/obesity has dramatically increased in recent years. The overweight/obesity during childhood has been associated with neuromusculoskeletal impairments and physical complications including muscular imbalance, impaired balance, lower physical activity level, and poorer functional movement performance.

Childhood overweight/obesity affect children's health which increases the risk of disorders and diseases in adulthood. Thus, the tackling pediatric overweight/obesity through effective strategies are critical in promoting active and healthy lifestyle among this population. This study aimed to examine the effectiveness of a 12-week supervised exercise program comprising dynamic neuromuscular stability (DNS) exercises with creative multi-skill games on functional movement performance and physical activity level in overweight/obese adolescent girls.

Using a single-blinded parallel-group randomized controlled trial design, 30 overweight or obese adolescent girls aged 14 to 17 were randomly allocated to two exercise groups. The exercise group 1

performed DNS exercises along with creative multi-skills games whereas the exercise group 2 engaged in a moderate to vigorous intensity walking program. Functional movement performance and physical activity level were assessed using Functional Movement Screen (FMS) test, and the International Physical Activity Questionnaire, respectively. Data were analyzed using repeated measures analysis of variance using SPSS24.

Following 12 weeks of the exercise program, participants in the DNS exercises along with creative multi-skills games showed significant improvements ( $P \leq 0.05$ ) in the FMS composite score and physical activity level, compared to the walking exercise program alone. These findings support the combination of dynamic neuromuscular stabilization exercises with creative multi-skills games as part of tackling pediatric overweight/obesity program.

**Keywords:** Exercise, Pediatric Obesity, Physical activity, Physical Functional Performance

## **Antidiabetic and antioxidative activity of Curcumin and Berberine**

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**Introduction:** These days, there's a growing intrigued within the utilize of plant-based operators rather than engineered drugs to oversee unremitting maladies such as MetS; one such case is *Berberis vulgaris*. *B. vulgaris*





contains alkaloids such as berberine, berberrubine and berbamine.

Later considers have demonstrated that berberine shows pharmacological exercises and positive impacts on the chance variables of weight and MetS. Curcumin hinders NF- $\kappa$ B signalling pathway. The point of this consider is assessment of the impact of curcumin & berberine on HbA1C, quick blood glucose and MetS and diabetic patients.

**Method:** We have looked into unique articles related to the molecular pathophysiology and molecular aspect of MetS and antioxidative related pathways for Berberine and Curcumin.

**Results & Conclusion:** berberine as a major antioxidant component of *B. vulgaris* and Curcumin is the most important component of Turmeric herb. These natural products have very good effect on diabetic harms pathways and molecular pathophysiology of diabetes type 1 or 2. They could do as serum glucose controlling agents beside the chemical antidiabetic medications.

**Keywords:** Metabolic syndrome, Curcumin, Berberine, HbA1C, Blood glucose, Obesity

## **An overview of nutritional characteristics of quinoa and its application in food product enrichment**

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Quinoa (*Chenopodium quinoa* Willd.) is a pseudocereal which can play an important role for worldwide food security. The United Nations has declared 2013 the International Year of Quinoa, which aims at focusing global attention on the role it can play in contributing to food security, nutrition and poverty eradication and policies. Quinoa is one of the few crops that grows on high salinity level soil in Southern Bolivia and Northern Chile. Today, quinoa is known for its high protein content and quality, i.e., a balanced amino acid spectrum with high contents of lysine and methionine. It contains a considerable amount of fiber and minerals, such as calcium and iron. It is also rich in antioxidants such as polyphenols. These compounds may exert beneficial effects on high-risk group consumers, such as children, the elderly, lactose intolerant, and people with anemia, diabetes, obesity and etc. Moreover, quinoa is considered gluten-free and, therefore, suitable for celiac patients as well as people who have wheat allergy. Those features distinguish quinoa from other conventional cereals; therefore, it attracts increasing interest worldwide.



## A survey on the levels of 3 monochloropropane-1,2-diol(3-MCPD) in chocolate samples collected from Iran market

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The chemical substance 3 monochloropropane-1,2-diol (3-MCPD) is one of the most common foodstuff contaminants frequently produced during food processing steps. The present study determined 3-MCPD levels in 90 chocolate samples (72 domestic and 18 imported products) collected from Iran market. Samples were analyzed using gas chromatography-mass spectrometry (GC-MS). In all samples, quantifiable levels of 3-MCPD were detected. The average levels of this chemical in chocolate samples were  $0.03 \pm$

$0.01$  to  $1.30 \pm 0.44$  mg/kg. Domestic samples with above 80% cocoa content (i.e. dark chocolate) had the highest mean 3-MCPD level (1.30 mg/kg) whereas the lowest concentrations were found in the imported samples. Also, 3-MCPD levels among different types of chocolates showed significant variations but no significant association between any of the brands and 3-MCPD level was found.

## Nutrition, nutrigenomics, and aging: Unraveling the genetic path to healthy longevity

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**Introduction:** As the global population ages, the quest for promoting healthy aging and extending the human health span gains paramount importance. Nutrition plays a pivotal role in influencing various physiological processes, and emerging research in the field of nutrigenomics has provided valuable insights into how dietary choices can impact aging at a genetic level. This presentation delves into the intricate relationship between nutrition, nutrigenomics, and aging, offering a comprehensive exploration of how the interplay between genes and nutrients shapes the aging process.

**Method:** The presentation begins by elucidating the concept of nutrigenomics, which investigates the complex interactions between diet and individual genetic



variations. We will discuss cutting-edge studies that shed light on the influence of specific nutrients, including antioxidants, vitamins, and polyunsaturated fatty acids, on gene expression and cellular mechanisms linked to aging. Through an in-depth examination of these molecular pathways, attendees will gain a deeper understanding of how dietary interventions can potentially modulate the aging process and reduce the risk of age-related chronic diseases. Moreover, the presentation emphasizes the potential of personalized nutrition as a powerful tool to optimize health span and improve outcomes in the aging population. By considering an individual's unique genetic makeup, dietary recommendations can be tailored to suit their specific needs, promoting better health outcomes and enhancing overall quality of life. Furthermore, the session will highlight real-world applications of nutrigenomics in clinical settings. Attendees will be exposed to the latest clinical trials and evidence-based approaches, showcasing the practicality of implementing personalized dietary strategies in geriatric healthcare.

**Discussion & conclusion:** In conclusion, "Nutrition, Nutrigenomics, and Aging: Unraveling the Genetic Path to Healthy Longevity" offers a compelling overview of the evolving landscape of nutrigenomics and its implications for healthy aging. Attendees will leave with a renewed appreciation for the role of nutrition in promoting longevity and equipped with practical knowledge to apply cutting-edge research to improve the

health and well-being of the aging population.

**Keywords:** Nutrition, Nutrigenomics, aging

## **The influence of probiotics on gastrointestinal disorders**

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Probiotics, live microorganisms with potential health benefits, have emerged as a subject of growing interest in gastroenterology due to their potential to impact various gastrointestinal disorders.

The intricate relationship between gut microbiota and human health has fueled investigations into the potential therapeutic role of probiotics in digestive diseases. Probiotics interact with the gut ecosystem, promoting a balanced microbial composition and fostering a harmonious gut environment. Through mechanisms such as the competitive exclusion of pathogenic microorganisms, production of antimicrobial substances, and modulation of local and systemic immune responses, probiotics have demonstrated the capacity to influence gastrointestinal health positively.

This review delves into the clinical relevance of probiotics in specific gastrointestinal disorders, including irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), and gastrointestinal infections. For IBS, studies suggest that certain probiotic strains may alleviate symptoms and improve quality of life by



modulating gut motility, reducing inflammation, and mitigating visceral hypersensitivity. In IBD, probiotics have shown the potential to attenuate inflammation, enhance mucosal integrity, and possibly influence disease remission. Additionally, probiotics have been investigated for their role in preventing and managing gastrointestinal infections, with evidence suggesting their ability to reduce the duration and severity of symptoms.

However, the application of probiotics in gastrointestinal disorders is not without challenges. Strain specificity, viability, dose-response relationships, and the intricate interplay between host genetics and the microbiome are complex factors that influence their efficacy. Moreover, the variability in study methodologies and outcomes presents a need for standardized research protocols to facilitate meaningful comparisons.

### **Probiotic *saccharomyces cerevisiae* var. *boulardii* supernatant and antitumor activities**

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Cancer is a health problem around the world. Due to the increase in the number of people suffering from this disease, its prevention and treatment are healthcare priorities. Cancer results from the growth, increase, and death of body cells. Improper nutrition and inactivity play a more significant role in cancer etiology than genetic and hereditary factors. About two-thirds of its cases can be prevented and treated. The mechanisms of the body are such that healthy cells are destroyed by apoptosis in cases of problems. However, cancer cells are resistant to apoptosis. In addition to the high economic burden, chemotherapy has many complications. Studies have shown that probiotics can have an anti-cancer effect with fewer costs and side effects. These tiny organisms exist from the mouth to the end of the human colon, and their beneficial effects are known.

One of them is the probiotic yeast called "Saccharomyces cerevisiae" (Boulardi variety). In three studies conducted over three years, the effect of Boulardi on human gastric and breast cancer cells was investigated in a laboratory environment. The cell wall of Boulardii supernatant (SBS) was added to the cell lines EPG85-257P, EPG85/257-RDB human gastric cancer cells, MCF-7, and MCD-7/MX breast cancer, and its effect on the cytoplasmic membrane at 24-72 hours was studied. The results showed



that SBS reduces the growth of cells and prevents their gene mutations by inhibiting carcinogens and suppressing cancer-inducing compounds. In cancer cells, the anti-cancer effect is in the form of inhibition and survivin gene expression. Expression of survivin, NF $\kappa$ B, and IL-8 genes is significantly suppressed in AGS cells treated with SBS. Animal studies emphasize the effect of SBS on the reduction of cancer cells, and these studies need to be conducted in humans as well.

## Effects of postbiotics on human health

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In 2021, The term of postbiotic was defined by a group of experts of the International Probiotic and Prebiotic Scientific Association " as inanimate products of microorganisms or their components that are beneficial to the health of the host.". This definition focuses not only on metabolites, proteins or carbohydrates from probiotics, but also on microbial cell progenitors or cell fragments. In addition to the ability of postbiotics to alter the gut microbiota (like probiotics), there is growing evidence that postbiotics can benefit the health of pediatric and adult populations by mechanisms other than microbiota modulation. Although the exact mechanisms have not yet been elucidated, they may contribute to host health by producing specific physiological effects including

activation of signaling pathways. Postbiotics, either as bacterial components or their metabolites, can mimic the beneficial therapeutic effects of probiotics. They do this without putting the body at risk of ingesting live microbes. There are reports of their anti-cancer, anti-obesity, immunomodulating, metabolic and antioxidant effects. In addition to in-vitro and in-vivo research, postbiotics have also been studied in the food industry. They are used because of their longer shelf life than other biotics, as well as easier storage, handling and transportation. Postbiotics can be a suitable treatment option for human diseases and pave the way for the development of new medicinal and food items with specialized physiological effects. More research on the biological activities of these metabolites is expected to reveal their potential applications in medicine and Nutrition.

**Key words:** Postbiotic, probiotic, Health

## Synbiotics and postbiotic concept: Current status and future horizons

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Beneficial bacteria that are defined as probiotics and also their derived bioactive macromolecules offer a wide range of antimicrobial and biological activities which cause them increasingly being considered as bioprotective materials. Postbiotics are defined as the preparation of inactive cells of probiotics or their metabolites that benefits the host's health. The term synbiotic refers to probiotic-prebiotics mixtures in a



synergistic relationship to improve the growth and survival of microbial communities in the host digestive system. Application of synbiotics and postbiotics as environmentally friendly alternatives to control bacterial infections has been proved to stimulate good health and modulate the gut microbiota with immunological response against pathogenic microorganisms. In a series of research projects carried out at RIFST, postbiotic macromolecules derive from a range of probiotic lactic acid bacteria, including bacteriocins and exopolysaccharides, were investigated. The isolates identified as high potentially postbiotic producers were further studied for their efficient activities by direct or indirect application (via edible films and coating) in food systems. The functionality of crude postbiotic extract were wholly evaluated, furthermore the functionality of derived and purified metabolites as in improving the texture and quality of model systems were individually investigated. This presentation discusses the fundamental knowledge of syn- to postbiotics and summarizes the results of these research projects to highlight the main limitations, challenges, and controversies toward developing a new perspective on functional foods and nutraceuticals in food safety, quality and shelf life.

### **Psychobiotics and mental health**

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Psychobiotics are a new type of probiotics that have shown promising results in improving mental health. These live bacteria can colonize in the gut and interact with the gut-brain axis and modulate the production of neurotransmitters, hormones, and other molecules that affect mood, cognition, and behavior. These beneficial microorganisms belong to the family Lactobacilli, Streptococci, Bifidobacteria, Escherichia, Enterococci, and mostly found in fermented foods such as yoghurt, kefir, kimchi, cottage cheese, buttermilk, and sauerkraut. Studies have demonstrated that psychobiotics can reduce symptoms of anxiety, depression, and stress, improve cognitive function and memory, and enhance social behavior. Psychobiotics may also have potential applications in the treatment of neurological disorders such as Parkinson's disease, multiple sclerosis, and autism spectrum disorders. It seems that neurons in the enteric nervous system interact directly with the neurochemicals produced by gut microbiota, thus influencing the signaling to the central nervous system. However, further research is necessary to fully understand the mechanisms of action and potential benefits of psychobiotics. Overall, psychobiotics offer an exciting new avenue for promoting mental health and improving quality of life.

**Keywords:** Psychobiotics, Probiotics, Gut-brain axis, Neurotransmitters



## Bariatric surgeries and liver transplantation

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Morbid obesity is associated with nonalcoholic steatohepatitis, leading to liver cirrhosis which is an indication of liver transplantation (LT). In addition to more surgical complications in obese patients, after liver transplantation, patients are at risk of weight gain and recurrent fatty liver that may affect graft survival. Although bariatric surgery is the most effective treatment for morbid obesity, its safety and efficacy among cirrhotic and liver transplant patients are doubtful. For LT patients, bariatric surgery can be conducted before, during, or after transplantation. However, there is a prevailing trend to perform it after the transplantation. Vertical sleeve gastrectomy seems to be the most safe and effective in compensated cirrhotic patients without portal hypertension, although it is associated with higher morbidity and mortality among candidates with severe portal hypertension. BS before the LT has been recommended, because of better outcomes regarding weight losing before

the surgery. Although it has been shown that bariatric surgery after liver transplantation is associated with higher morbidity, bariatric surgery, and liver transplantation simultaneously leads to lower morbidity and mortality.

**Keywords:** Bariatric surgeries, liver transplantation, morbid obesity

## The importance of probiotics in oral and dental hygiene

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Prevention and treatment of oral and dental diseases are some of the challenges faced by most pediatric dentists. Dental caries and gingival diseases are among the most common problems encountered by patients. The multifactorial nature of dental caries makes it difficult to manage and prevent in children. Despite numerous recommendations for oral and dental hygiene and dietary control, dental caries remains prevalent in many children. However, nowadays, one of the new approaches to preventing caries is the control of microorganisms involved in its occurrence, and the use of probiotics as beneficial microorganisms residing in the human body that counteract the caries-causing microorganisms and gum diseases. This is part of the innovative approaches in preventing oral and dental diseases. In this review, we briefly aim to introduce probiotics, their application methods, and



the mechanisms by which probiotics control microorganisms which cause oral and dental diseases.

Running title: Probiotics in oral and dental Hygiene

**Keywords:** Probiotic, Oral Hygiene, Dental Caries, Gingival Disease

## **The role of functional foods in future pandemics**

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Pandemics are a part of our life and always lie in wait for human health, but like an earthquake, we do not know when and with what intensity it will occur. Due to the lack of monitoring and enforcement of food-safety standards, the overuse of antibiotics, close relationship between human and animals, wildlife trade, population, lifestyle and climate changes and finally growing ease of local and global transport pandemics will happen again. The bitter and unsuccessful experience of the recent pandemic revealed to everyone that, cannot survive without being prepared and equipped with knowledge and experience. The increasing prevalence of chronic diseases such as diabetes, obesity and depression with a global level of expansion can provide new definitions of decline of the health level of societies in the present century. Functional

foods, also known as nutraceuticals, are defined as foods containing bioactive compounds that have beneficial effects on consumer health. Vitamins, minerals, fibers, pigments, prebiotics, probiotics and their metabolites are the obvious examples of the bioactive compounds in food, which while providing safe treatment, can protect the body against a wide range of diseases in the long term. The experience of the past pandemic, the predictability of pandemics in the future, as well as the shortcomings of medical services at the time of a pandemic, especially less developed countries, have made it necessary to pay more attention to development and consumption of modern and traditional functional foods. In this presentation, the latest researches on the role of functional foods in improving community health and reducing the consequences of epidemics is discussed, on the other hand, innovative technologies to increase their bioavailability will also be considered.

**Keywords:** Functional foods, Pandemics, Prebiotics, Probiotics, Microbial secondary metabolites, bioavailability

## **Nutrition in an inborn error of metabolism**

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Nutrition management in patients with inborn errors of metabolism (IEM) is crucial to support their overall health and well-being. IEM refers to a group of genetic disorders that affect the body's ability to metabolize specific nutrients, leading to the accumulation of toxic substances or deficiencies of essential compounds. The nutritional approach for each patient varies based on the type of IEM they have, but some general principles apply. Since different IEMs affect the metabolism of specific nutrients, each patient requires a carefully tailored diet. This often involves restricting or increasing certain nutrients, such as proteins, amino acids, carbohydrates, or fats, depending on their condition. Many patients with IEM require specialized medical foods or formulas that are designed to meet their specific nutritional needs. These products are often formulated to be low in nutrients that the patient cannot metabolize and high in those they need to support growth and development. Close monitoring of nutritional status is essential for patients with IEM. Regular assessments of growth, weight, blood markers, and metabolic profiles help healthcare providers adjust the diet or treatment as needed. Managing IEM requires a multidisciplinary approach, involving a team of healthcare professionals, including metabolic specialists, dietitians, and nurses. This collaborative effort ensures comprehensive care and support for the patient.

In conclusion, nutrition plays a vital role in the management of patients with inborn

errors of metabolism. An individualized approach, close monitoring, and strict adherence to the dietary plan are essential to optimize their health and improve their quality of life. With proper management, many individuals with IEM can lead healthy and fulfilling lives.

### **Novel therapies for individuals suffering from celiac disease**

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Celiac disease, triggered by gluten intake from wheat, barley, and rye, requires meticulous nutritional management, especially in children, to ensure growth, development, and well-being while preventing gluten-related complications. This review highlights crucial dietary considerations for young individuals with celiac disease.

Central to effective celiac management is strict adherence to a gluten-free diet, replacing wheat, barley, and rye with alternatives like rice, corn, quinoa, and certified gluten-free oats. A diverse diet, encompassing gluten-free options like fruits, vegetables, lean proteins, dairy substitutes, and grains such as quinoa and rice, is imperative.

Addressing potential deficiencies in essential elements like iron, calcium, vitamin D, and B vitamins underscores the importance of consulting a dietitian. This collaboration assists in designing a diet that



bridges these gaps through strategic food choices or supplements. Diligent scrutiny of food labels is essential to uncover concealed gluten, given the risk of processed foods containing gluten or cross-contamination. Even trace amounts of gluten can trigger symptoms, underscoring the significance of separate utensils, designated cooking areas, and meticulous food handling.

Concurrently, studies explore innovative therapies tailored for those with celiac disease. While traditional management centers on gluten-free diets, emerging treatments offer potential solutions to unmet challenges. These novel approaches, including drug interventions, enzyme therapies, and immune modulation, hold promise in symptom alleviation, intestinal healing, and overall quality of life enhancement. Although some therapies are experimental, they can potentially reshape celiac disease management. As research advances, the review underscores evolving prospects that novel therapies bring to celiac disease care.

### **Advancements in pediatric inflammatory bowel disease (IBD) nutrition: A comprehensive review of final achievements**

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Inflammatory Bowel Disease (IBD) in pediatric patients presents unique challenges, necessitating specialized

approaches to manage nutritional needs and achieve optimal growth and development. This review aims to summarize the final achievements in pediatric IBD nutrition, considering the latest research and interventions.

Exclusive enteral nutrition has emerged as a successful therapeutic approach in inducing remission in pediatric IBD. Studies have shown that EEN can lead to mucosal healing, reduce inflammation, and improve clinical outcomes in children with active disease.

There is a growing recognition of the importance of tailoring nutritional interventions to the individual needs of pediatric IBD patients. Personalized diets and nutritional plans are being designed based on disease type, severity, and nutritional deficiencies.

Research has highlighted the role of gut microbiota in IBD pathogenesis. Novel interventions, such as prebiotics, probiotics, and fecal microbiota transplantation (FMT), are being explored to modulate the gut microbiome and potentially alleviate disease symptoms.

Telehealth and remote monitoring technologies have enhanced access to nutritional counseling and follow-up care for pediatric IBD patients, facilitating regular assessments and timely interventions.

Collaborative care models involving gastroenterologists, dietitians, psychologists, and other healthcare professionals have become more prevalent. Such multidisciplinary teams ensure



comprehensive care for pediatric IBD patients, addressing both medical and nutritional aspects of the disease.

In conclusion these final achievements underscore the importance of ongoing research and collaboration in the pursuit of better nutritional management and quality of life for pediatric IBD patients.

### **Navigating nutritional sampling biases: ensuring unbiased representations for accurate nutritional modeling**

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In the realm of nutrition sciences, the reliability of data plays a pivotal role in shaping our understanding of dietary patterns, health outcomes, and nutritional interventions. Ensuring that our collected samples are representative and free from bias is crucial. This symposium presentation delves into the vital topic of sample bias within the context of nutritional research. We commence by revisiting the concept of size-biased samples, drawing parallels to historical instances like Wald's pioneering work in aircraft reinforcement and modern dietary surveys. These historical anecdotes illuminate the significance of identifying and rectifying sampling biases, even in contemporary nutritional research. Moving forward, we delve into contemporary nutritional modeling scenarios where unintentional biases in sample selection can distort our

predictive capabilities. We explore the challenges posed by biased samples, such as the overrepresentation of certain dietary habits in food consumption records and the skewing of body mass index (BMI) data due to self-reporting biases. Furthermore, we examine the negative repercussions of disregarding size-biased samples, emphasizing the consequences for the accuracy and applicability of nutritional models. Our discussion extends to techniques for detecting and addressing biased samples, equipping researchers with tools to enhance the integrity of their findings. In closing, we present a practical example that underscores the importance of implementing the insights gleaned from our discussions, such as addressing bias in clinical trials assessing nutritional interventions and mitigating bias in online surveys and social media data.

### **The use of artificial intelligence in the modification of eating behaviors**

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Artificial intelligence (AI) has the potential to help healthy lifestyle modifications. AI could help individuals take on healthy eating behaviors and routine physical activity. To establish new behaviors which continues for long term, behavior modification techniques can be helpful. Identifying patterns in eating behavior and providing personalized



recommendations for healthier eating habits are areas AI can be effective in. Here are some ways AI can be used to modify eating behavior: Just-in-time support system: AI can be used to develop a just-in-time support system for healthy eating. This system is developed to provide personalized recommendations and support to individuals who are struggling with healthy eating, right at the time it is needed.

Predictive analytics are another area AI can help to improve eating behavior modification. AI can be used to develop predictive analytics that focus on predicting weight loss, intervention adherence, dietary lapses, and emotional eating, to provide plans which are predicted to have highly adherence and effectiveness level. Besides, AI can be used to collect behavioral data in real-time and optimize prediction models for behavioral lapse events. AI can also be used to enhance behavioral self-control through adaptive and personalized nudges/prompts.

However, it is important to note that AI alone may not be sufficient to modify eating behavior. Human interventions may be needed to achieve and sustain health-related behavioral changes. Further research is needed to determine the effectiveness of AI in modifying eating behaviors.

**Key words:** Artificial Intelligence, Eating Behavior, Health Behavior

## Artificial intelligence in nutrition studies: Alteration of glycated albumin in diabetes mellitus

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Diabetes is one of the leading causes of mortality and is among the most prevalent chronic diseases in modern society. One of the significant consequences of this disease is the glycation (GLC) of body proteins, leading to atherosclerosis, aging processes, and neurodegenerative diseases. Among the key proteins that undergo GLC due to diabetes are HbA1c, albumin, and certain antibodies, typically binding to NH<sub>2</sub> lysine or arginine residues of these proteins. Albumin is the most abundant protein in the blood responsible for transporting drugs, toxins, and various substances in the body. To date, the ability to assess glycated albumin (GA) has been developed at three levels. Approximately 80 different GLC sites on albumin have been identified, but in clinical observations and tests, some sites (Lys525, 136, 233, and etc.) have shown the highest prevalence of GLC in both normal individuals and those with diabetes.

Artificial intelligence has played a significant role in “in silico” studies, particularly in evaluating interactions between proteins and small molecules in the field of medical



science for years. Nowadays, GA assessment kits offer the ability to evaluate three levels of GA, and protein-GLC connections with albumin are abundantly available in protein databases (4IW2, 4IW1, and etc.). Consequently, utilizing established principles in “in silico” studies, which are conducted through artificial intelligence tools, allows for the evaluation of the binding of drugs or toxins to GA and other blood proteins. This, in turn, provides insights into whether alterations in drug or toxin functionality are probable or not.

**Keyword:** Artificial Intelligence, Nutrition Studies, Albumin, Glycated Proteins, Diabetes Mellitus, In Silico Studies, Glycated Albumin, Drug Binding

### **Dietary and lifestyle factors in predicting type 2 diabetes mellitus in MASHAD cohort study**

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Diabetes is a major global public health issue with economic burden in all nations, especially in developing countries. Rapid urbanization, sedentary lifestyles and nutrition transition play important role in the growing prevalence of diabetes. As Asian populations tend to develop diabetes at lower body mass index (BMI) levels and younger ages, prevention of diabetes is

crucial to lowering disease incidence, and its health and economic burden. Previous studies have examined individual lifestyle and dietary factors in relation to type 2 diabetes, but the combined effects of these factors to predict diabetes is largely unknown. In this study we aimed to predict the 10-year incidence of T2DM by dietary and lifestyle factors in an Iranian adult population, and to develop a diabetes risk score based on these factors. All data (N=9704) were collected from the Mashhad stroke and heart atherosclerotic disorder (MASHAD) study. The incidence of diabetes was determined during the 10-year follow-up (2010-2020), based on fasting plasma glucose. Lifestyle factors including physical activity level, smoking status, and BMI, besides dietary intakes were included in our machine learning method. Translating these findings into practice, can lead to early prediction of diabetes in clinical setting based on non-invasive and low-cost factors, providing primary prevention through promotion of a healthy diet and lifestyle.

**Keywords:** diabetes, diet, lifestyle, machine learning

### **Salt intake and cardiovascular events**

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Cardiovascular disease (CVD) is the global leading cause of mortality and disability accounting for 32% of all-cause mortality and 15% of disability-adjusted life years. High sodium intake is one of the main contributors of elevated blood pressure and associated with a high risk of CVD. High sodium intake is the first cause of diet-related mortality globally responsible for about 27% of diet-related deaths while CVD is accounting for about 90% of these deaths. Well-designed randomized clinical trials (RCTs) indicate the causal association between salt and elevated blood pressure. These studies show that salt reduction reduces blood pressure in those who are hypertensive and normotensive, in addition to antihypertensive treatments. Strong observational studies using precise tools to assess salt intake indicate a lower salt intake inversely associates with the CVD risk, CVD mortality and all death. Methodologically robust studies demonstrate that 1000 mg/d reduction in sodium decrease the risk of CVD and hypertension by 27 and 20%, respectively. Recent meta-analysis of RCTs revealed 2.8 mm Hg and 1.2 mm Hg reduction in systolic and diastolic blood pressure per 1000 mg/d reduction in sodium, respectively. Several potential physiological mechanisms including fluid homeostasis, hormonal and inflammatory, immune response and the gut microbiome

have been proposed for the link of salt intake and hypertension and CVD risk. However, there is some debates on salt reduction benefits. The theory of a J-shaped association between sodium intake and the risk of CVD emerged from large cohort studies, in spite of reducing blood pressure level, which might be due to inaccurate sodium assessment method and reverse causality. Thus, as nearly most countries worldwide sodium intake exceeds recommended levels by 86%, strategies to lower sodium intake should remain a priority.

**Keywords:** Salt intake, Diet, Cardiovascular disease, Mortality

### **Effect of sesame oil and honey on lipid profile and atheromatous plaque**

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A high level of fat in the blood circulation is one of the important factors in causing atherosclerosis. Agents that improve abnormal levels of lipids are able to limit atherosclerosis and its consequences. The anti-inflammatory effects of sesame seeds and its products such as Ardeh have been reported in recent studies. Honey is also rich in antioxidants that act against oxidizing agents and prevent their combination with



unsaturated fatty acids and prevent the oxidation of lipoproteins. Here we investigated the effect of sesame oil and honey combination on lipid profile and atherosclerotic plaque. Total 20 adult male New Zealand rabbits were randomly divided into four groups including control (without any intervention), hypercholesterolemic diet, hypercholesterolemic diet with a mixture of sesame oil and honey and hypercholesterolemic diet with lovastatin. Blood samples were taken on day 0, 30 and 60 for lipid profile measurement. At the end of the study, the aorta were sampled for histological operations to study the formation of atherosclerosis plaques. The serum lipid of the three hypercholesterol groups on days 30 and 60 have significant differences compared to the control. In measuring the 30th and 60th day of the study, the serum lipids of the two groups with therapeutic intervention was significantly improved compared to the hypercholesterolemic diet group. Improvement in serum lipids as well as severity of the lesion in aorta was significantly more prominent in the sesame oil and honey group in compare with lovastatin group. Sesame oil combined with honey has the prominent effect on lipid profile and atheroma in compare with statin.

### **Non-pharmacological treatment of pediatric metabolic syndrome**

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Pediatric metabolic syndrome has become as a global emerging health problem. Although different definitions are used for this condition, but same as adults, its main components include insulin resistance, central obesity, hypertension, and dyslipidemia. However, non-alcoholic fatty liver disease, hyperuricaemia, and sleep disturbances are being recently considered as additional elements of this syndrome. Lifestyle intervention is the first step in the treatment of children with metabolic syndrome. Still the amount of overweight reduction to achieve improvements is not established. In a longitudinal study among obese children, a BMI-SDS reduction of 0.25 or greater could significantly improve elevated blood pressure, hypertriglyceridemia, and low HDL cholesterol, whereas a BMI-SDS reduction of >0.5 increased these effects by two-fold. According to the Endocrine Society Clinical Practice Guidelines, a minimum of 20 minutes of moderate-to-vigorous daily physical activity, with a goal of 60 min and a maximum of 1-2 hours of non-academic screen time per day is recommended for controlling overweight and metabolic syndrome. In addition to reducing sedentary activities, sleeping habits can also affect weight and pediatric metabolic syndrome. Late and or short sleep duration as well as obstructive sleep apnea syndrome are found to be important underlying factors for pediatric metabolic syndrome. The optimal nutritional management of pediatric



metabolic syndrome remains to be determined. The main dietary recommendations consist of high-fiber intake because it has bulking effect, providing low-energy food, slowing the gastric emptying as well as absorption of dietary carbohydrate and fat contents. All these effects will result in increased satiety, improving inflammatory markers, and gut hormones. Studies have shown that high-fiber diet in children and adolescents is associated with increased insulin sensitivity and lower odds of metabolic syndrome, improved body composition, lower systolic blood pressure and fasting blood glucose. Some evidence also exists on the beneficial effects of low-glycemic-load diet as well as Dietary Approaches to Stop Hypertension, including a diet that is rich in fruits, vegetables, low-fat milk products, whole grains, fish, poultry, nuts, and lean red meats and poor in sugar, sweets, and sodium for controlling pediatric metabolic syndrome and its components.

## **Development and establishment of obesity registry for adults and children**

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Obesity in Iran; Development and establishment of obesity registry for adults and children Shirin Hasani Ranjbar Professor of Endocrinology and metabolism Endocrinology and Metabolic Research Institute Tehran University of Medical

Sciences, Shariati Hospital. Iran Obesity and overweight have been prominent diseases in recent decades. Obesity underlies many non-communicable diseases such as heart problems, diabetes, osteoarthritis and some cancers. Therefore, it contributes to a remarkable disease burden and disabilities. Furthermore, one out of three Iranian children and adolescents is overweight or obese. The development of obesity and its consequent diseases is influenced by a complex interplay of factors at different levels (e.g., physiology, individual behavior, environmental factors, physical activity, food consumption, food production, personal psychology, and social psychology). The purpose of this research was to design and establish a multi-center online network for collecting genetic, demographic, clinical, and therapeutic information from adults, children, and adolescents who are overweight or obese. This aims to expand knowledge about these individuals by overcoming the fragmentation of clinical experiences gained from obese individuals through sharing the information obtained from them in research centers and various universities, to provide effective solutions for prevention and treatment of obesity. Specifically, the main objectives of this project include evaluating therapeutic, clinical, and laboratory differences among obese individuals, as well as evaluating the relationship between clinical manifestations and their clinical and demographic characteristics. Another main goal is to assess the association between clinical and laboratory responses to different therapeutic approaches. Investigating the causes of obesity, its associated complications, treatment methods,





prevention, and assessing its prevalence in the current community are also among the objectives of this research project. The registry consists of two sections for children/adolescents and adults. Adults with overweight or obesity are enrolled in the adult registry. At the pediatric registry section, all children and adolescents aged 4 to 18 years with a body mass index above the 85th percentile based on age and gender will be eligible for enrollment in the program. All children who meet the inclusion criteria will be included in the study, and various factors related to obesity will be investigated. Investigating and understanding how these factors are interrelated and change over time can help tailor interventions to the unique needs of obese individuals and their families, rather than adhering to a traditional "one-size-fits-all" approach to weight management.

## **Application of artificial intelligence and machine learning in bariatric surgery: A systematic review**

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In recent years, there has been a lot of interest in using artificial intelligence (AI) and machine learning (ML) approaches in bariatric surgery. Based on an examination of chosen works, this systematic review article seeks to provide a comprehensive picture of the current state of AI and ML applications in bariatric surgery, highlighting the potential benefits in improving surgical outcomes. Method A

systematic search was performed in accordance with the PRISMA guidelines. A complete search in Web of Science, PubMed, Embase, and the Cochrane Library was done, and all relevant studies published until 2023 were screened. Machine learning algorithms are being researched for use in several parts of bariatric surgery, including preoperative risk assessment, intraoperative management, and forecasting problems and outcomes throughout the clinical pathway. The categorization of studies was based on machine learning aims, and the results. Results Various machine learning methods such as neural network, decision tree, random forest and multiple have been proposed. In terms of surgical results, AI systems can be used to predict probable complications including Surgical Site Infections (SSI), Postoperative Bleeding, Organ Damage, Anesthesia-related Complications and Postoperative Complications which result in fewer surgical problems, shorter hospital stays, and better patient recovery. AI systems can also be used in optimizing surgical approaches, determining the optimal type of bariatric surgery, and predicting post-operative weight loss for bariatric surgery patients. AI and machine learning can be applied in identifying patients who are most likely to benefit from bariatric surgery by examining numerous parameters such as body mass index (BMI), comorbidities, and psychological profiles, allowing providers to make more accurate and informed decisions



about patient selection and surgical candidacy. Conclusion In terms of improving surgical outcomes, AI technologies enable surgeons to make better informed judgments during the procedure. AI systems aided in the development of tailored treatment regimens for bariatric surgery patients. AI and machine learning can help improve pre-operative screening for bariatric surgery candidates and anticipate post-operative complications in bariatric surgery patients.

## The role of knowledge enterprise in reducing inequality for food security and nutritional services

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**Introduction:** Differences between individuals and groups have always existed and this difference is observed at many different levels of people's lives in society. Inequalities are the observed differences in nutritional services or food security outcomes or related food and nutrition system factors (such as access to finance or nutrition's experts) between individuals and groups, based on social, economic, and/or geographical position (for instance, socioeconomic status, race or ethnicity, sex or gender. One of the current inequalities in our society is the lack of access to reputable nutrition specialists at a very low cost. On

the other hand, government service delivery structures alone are not capable of responding to the needs of society in controlling and preventing diseases and promoting a healthy lifestyle. The approach of using Knowledge Enterprise has created the capacity to reduce inequality-generating gaps. The use of the capacities Knowledge Enterprise in the field of food and nutrition leads to a reduction in food and nutrition insecurity.

**Method:** Given the importance of community access to nutritional counseling services, we have established a Knowledge Enterprise called AngabinTeb Ghayour. Changing the dietary pattern and infrastructure work as a university company, we provide counseling and therapeutic diet services with the highest quality and lowest cost (government tariff) in the shortest possible time. In cooperation with the Vice Chancellor for Health of Mashhad University of Medical Sciences, access and referral to this infrastructure has been provided at the lowest cost, so that even in the lowest level of health services, i.e. villages, they will have access to these services.

**Result:** With the implementation of the AngabinTeb plan in the field of health deputy, access to 73 rural and urban centers, especially areas without access to a nutritionist, was provided. Applicants to comprehensive health service centers or health homes, who needed counseling or therapeutic diet based on care instructions,



were referred to AngabinTeb. With the passage of 2 months since the implementation of this plan, more than 10,000 referrals have been made to AngabinTeb, but only a limited number have been able to successfully obtain a therapeutic diet. Although the salaries and benefits of nutrition experts (Nutritionist working in comprehensive health centers) depend on various factors, the average monthly salary of a nutritionist is 125,000,000 Rials. The average number of services delivered in 2022 was 148, for which 844,600 Rials were paid per service. On the other hand, AngabinTeb receives 550,000 Rials for three service periods, in other words, 183,340 Rials per service. With the investigations carried out, the problems, challenges and obstacles facing the applicants have been solved and the process of receiving services has increased.

**Conclusions:** Undoubtedly, universal health coverage, especially in the field of food security and nutrition services, will not be implemented solely by governments. To achieve such coverage and reduce inequality gaps, we need to use new capacities created in the service delivery structure, such as the use of Knowledge Enterprise. Receiving online nutritional counseling services under the supervision of university professors can be very helpful in preventing and controlling diseases.

## Nutrition in pre/post kidney transplantation

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In pre-transplantation phase, two unfavorable conditions may be observed: 1. obesity, 2. malnutrition. Obese patients have several limitations in surgery and complications are more serious in these subjects. on the other hand, patients with malnutrition have greater risk of infection, low quality of life and mortality after kidney transplantation. In post-transplantation, a metabolic stress resulted from surgery is observed in patients until 6 weeks after the transplantation. In this situation, patients need more energy (30-35 kcal/kg) and protein (1.2-1.4 g/kg). Other nutrients such as phosphorus and potassium should be managed based on serum level of these nutrients. After 6 weeks, diet should be modified based on the patient condition. In subjects with acceptable kidney function (eGFR>60 mL/min/1.73m<sup>2</sup>), a mild restriction in protein and sodium is required. In contrast, a restriction in protein, sodium, potassium and phosphorus may be applied in patients with eGFR.

## Fasting and health

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Fasting has been observed by followers of various religions for centuries. Traditionally, the effect of fasting on the soul and spirit was known. In recent years, the focus of fasting has included the physical, mental, and social



aspects of health. There are 1.8 billion Muslims around the world, almost 23% of the global population, which will rise rapidly, reaching approximately 2.8 billion by 2050. Muslims are required to fast during the month of Ramadan each year. Muslims abstain from eating and drinking from predawn to sunset. Changes in the patterns of eating, physical activity, and sleep/wake cycle occur during Islamic fasting. Research and clinical observations in various aspects of Islamic fasting have been increasing in the last four decades. In addition, various forms of intermittent fasting have been adopted by western scientists and physicians for the promotion of health, particularly cardiometabolic status. Islamic fasting and other forms of intermittent fasting have been shown to decrease oxidative and inflammatory stress, improve serum lipids, stabilize metabolism, and improve cardiometabolic risk factors, hepatic statuses, and glucose hemostasis. This makes Islamic fasting and other forms of intermittent fasting an ideal way for the prevention of major non-communicable disorders and the improvement of cardiometabolic health status. A knowledgeable physician can utilize the holy month of Ramadan as a means of improving lifestyle and enhancing the quality of self-management in healthy people and self-care, self-discipline in many patients with mild to moderate disorders when intermittent fasting is safe. Islamic fasting underscores the need for communication and counseling

and shared decision making. This improves the quality of care for both healthy individuals and ill patients and intensifies the confidence between patients and physicians.

## Research gaps in Ramadan fasting studies in health and disease

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**Background and Objective:** Ramadan fasting is a religious practice observed by Muslims and has various effects on health and disease. This study aimed to analyze the research output on Ramadan fasting and identify gaps in the existing literature.

**Materials and Methods:** We conducted a systematic search using appropriate keywords in databases such as Web of Science, PubMed, Scopus, EMBASE, and Cochrane. We included documents published in English between January 2015 and January 2020. After removing duplicates, we screened and classified the remaining documents.

**Results:** After the screening, we identified 393 relevant documents for classification. Of these, 53 were review articles, and 338 were original articles. More than 96% of the studies were clinical in nature, while basic science studies were limited. The most common topics of study were diabetes mellitus (31%), followed by metabolic disorders (8.1%), nutrition (8.1%), and urology (6.1%).



**Conclusion:** The majority of clinical studies on Ramadan fasting focused on disease conditions such as diabetes and kidney disease (such as renal stones), which are highly influenced by dietary and fluid restrictions. These conditions are also associated with specific health factors like pregnancy and physical activity, which can be impacted by limited calorie intake and water consumption. Expanding research efforts to include various health and disease conditions beyond nutrition and metabolic disorders is essential. Collaboration among Islamic countries is recommended to facilitate comprehensive research on fasting.

### **Advances in fasting research in the last two decades**

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Fasting has become a new growing research topic worldwide. For instance, the number of published papers on fasting in PubMed has grown from 2544 in 2002 to 5919 in 2012 (32%) and to 8372 in 2022 (129%). In Iran fasting research had a similar trend. Iran is among the leading countries in terms of fasting research. Based on a recent article published in 2022, Iran was ranked second after the United Kingdom in terms of published articles on fasting (144 and 153 articles, respectively). The first Iranian journal on the title of fasting was registered in Mashhad University of Medical Sciences in 2013. Until now three books have been

published by Iranian universities on the title of fasting. There are currently four international conferences with the title of fasting. The Diabetes and Ramadan International Alliance is another example of recent organizations held on the topic of fasting that include resources and nutritional guidelines on fasting in diabetes.

### **Determining the scope of the clinical practice guidelines**

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Determining the scope is one of the most difficult steps in developing Clinical Practice Guidelines (CPGs), So that if this activity is done correctly, the guideline development process will be facilitated and manageable. The scope determines the framework of the CPGs and includes the functional area of the guideline (areas of diagnosis, prevention, treatment, rehabilitation, follow-up or a combination of them), the people that affect of recommendations and suggestion of final guideline, the activities and interventions that are the focus of the guideline and the consequences resulting from the final guideline. One of the important parts of determining the scope is designing the PICO questions. This questions determine what kind of evidence is needed for analyzing and comparing the solutions. These questions are helpful in making decisions for patients or clients. They include four components of Problem/Population/Patient, Intervention,



Comparison/Control and outcome. This framework includes all key components of clinical questions and its structure is similar to the structure of clinical research evidence. Therefore, if the design of this question is done in a correct and standard way, it can play a key role in determining the direction of the guideline development process. A good question should have two main characteristics, It should represent the real issue and problem and be considered a suitable representative for it and It should has homogeneity and alignment with relevant research evidence in such a way that it facilitates the identification of evidence for solving the problem.

## **Preparation and rating of guideline recommendations**

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Formulation of recommendations is the final part and one of the important components of guideline design. Recommendations are prepared based on the results of a systematic review and decision-making criteria, including overall certainty of evidence, balance of benefits and harms, patient values, costs and resources, acceptability, feasibility, impact on health inequalities. To prepare the recommendations, the guideline development group and methodologists review the evidence provided by the systematic review group and discuss it. In addition to considering prognostic criteria

and intervention outcomes, this group discusses the direction and strength of the primary evidence and reaches agreement by consensus using consensus-building methods for each recommendation. Decision making and selection for each recommendation is done separately and independently. Recommendations should be clear and actionable, reflect the PICO format, and demonstrate strength of recommendation and quality of evidence. The language of presentation of all guideline recommendations should be consistent as much as possible. The strength of each recommendation is determined by the level of evidence, quality of evidence, statistical accuracy, and applicability of the recommendation in the target population. The strength of a recommendation determines the importance of following the recommendation. Recommendations are divided into two categories: strong and conditional recommendations. Strong recommendations based on moderate to high quality evidence. Following strong recommendations has more favorable effects, and in most situations, these recommendations can be adopted as policy. Conditional recommendations are recommendations that are more uncertain about the quality of evidence, the balance of benefits and harms, values and preferences, and the use of resources. Before adopting conditional recommendations as policy, there is a need for substantial discussion and review with the participation of stakeholders.



## Obesity, causes and consequences; what we learned from RaNCD cohort study

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**Background:** Obesity is a medical condition involving an excessive amount of body fat that increases the risk of non-communicable diseases (NCDs) such as cardiovascular diseases (CVDs) and diabetes. Life style and dietary modification is an appropriate approach to reducing this phenomenon. Although little information is known about it in the Kurdish population. Objectives: The aim of this study was to report of the prevalence of obesity and abdominal obesity, their causes and consequences among Kurdish adults.

**Methods:** This study was applied data from baseline phase of Ravansar non-communicable diseases (RaNCD) cohort study. Obesity and abdominal obesity were defined using body mass index (BMI) > 30 kg/m<sup>2</sup> and based on the International Diabetes Federation (IDF) criteria, respectively. Dietary intake was assessed by the food frequency questionnaire. Binary logistic regression odds ratios (OR) and 95% confidence intervals (CI) were used to determine association between obesity and NCDs. The structural equation modeling was used to study the direct and indirect effects of risk factors on overweight and obesity.

**Results:** Based on the BMI, 43.35% of the participants had overweight and 26.91% of them were obese. 79.37% had abdominal obesity (61.3% of men and 95.5 % women). We found that higher adherence to healthy eating pattern was associated with lower odds for obesity and abdominal obesity (OR: 0.67; CI 95%: 0.58-0.78) and (OR: 0.87; CI 95%: 0.76-0.98), respectively. Obesity was significantly associated with higher odds for CVDs (OR: 1.42), diabetes (OR: 1.71), and hypertension (OR: 1.59). The direct effect of socioeconomic status (SES) on overweight and obesity was - 0.070, the indirect effect was 0.127, and the total effect was 0.057. The indirect effect through three variables such as physical activity, dietary pattern, and smoking status, on the outcome.

**Conclusion:** This study indicated high prevalence obesity in Kurdish population especially abdominal obesity in women. Factors associated with overweight and obesity not only by direct effect, but also can indirectly and through mediators (such as dietary pattern and physical activity as two important mediating variables) cause this outcome. Lack of physical activity, unhealthy dietary patterns, and smoking could develop overweight and obesity.

## Useful foods and their effect on weight control

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At the beginning of the 20th century, the attention of nutrition science was only focused on the prevention of nutritional deficiencies or the treatment of diseases caused by malnutrition, but in the last three decades, with the increasing focus on the effect of diet on improving health, research aimed at identifying or inventing healthier foods. The aim is to prevent or treat chronic diseases. Since 1980, when for the first time in Japan, the term "foods with special function in health" was coined, there are different definitions based on 4 main concepts: 1- Having preventive effects from diseases, 2- The nature of the food (natural or enriched), 3 - Performance level beyond meeting nutritional needs and 4- consumption pattern and compliance with consumer culture are provided. According to the comprehensive definition of the Functional Foods Center (FFC), beneficial foods are processed or natural foods that contain biologically active compounds that are proven to have positive effects on biomarkers and the risk of chronic diseases or their symptoms in specific, effective and non-toxic doses. and based on this, a 16-step process has been defined for registration and approval by the FDA and marketing of a beneficial food. In recent years, epidemiological studies have investigated the effects of superfoods on weight control and it has been determined that some fruits such as avocados, berries, medicinal plants (green tea and ginger) and brains reduce appetite, increase the feeling of satiety,

increase Metabolism, reduction of fat absorption and increase of enzymes involved in lipolysis have anti-obesity effects.

## **Knowledge gaps in diabetes research: A scoping review**

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**Background & Aims:** A substantial amount of research funding is dedicated to diabetes management and preventive strategies. However, conducting redundant and unnecessary studies can waste the research budget. Hence, it is crucial to prioritize areas of focus and identify gaps in research to conduct novel, practical, and beneficial studies. Our objective was to collect available evidence, identify research gaps, and prioritize future studies in the field of diabetes management.

**Method:** In this updated scoping review, we utilized Scopus and PubMed databases to search for relevant studies on diabetes from 2015 to 2020. The eligible articles were then categorized based on their study design, level of evidence, and subject areas.

**Results:** The majority of the eligible studies in this review were focused on different types of diabetes (53%) and diabetes complications (28%). Most of the publications consisted of original articles (82%) rather than reviews (18%). Observational studies were the most common study design (26%), followed by





clinical trials (20%). Diabetes management was the most prevalent subject area (58%), but there was less emphasis on psychological interventions (10%), educational interventions (9%), and physical activity-related interventions (7%).

**Conclusion:** To address the existing gaps in diabetes research, it is crucial to invest more in cost-effective interventions, particularly preventive strategies and behavioral self-management programs. Additionally, there is a need to prioritize applied sciences and real-world evidence to facilitate the translation of research findings from the lab to practical patient care. In this context, conducting further data synthesis can aid in evaluating the effectiveness of existing studies and avoiding redundant investigations.

## Diabetes mellitus and melatonin

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Diabetes Mellitus (DM) is a chronic metabolic disorder whose prevalence is increasing in the world. According to the statistics of the International Diabetes Federation (IDF) in 2015, there were about 415 million adults with diabetes and it is expected that this figure will increase to 642 million people in 2040. Despite several studies on the treatment of diabetes, there is still no definitive treatment for this disease. Chronic hyperglycemia, as the main feature of DM, can affect all body organs and systems by inducing oxidative stress, and cause macrovascular and microvascular

complications in the human body. Therefore, due to the central role of oxidative stress in the pathogenesis of diabetes, the interest in using antioxidants as an auxiliary therapeutic strategy in the control of diabetes has increased. Melatonin is one of these antioxidants that can play a role in improving diabetes and its related complications. Melatonin is a neurohormone secreted from the pineal gland and a natural antioxidant of the body that has the ability to destroy free radicals and has anti-aging, anti-inflammatory, and anti-cancer effects. Also, this substance regulates the body's circadian rhythm and plays a role in immune function, cardiovascular system, mental states, body temperature, and maturity. Age-related decline in melatonin is associated with sleep disorders, health problems, and chronic inflammatory diseases related to oxidative damage such as cancer, diabetes, and obesity. Studies have shown that daily treatment with melatonin reduces body weight, plasma leptin, adiponectin, triglycerides, cholesterol, insulin, and glucose. Therefore, in addition to acting as an antioxidant and anti-inflammatory agent, melatonin is also functionally related to glucose metabolism.

## Lifestyle and biomolecular functions

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Today, for a better life, we need to know more about the molecules and biomolecules that govern humans and other creatures. In today's world, every person should have



self-knowledge of the lifestyle based on health. All physical and psychological reactions of humans are done by molecular reactions and interactions (interactomics). Some human actions become rewarding molecules. For example: human satisfaction turns into oxytocin, happiness turns into serotonin, sleep turns into melatonin, fear turns into cortisol, courage turns into adrenaline, and pain relief causes the release of endorphins. These are the molecules that are rewarded from inner body to man according to his deeds. But there are molecules that are in nature outside the human body that are generous and help human and other creatures. A healthy person with a good lifestyle creates a balance inside the body and outside with nature. Human inner-nature and nature are both of the same character and related to each other. Therefore, one should know about nature and imitate it, and apply biomimetic innovations and technologies and bio-inspiration in his lifestyle. For example: curcumin molecule, which is a tailor of the body and is a very good treatment for body diseases specially antidiabetic functions; gingerol molecules, which are sourced from valuable ginger that are pain relievers. These molecules known as nutraceuticals and have no medicinal toxicity. Therefore, in a good lifestyle, one should do good actions to secrete reward molecules from the inside body and get acquainted with the nature and nutraceutical molecules from outside the

body, and include functional food nutritious in the healthy life plan

## **The role of dietary patterns and eating habits in prevention and controlling of CVD risk factors among patients suffering from type 2 diabetes**

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Cardiovascular disease (CVD) remains the foremost cause of mortality and morbidity among individuals with diabetes, underscoring the urgent need to mitigate CVD risk in this vulnerable population. Extensive research demonstrates that suboptimal dietary habits are highly prevalent among adults with diabetes, and strongly linked to elevated CVD risk. Identifying modifiable risk factors, including diet, is therefore critical for developing interventions to reduce CVD burden. Numerous systematic reviews and meta-



analyses of prospective cohort studies have consistently shown that plant-based dietary patterns high in vegetables, fruits, whole grains, legumes, nuts, vegetable oils, and low-fat dairy are associated with significantly lower risk of obesity, hypertension, dyslipidemia, and other CVD risk factors. In contrast, dietary patterns rich in processed and red meats, refined carbohydrates, fried foods, and high-fat dairy correlate with substantially worse cardiovascular risk profiles. These findings persist after controlling for demographic and lifestyle factors. Analyses of dietary patterns derived using posteriori exploratory techniques like cluster analysis and principal component analysis reveal similar findings. For instance, a recent analysis of NHANES data found adults with diabetes and poorer quality dietary patterns were 3 times more likely to have CVD compared to those with higher quality dietary patterns characterized by higher intakes of whole grains, fruits/vegetables, nuts/seeds and plant proteins. Prospective cohort studies evaluating diet quality using a priori defined indices like the Healthy Eating Index (HEI) exhibit significant inverse associations between baseline diet quality and incidence of CVD events and mortality among those with diabetes. Cross-sectional studies have also found significant

relationships between diet quality scores and reduced odds of CVD risk factors. Dose-response relationships are evident in longitudinal analyses, with a 5 point increase in total HEI score associated with 6-9% lower risk of composite CVD events. Beyond overall dietary patterns, research shows specific dietary habits like frequent snack, fish, coffee home cooked meals as well as olive oil consumption, and avoidance of high intake of sugar added beverages, artificial sweeteners and late-night snacking are linked to lower CVD risk factors including dyslipidemia, hypertension, obesity, and hyperglycemia in patients with diabetes. Proposed mechanisms relate to improved glycemic control and metabolic profiles. These findings highlight the need to emphasize synergistic benefits of dietary components through optimized patterns and habits, rather than analyzing nutrients in isolation. Customizing lifestyle interventions to patient preferences while targeting increased intake of protective foods like vegetables, fruits, legumes, whole grains and limited processed foods can aid CVD prevention efforts. Recent research is actively informing guidelines and policies aimed at reversing adverse CVD trends among vulnerable adults with diabetes through improved diet.



## **Electrospinning: Perspective in food and drug technology**

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In the last years, nanofibres have been reported as an important group of one-dimensional nanostructures because of their special properties such as high surface area, high porosity, and their high safety in comparison with other nanomaterials. A number of technologies such as phase separation, self-assembly, interfacial polymerisation and electrospinning have been developed to produce nanofibres, in which electrospinning is the most widely studied technique. A typical electrospinning system contains a high-voltage electric field, a syringe with a metal needle, and a metal collector. Electrospinning has several benefits in comparison with other production methods such as the relative ease of use and being cost-effective, production of fibres in a diameter range of lower than 100 nm, easy incorporation of active materials such as drugs, vitamins, antioxidants, metallic nanoparticles, etc. into nanofibres during the electrospinning process, the absence of heat in the conventional electrospinning process, and the formation of nanofibres of both organic and inorganic materials. Applications of electrospinning process in food industry included encapsulation of food materials

and fabrication of food packaging materials. The main purposes of using electrospinning method in pharmaceutical system are included tissue engineering and drug release properties.

## **The interaction between ultra-processed foods and genetic risk score on body adiposity index (BAI), appendicular skeletal muscle mass index (ASM), and lipid profile in overweight and obese women**

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**Background & Aims:** Ultra-processed foods (UPF) are formulations of ingredients, mostly exclusive industrial use, resulting from a series of industrial processes (hence 'ultra-processed'). Excess intake of UPF is associated with an increased risk of obesity and chronic disease. The present study investigates the interaction between the consumption of UPF and genetic risk score with body composition, body adiposity index (BAI), and appendicular skeletal muscle mass (ASM) in overweight and obese women living in Tehran. **Method:** The study is cross-sectional with 376 overweight and obese women aged 18-65 years. The food consumption was obtained with 147-item food frequency (FFQ), and food items were grouped according to the level of processing as per the NOVA classification. Three single nucleotide polymorphisms (SNPs), including Caveolin\_1 (Cav\_1), Melanocortin4 receptor



(MC4R), and cryptochrome circadian regulator 1 (CRY1), were used to calculate GRS. The individual risk allele (0, 1, 2) for each SNP was calculated using the incremental genetic model. Anthropometric measurements and some blood parameters were measured by standard protocols. Results: After controlling for confounders such as age, energy intake, and body mass index (BMI) a significant interaction was found for appendicular skeletal muscle mass ( $\beta = -0.34$ ,  $P = 0.04$ ) and appendicular skeletal muscle mass index ( $\beta = -1.51$ ,  $P = 0.05$ ) on the NOVA classification system and GRS. Conclusions: The findings of this study showed a significant interaction between GRS and the NOVA classification system on some body composition, including appendicular skeletal muscle mass. A higher intake of ultra-processed foods may be associated with lower appendicular skeletal muscle mass in people with high obesity-GRS.

### **Investigating the relationship between household food insecurity and mothers' mental health**

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Food security is an essential component for all aspects of health, which has comprehensive effects on biological, social and psychological impacts. In this study, we collected data on household food insecurity status using the Household Food Insecurity Access Scale (HFIAS) and evaluated its

relationship with mental health in subjects. Depression, anxiety, and stress used for showing participant's mental health. The participants were mothers who answered all the questionnaires, including food insecurity and mental health.

The prevalence of stress, anxiety, and depression was 70.2%, 70.2%, and 55.1% and the prevalence of food insecurity was 51.9%. in the food-secure group, 37.3%, 61.3%, and 60.7% of the mothers were depressed, anxious and stressed. Whereas, in the food-insecure group, 94.3% of the mothers had stress, 91.4% had anxiety, and 87.1% had depression. Our results showed that food insecurity was significantly and positively associated with stress, anxiety, and depression ( $P < 0.001$ ). Moreover, we found that a higher level of food insecurity correlates with extreme degrees of stress, anxiety, and depression. Therefore, the improvement of mothers' stress, anxiety and depression depends in the progress of household food security.

**Keywords:** Food Security, Stress, Anxiety, Depression, Mental Health, Mother

### **The effects of aqueous and ethanolic extracts of rheum ribes on insulin-resistance, inflammation and oxidative stress in patients with type 2 diabetes mellitus: A randomized, double-blind, placebo-controlled trial**

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Previous studies have shown that Rheum ribes (*R. ribes*) could be effective in controlling the blood glucose levels. Type 2 diabetes mellitus, one of the most common chronic metabolic disorders, occurs when the body is unable to utilize insulin effectively. Therefore, the aim of the current study is to investigate whether the consumption of aqueous and ethanolic Rheum extractions improve insulin sensitivity, inflammation and oxidative status in subjects with T2DM. In the present randomized double-blind controlled trial, 60 type 2 diabetic patients aged 30-60 years with a body mass index (BMI) of 20-30 kg/m<sup>2</sup> and hemoglobin A1c (HbA1c) of 6-8% were enrolled. Patients were randomly assigned to receive 450 mg of aqueous *R. ribes* extract (AG), 450 mg of ethanolic *R. ribes* extract (EG), or placebo (PG) three times daily for 6 weeks. At the baseline and at the end of the study, blood glucose levels, homeostatic model assessment of insulin resistance (HOMA-IR) and the homeostatic model assessment of  $\beta$ -cell dysfunction (HOMA-B), A significant elevation in the quantitative insulin-sensitivity check index (QUICKI) was observed at the end of study in the aqueous extracts ( $P=0.03$ ) and also ethanolic extracts ( $P=0.01$ ) of Rheum

extract groups compared to initial values. At the end of study, there was also a significant reduction in levels of malondialdehyde (MDA) in ethanolic extracts ( $P=0.002$ ) compared to initial values; however, intervention with aqueous extracts had no effect on malondialdehyde. There was also a significant reduction of high sensitivity C-reactive protein in ethanolic extracts ( $P=0.001$ ) and aqueous extracts ( $P=0.001$ ) groups at the end of study compared to initial values. At the end of the study, there were significant differences in the insulin, ethanolic extract group compared to control group. It appears that the ethanolic extract is more effective than the aqueous extract of Rheum ribes in diabetic patients. Rheum ribes intake may have favorable effects on insulin sensitivity, malondialdehyde and high sensitivity C-reactive protein in diabetic patients. Consumption of *R. ribes* intake could have beneficial effects on insulin resistance and apolipoproteins in type 2 diabetic patients

### **Antioxidative effect of polyphenols: a novel therapeutic approach in diabetes**

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Diabetes mellitus is a fast-growing problem that has been raised worldwide. It is a chronic, metabolic disease characterized by



elevated levels of blood glucose, which causes serious damage to the heart, blood vessels, eyes, kidneys and nerves. Reactive oxygen species (ROS) are generated from normal intracellular metabolism in mitochondria and peroxisomes and from various cytosolic enzyme systems. The increased generation of ROS or a declined activity of endogenous antioxidants, or both, results in oxidative stress which is a potent culprit in diabetes mellitus by inducing  $\beta$ -cell dysfunctions and insulin resistance. There are thousands of compounds containing phenolic rings with different structural elements which are classified into phenolic acids, flavonoids, stilbenes, lignans, and curcuminoids. Increasing evidence has shown specific antioxidative effects of some (poly) phenolic compounds in plants. This review focuses on the recent progress in anti-oxidative effect of some polyphenols such as epigallocatechin-3-gallate, gallic acid, oleuropein, resveratrol and curcumin as potential nutritional therapy in diabetes

## Effects of antioxidants in diabetes

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Effects of antioxidants in diabetes Dr. Atena Ramezani Assistant professor of Nutrition , Faculty of Health ,Mazandaran University of Medical Sciences,Sari, Iran Diabetes mellitus is an insistent metabolic disorder characterized by an aberrantly upraised

level of blood glucose due to the deficit in insulin secretion by the  $\beta$ -cells of the pancreas and/or resistance toward the exploit of hormone insulin associated with disturbances in the carbohydrates, lipids, and proteins metabolism which leads to long-term complications. Based on the previous experimental and clinical studies recommend that oxidative stress plays a main role in the pathogenesis of diabetes. Free radicals are a molecule with one or more single pair of the electron that can quickly react with the constituents such as proteins, nucleic acid, and lipids. Abnormally high levels of free radicals and the simultaneous decline of antioxidant defense mechanisms can lead to damage of cellular organelles and enzymes increased lipid peroxidation, and development of insulin resistance. This oxidative stress can promote the development of complications of diabetes mellitus. Antioxidants obtained from nature helps in neutralization of reactive oxygen species and significantly reduce the probability of progression of diabetic complications. A variety of nutritionally important vitamins, supplements and some constituents of natural food sources, including cappers, broccoli, tomatoes, berries, grapes, spinach, carrots, nuts, etc. naturally trim down the injury caused by oxidative stress in diabetes mellitus. In this symposium, we intend to discuss the effects of antioxidants in diabetes.



## **Extrusion technology: A method for improving the nutritional and functional properties of food products**

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Extrusion technology is one of the most common industrial processes used to make several foodstuffs, such as snacks, ready-to-eat cereals, pasta, confectionery products, baby food, pre-cooked flour, instant food components, meat analogues, fiber-rich products and pet foods. This technology as a continuous and short-time process has many advantages, including versatility, high productivity, low cost, low waste and the ability to produce unique shapes and high quality product. Extrusion process combines several unit operations including mixing, cooking, kneading, shearing, shaping and forming. Important parameters, which determine the product quality in extrusion cooking, include moisture content of food material, screw speed and configuration, die geometry, barrel temperature and time. This process modifies the molecular structures and nutritional profile of food material such as starch gelatinization, glycemic index, starch digestibility, fiber dissolution, denaturation of proteins, inactivation of enzymes and antinutritional factors including enzyme inhibitors and toxins, reduction of microbial counts, lipid modifications, and improvement in digestibility and biological value of proteins.

However, its short residence time reduces the side reactions, such as degradation of bioactive compounds. In conclusion, the extrusion process is a versatile and widely used processing method in the food industry. However, to produce high-quality products with desirable functional and nutritional properties, the extrusion process must be optimized based on the nature of raw materials and desired final product, which require more studies to understand the affecting factors on final product quality.

**Keywords:** Diet formulation, Functional foods, Nutritional quality

## **Production of a functional dietary fiber supplement based on agro-food by-products**

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Overweight and obesity have reached epidemic proportions in the last two decades in both developed and developing countries. This epidemic, due to lifestyle, has led to more attention being paid to fiber-rich products. Dietary fiber as a functional ingredient is used extensively in the food industry. The WHO recommended an average daily intake of 25 g fiber for women and 38 g for men, up to 50 years of age. The search for new sources of fortified components from low-cost and sustainable sources has become a trend in the last decade. Agri-food byproducts from fruit and vegetable processing, grain milling, oil extraction and sugar processing would be





one of the accessible and cost-effective sources of dietary fiber. The presence of other bioactive compounds in wastes such as proteins, phenolic compounds, vitamins, and minerals also shows that they play an important role in promoting health. Approximately 35% of the world's food and agricultural products are wasted each year; Global food waste has become a negative impact on the environment due to the problems associated with its accumulation. The generation of huge amounts of waste opens an important area for applied research aimed at reducing and managing it efficiently. Studies have been conducted to incorporate the by-products into different foods in order to promote their utilization and tackle their environmental impacts. Extrusion is an efficient technology for converting food by-products into nutrient-rich food ingredients. Extrusion is a widely used thermo-mechanical process due to its versatility, flexibility, high production rate, low cost, and energy efficiency. Extrusion technology applies high temperatures and high pressure simultaneously in a short time (HTST), resulting in unique product shapes, a reduction in microbial load and the activity of harmful enzymes, and increasing the amount of soluble fiber and digestibility. Therefore, For the practical applications of these by-products in extrusion, it is crucial to understand their impacts on the qualities of raw material blends and extruded products. Keynote: ingredient, extrusion, soluble fraction, solubility

## **Mitigating aspergillus flavus and aflatoxin contamination in pistachios (*Pistacia vera* L.) through non-thermal processing**

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The presence of the *Aspergillus flavus* fungus in pistachios and the resulting production of aflatoxins have had a significant impact on the quality of this important agricultural product from Iran, thereby limiting its export. Recently, non-thermal processing methods, such as irradiation, have garnered significant attention for their ability to decontaminate pistachios. In the current research, the possibility of applying two types of non-thermal processing methods, namely dielectric barrier discharge (DBD) cold plasma and gamma irradiation, to reduce *A. flavus* and aflatoxin B1 in pistachios was compared. For this purpose, plasma treatment was conducted at various time durations (15, 30, 60, 90, 120, 150, and 180 seconds). The treatment was carried out under atmospheric pressure conditions, using ambient air as the feeding gas. The plasma was generated at a power of 130 W, a frequency of 20 kHz, a voltage of 15 kV, and with a distance of 3 mm between the electrodes and the samples. To perform gamma irradiation, a cobalt-60 source in a Gammacell irradiator was utilized. The



samples were exposed to different doses of radiation (0.5, 1, 1.5, 2, 4, and 6 kGy). The irradiation process was conducted under unified conditions of temperature and relative humidity. The results demonstrated that by increasing the treatment duration with cold plasma and employing higher doses of gamma radiation, there was a greater reduction in the population of fungi and a higher decrease in the amount of aflatoxin B1. The findings indicated that subjecting the pistachio nut samples to a 180 seconds duration of cold plasma treatment and  $\gamma$ -irradiation at a dose of 6 kGy resulted in a reduction of fungal spore population by approximately 3 and 5 log cfu/g, respectively. Additionally, the High Performance Liquid chromatography (HPLC) revealed that the treatment of pistachio samples with 180 seconds of cold plasma and gamma irradiation with a dose of 6 kGy decreased the concentration of aflatoxin B1 by 52.42 and 86.36%, respectively. In conclusion, this research demonstrated that the utilization of both non-thermal processing methods resulted in a reduction in fungal spore population and a decrease in aflatoxin concentration in pistachio samples. However, it should be noted that while the application of higher doses of gamma radiation had a more pronounced effect on reducing fungal spores and aflatoxin concentration compared to longer cold plasma treatment times, further investigation is required to assess the impact

of high doses on the physicochemical and sensory characteristics of pistachios.

## **Microbiome-based personalized nutrition**

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Microbiome-based personalized nutrition

Microbiome-based personalized nutrition is a dietary approach considering an individual's unique gut microbiome composition to optimize their health and well-being. Diet can more easily shape the microbiome, potentially influencing human physiology through modulation of digestion, absorption, mucosal immune response, and the availability of bioactive compounds. On the other hand, the gut microbiome is a complex ecosystem of microorganisms that reside in the gastrointestinal tract and play a crucial role in digestion, immune function, and overall health. Studies have shown that the composition of an individual's gut microbiome is modulated by dietary components, which could influence metabolism, the pathogenesis and progression of various metabolic disorders, and their management. By analyzing an individual's gut microbiome, which is the challenging part, personalized nutrition plans can be developed that are tailored to their unique microbial profile. Microbiome-based personalized nutrition involves identifying the specific types of bacteria in an individual's gut and determining how



they interact with different types of food. This information is then used to develop a personalized dietary plan that includes foods that promote the growth of beneficial bacteria and avoid those that may be harmful. Microbiome-based personalized nutrition aims to apply nutritional recommendations and lifestyle modifications such as physical activity as tools to optimize gut health, improve digestion, boost immune function, and reduce the risk of chronic diseases such as obesity, diabetes, and cardiovascular disease. This approach is a promising way to improve overall health and well-being through targeted dietary interventions.

Running Title: Microbiome-based personalized nutrition as a promising approach to improve overall health and management of chronic disease.

## **Interprofessional education (IPE) and its core competencies**

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Interprofessional Education (IPE) refers to the educational approach that brings together learners from different healthcare professions to learn collaboratively from, about and with the other professions. The goal of IPE is to prepare future healthcare professionals to work effectively in interprofessional teams, ultimately improving patient outcomes and the overall quality of care. There are several core

competencies which can be categorized into four main domains values and ethics, roles and responsibilities, communication, and teamwork. Values and Ethics, One of the core competencies of IPE is the development of shared values and ethics among healthcare professionals, includes understanding and respecting the rights, autonomy, and dignity of patients, as well as recognizing and addressing ethical dilemmas that may arise in healthcare practice. Roles and Responsibilities as an important competency in IPE, is the understanding of professional roles and responsibilities within a healthcare team, involves recognizing the unique contributions that each profession brings to patient care. Learners learn to appreciate the importance of interdisciplinary collaboration and how to effectively navigate professional boundaries while working together towards common goals. Communication is a fundamental competency in IPE which learners are taught how to communicate clearly, respectfully, and efficiently with patients, families, and other healthcare professionals by developing active listening skills, using appropriate language and terminology, and utilizing effective non-verbal communication techniques. In the context of the nutritionist field, IPE plays a crucial role in enhancing the delivery of comprehensive and holistic care to individuals seeking nutritional guidance. IPE is highly relevant to the nutritionist field as it enables nutritionists to work collaboratively with



other healthcare professionals to provide comprehensive care to individuals seeking nutritional guidance.

## **Iranian experiences and challenges**

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In the field of interprofessional domain I had two experiences one of them entitled "Developing and Implementing of an Interprofessional Educational model Based on Change Behavior Model in Emergency ward" the aim of the present study was to develop and assess the effectiveness of an interprofessional education model (IPE) based on stages of change (SOC) theory. Also, the participant's experience about the interprofessional education and collaboration was explored. The second interprofessional thesis was done in outpatient clinic. Entitled "Development, implementation and effectiveness study of interprofessional collaboration competencies teaching model on the basis of community-based education on attitude and performance of medical and midwifery interns at Tehran University of Medical Sciences. The aim of the current study was conducted to develop, implement and effectiveness study of interprofessional collaboration competencies teaching model on the basis of community-based medical education (CBME) on attitude and performance of medical and midwifery

interns at Tehran University of Medical Sciences.

## **Mobile applications and dietary intake assessment: An evolution in nutrition research**

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Conventional dietary intake assessment tools, such as food frequency questionnaires (FFQs), dietary food recalls, and records, are widely used in nutrition research. However, each method has its own limitations. Dietary recalls and FFQs are prone to information errors because they are highly dependent on memory. Although, dietary records are less prone to memory errors, they can be burdensome for participants and may lead to underreporting. Recent advances in technology have led to the development of new dietary assessment methods that use images. These methods can be divided into two categories: Image-assisted methods that use a trained analyst to identify and measure food items in images. Fully automated methods that use computer algorithms to identify and measure food items in images. These methods have been shown to improve the accuracy of conventional dietary assessment methods by adding detail from dynamic images to participants' self-reports. Recent investigations have found that image-assisted methods reduced underreporting compared to traditional



methods. Larger sample sizes are needed to get more detailed information on subgroups and to make results generalizable. Future studies are also needed to investigate whether image based mobile applications can lower the costs of dietary assessment.

## **Human microbiome in health and in diseases**

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The gut microbiota is now considered as one of the key elements contributing to the regulation of host health. Virtually all our body sites are colonised by microbes suggesting different types of crosstalk with our organs. Because of the development of molecular tools and techniques (ie, metagenomic, metabolomic, lipidomic, metatranscriptomic), the complex interactions occurring between the host and the different microorganisms are progressively being deciphered.

Nowadays, gut microbiota deviations are linked with many diseases including obesity, type 2 diabetes, hepatic steatosis, intestinal bowel diseases (IBDs) and several types of cancer. Thus, suggesting that various pathways involved in immunity, energy, lipid and glucose metabolism are affected.

As our understanding of the interplay of the microbiome with the human immune system and metabolism increases, it opens exciting opportunities to improve management of these diseases.

**Keywords:** Microbiome, Probiotics, Prebiotics, Synbiotics, Health

## **Artificial intelligence, food security, and food safety**

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World hunger is of the major challenges ahead of human civilization. The first world hunger has been resolved in mid 20th century with the emergence of synthetic pesticides and a dramatic increase in agricultural food production (green revolution). The second world hunger menace has been averted due to the application of Genetically Modified Organization (GMO) technology in the last years of the 20th century (greener revolution). Scientists believe that the next green revolution is the application of Artificial Intelligence (AI) in the field of food science. They stated that by the year 2040, only countries that reached a certain threshold of AI will avail food security. AI will revolutionize food security through these approaches: image processing, electronic nose, 3D printers, the Internet of Things (IoT), etc. The AI will change the production, processing, and distribution of food. In addition, despite the great advancements in food industries, food waste still remains a huge concern. It is estimated that approximately 30% of foods are lost every year. AI can be a useful solution for food waste and it can dramatically reduce



the amount of food loss. AI can open a new horizon for human challenges such as food security and hunger. This technology should be applied and commercialized in food industries to achieve its goals.

**Keywords:** Artificial intelligence, Food security, Food safety

## Legal aspects of diets based on Iranian laws until 2023

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Nowadays, complaints against the medical staff due to Negligence about treatment of patient who suffer from obesity is increasing. Negligence in the legal, means that does not perform assigned task. The task that the legislator has placed on that person. The legislator in the Islamic Penal Code, adopted in latest version, Defines negligence as carelessness or omission and also includes lack of skill and non-compliance with state regulations as part of this. **Methods:** The definition of the above items is in brief Omission: Non performance of an act which scientifically is expected to be done carelessness : Performance of an action which scientifically should not be done Lack of skill: Includes cases in which the physician does not have the scientific skill for a certain work Failure to comply with government regulations: Namely, failure to pay attention to regulations,

departmental letters, regulations of administrative superiors, medical system, Ministry of Health **Results :** Examples of the four listed in Materials and Methods above , includes the following 1-in a skinny patient with pain in pelvic and history of falling not request x ray before starting glucocorticoide 2- Prescribing zinc sulfate for a patient who has high level of zinc in blood sample 3- Incorrect Injection of vitD (IV) in patient. 4-: Not obtaining informed consent in necessary cases in a obese person **Conclusion:** Due to the special conditions of patient who need to starting a new diet, doctors should be more careful in examining and taking history so as not to make mistakes in the diagnosis and treatment of them.

**Keywords:** nutrition program, omission, carelessness, Lack of skill, government regulations

## Isfahan cohort study (ICS)

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Isfahan Cohort Study (ICS) is a 10-year longitudinal population-based study which has conducted 2001-2011 on 6300 recruiting individuals aged  $\geq 35$  year living in urban and rural areas of three counties in central Iran, to determine incidence of cardiovascular events, and impact of their risk factors on it. After 24379 person-years of follow-up with a median follow-up of 4.8 years, 219 incident cases of ischemic heart



disease (IHD) and 57 incident cases of stroke.

Then, ICS was considered as a master plan for a multi-level non-communicable disease (NCD) study named ICS2. This multi-generation 10-year cohort study started in 2013 to determine incidence of cardiovascular events, cancers, and diabetes and their risk factors. Moreover, studying lifestyle behaviors and NCDs incidence in three generations in a hierarchical manner of parents, their children and grandchildren. Recruiting a sub-sample of ICS ( $n = 1\ 487$ ) and a new recruited sample ( $n = 1355$ ) aged  $\geq 35$  years, living in urban and rural areas of two counties in central Iran. In addition, 2500 of participant's adult children were selected randomly, as well as 1000 of their grandchildren. The aim of ICS2 is to detect the incidence of some NCDs including CVDs, grandchildren in ICS 2 will improve our knowledge on other determinants such as epigenetics of NCDs. Till 2017, incidence rate of IHD and stroke was 262 and 275 per 100000 person, respectively. The final phase of ICS2 is being done now and the complete data will be presented in 2024.

**Keywords:** Isfahan Cohort Study, non-communicable disease

## Free Oral Presentation

### Clinical studies on the effect of *Zataria multiflora* on respiratory disorders

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Various pharmacological effects for *Zataria multiflora* (*Z. multiflora*) and its constituents including anti-inflammatory, antioxidant and immunomodulatory were shown. The plant is used in traditional and modern medicine for the therapeutic objectives especially in respiratory disorders. In clinical studies, the bronchodilatory property of hydro-ethanolic extract of *Z. multiflora* comparable to the effect of theophylline was shown in asthmatic patients with asthma. The effect of *Z. multiflora* extract and essential oil in the treatment of acute cough was also reported. Treatment of asthmatic patients with two doses of *Z. multiflora* extract for two months, improvement of PFT values, clinical symptoms, oxidative stress markers, serum cytokines levels. In patients with allergic rhinitis, hydro alcoholic extract of *Z. multiflora* for two months, remarkably reduced symptoms of allergic rhinitis and induce of IL-17 gene expression. In patients with COPD also treatment with two doses of *Z. multiflora* extract for 2 months, clinical signs, PFT values, oxidative stress, and C-reactive protein (CRP) were reduced. Two months treatment of patients with lung disorders, long term after exposure to sulfur mustard (SM) with the extract of *Z. multiflora*, improved PFT and respiratory symptoms, oxidant/antioxidant markers, serum levels of TNF- $\alpha$ , MCP-1, VEGF, EGF, reduced total and different WBC, hematological indices, serum levels of IL-2, IL-6, and IL-8, while serum levels of IL-10



and IFN- $\gamma$  were increased in the treated groups. In randomized clinical trial the effect of the plant syrup in the treatment of cough and mild infections caused by the common cold was demonstrated. The reducing cough due to thym herbs treatment in common cold, bronchitis, and other respiratory tract diseases was shown. Accordingly potential therapeutic effects of *Z. multiflora* on various respiratory disorders based on clinical findings were demonstrated and the plant may be considered as a preventive and/or relieving therapy in various respiratory diseases.

**Keywords:** *Zataria multiflora*, Shirazi thyme, Allergy, Asthma, Lung diseases

## Effect of fat-soluble vitamins on premature ovarian failure: A systematic review

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**Objectives:** Premature ovarian insufficiency (POI) is a major concern in women's health. It is hypothesized that deficiency in fat-soluble vitamins might result in POI; however, this relationship has not been extensively evaluated.

This systematic review was designed to elucidate the overall relationship between fat-soluble vitamins serum levels and POI.

**Materials and Methods:** This systematic review was conducted on international databases, including SCOPUS, national library of medicine (PubMed), and web of science (ISI) databases, along with Google Scholar until June 2022. This review was conducted on case reports, case series, cross-sectional, cohort, and case-control studies (observational studies), that were published in English and Persian language in peer-reviewed journals that assessed the association between serum levels of fat-soluble vitamins and POI were reviewed.

**Results:** Of the 10029 retrieved articles, 5 articles (N= 3443 subjects) were included in the review. The results of the reviewed articles were inconsistent in terms of the relationship between serum vitamin D and A levels and POI; however, vitamin D binding protein and vitamin A/total cholesterol ratio might be related to POI. Serum vitamin E was associated with POI based on the findings of one study.

**Conclusion:** This review showed that the serum levels of fat-soluble vitamins might predict POI. However, there were insufficient number of studies to document the findings. If approved in further studies, these vitamins and their binding proteins can be evaluated in high-risk POI patients.

**Keywords:** Vitamin A, Vitamin E, Vitamin D, Fat-soluble vitamins, Premature ovarian insufficiency

## Nutrition and parasitic/ fungal infection

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Every Living organism needs nutrition to be alive, but man seek tasty food with higher quality, sometimes does not know whether it is healthy or not. In order to obtain healthy food we should regard sanitary measurement. On the other hand pathogenic microorganisms not only decrease the quality of food, but also make it as unhealthy and sometimes dangerous. Therefore we should learn how to obtain or prepare healthy food. Among microorganisms, several parasites, fungi and their toxins may not only change the quality of food, but they can change a healthy food into the dangerous and even a killer material. Some fleshy toxic fungi are very similar to edible genera, like *Amanita phalloides*. On the other hand, some molds contaminate the food and make it poisonous by their toxins, like aflatoxin and ergot. Parasites can also contaminate raw food, vegetables and even tap water so that Consumption of such food and water leads to infection and disease. In this session the parasites and fungi which can change the quality of different types of food in to a dangerous or even a killer material are presented and discussed.

### **Symbiotic supplementation during pregnancy increases adiponectin level and improve metabolic syndrome in rats**

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**Objective:** Metabolic disorders during pregnancy have detrimental effect on mother and her fetus. Symbiotic supplementation can improve metabolic disorders through adipocytes. The aim of this study was to assess the impact of symbiotic supplementation on the levels of adiponectin, lipid profile, glucose, and insulin resistance in pregnant rats fed a high-fat diet (HFD).

**Materials and Methods:** 36 Pregnant Wistar rats were divided into three groups: control group, HFD group, and HFD+ symbiotic group. The control group received the regular diet; the HFD group received HFD alone; and the HFD + symbiotic group, which gavaged with a symbiotic solution. At the end of pregnancy period, birth weight of offspring, levels of blood glucose, lipid profile, insulin, and adiponectin levels were measured.

**Results:** Birth weight of offspring in the HFD+ symbiotic group was significantly lower than in the HFD group. Similarly, insulin, insulin resistance, Triglyceride (TG), total cholesterol, and LDL levels in the HFD+symbiotic group were significantly lower than in the HFD group. Symbiotic



supplementation significantly increased adiponectin concentration in HFD+symbiotic. Adiponectin levels had a significant and positive correlation between food intake in the first ten days of the experiment and gestation period. Adiponectin levels had a significant and negative correlation with, Fasting sugar, HOMA Index, TG, Total cholesterol and LDL levels.

**Conclusion:** Symbiotic supplementation improves weight gain during pregnancy, pup birth weight, FBS, insulin resistance and lipid profile. These advantages of symbiotic supplementation could be mediated by increasing serum adiponectin levels.

**Keywords:** Adiponectin, Symbiotic, Metabolic syndrome, Pregnancy, High Fat Diet

## **Ketogenic diet in children with intractable epilepsy**

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**Introduction:** The ketogenic diet (KD) is a promising therapeutic approach for intractable epilepsy, characterized by drug-resistant seizures (1). It involves a high-fat, low-carbohydrate, and adequate-protein

diet, inducing a state of ketosis and producing ketone bodies as an alternative brain fuel. Clinical studies have shown significant reductions in seizure frequency and improved cognitive function, especially in certain epilepsy syndromes (2). The diet's exact mechanisms are not fully understood but may include neuroprotection, neurotransmitter modulation, and anti-inflammatory effects. The aim of the study was to evaluate the effect of different kind of diet in children with intractable seizure.

**Method:** In this retrospective study, 40 patients with refractory epilepsy were included. The efficacy of the KD was assessed in terms of adherence to the diet, seizure frequency reduction diet continuity.

**Result:** Mean age of patients was 4.8 (3.9). The adherence to KD was variable. KD was pursued from a minimum of 1 month to a maximum of 12 months. 20 patients (51%) obtained a seizure reduction of > 50% and (12)31% patients became seizure free. About 74% of patients continue diet for 1 month, 43% patients for 3-month, 26%patients for 6 month and just 14% patients following the diet for 12 month.

**Conclusion:** The study underscores the potential efficacy of the KD as a treatment option for intractable epilepsy in children, though further research is needed to optimize adherence and identify factors influencing treatment outcomes.



**Keywords:** Ketogenic diet, intractable epilepsy, pediatric

## **Novel extraction of Phenolic compounds from fruits and vegetables waste for functional foods: a review**

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**Introduction:** Waste management is one of the main parts of the food industry. Fruits and vegetables include peels, skins, pods, pulp, seeds, and stems, commonly discarded despite containing potentially beneficial compounds such as polyphenols, carotenoids, dietary fiber, enzymes, vitamins, and oils. In addition, it provides evidence of the use of fruit and vegetable waste in various food formulations, especially bakery, jam, and meat-based products. Food waste is a byproduct of many industrial, agricultural, household, and food sectors, which is steadily increasing with the increase of these activities.

**Methods:** In this study, food waste, food industry and bioactive compounds were used to find related articles from reliable scientific databases including ScienceDirect, Scopus and PubMed.

**Result:** For the extraction of biologically active compounds, various extraction technologies such as liquid-liquid extraction, pressurized liquid extraction, solid phase extraction, supercritical fluid extraction, subcritical water extraction, enzyme-

assisted extraction, ultrasound, microwave-assisted extraction, or combined use different techniques are used.

**Conclusion:** Traditional methods of extracting phenolic compounds have disadvantages such as low selectivity and extraction efficiency, time-consuming, and high solvent consumption. According to the reviewed literature, new and emerging extraction methods and solvents promote the recovery of phenolic compounds from food waste and increase their bioavailability. According to the reviewed literature, new and emerging extraction methods and solvents promote the recovery of phenolic compounds from food waste and increase their bioavailability.

**Keywords:** bioactive compounds, Food waste, Food industry

## **An investigation of the research articles in nutrition and nutritional sciences journals with an eye on the mistakes the authors make in their writing**

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**Objective(s):** Researchers, faculty members, and other academicians conduct research in their area of specialty and get their reports published in journals of their field. In so doing, the authors' writings may not be void of some writing errors/mistakes. Therefore, the purpose of this paper is to discover the mistakes/errors the authors make in their publications in the field of nutrition and nutritional sciences.

**Materials and Methods:** In this study, 40 original articles published recently in 4 journals in the area of nutrition and nutritional sciences were selected. The researchers read the articles carefully, identified and classified the errors, and described them in 20 different categories of which 4 categories were of utmost importance for this study. The errors were analyzed through frequency and percentage. Results: The results showed a total of 473 errors in the forty articles and that the journals D and A contained the most (n=117) and the least (n=87) numbers of errors, respectively. When the four error types were counted altogether, "punctuation" errors (n=261) ranked first, and "missing auxiliary" errors (n=15) ranked last.

**Conclusion:** In general, some errors were related to grammar, vocabulary, and sentence structure. The authors' inappropriate level of English language

proficiency and their insufficient knowledge of writing skills were the main causes of the errors. However, some errors were due to the authors' first language interference. Some other errors were, yet, related to the mechanics of writing such as punctuation, spelling, italics, etc. Thus, it is highly recommended that the editors and authors of the journals in the area of nutritional sciences under study seek help from language editors with high proficiency in the English language.

**Keywords:** Faculty members and authors, grammatical and lexical errors, journals of nutrition, nutrition

### **Investigating the effects of carnitine supplementation in obese patients with COVID-19-related respiratory failure admitted to the intensive care unit**

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**Introduction:** Patients with severe respiratory failure due to COVID-19 are often accompanied by significant metabolic and hypoxic conditions, and during the



course of the disease, multiple systemic inflammatory symptoms and responses will occur. Carnitine supplementation has the potential to play an important role in improving the clinical status of patients and is, therefore, the focus of this study to investigate the effect of carnitine supplementation on clinical status and prognosis in COVID-19 patients with obesity admitted to the intensive care unit.

**Methods:** This randomized, double-blind clinical trial was conducted on 42 COVID-19 patients admitted to the intensive care unit. In this study, the intervention group received 3 grams of liquid carnitine supplement along with hospital meals for seven days, while the control group received a placebo.

**Results:** The carnitine supplement did not show a significant difference between groups in protein-reactive C and the protein-reactive C to albumin ratio ( $p>0.05$ ). However, it led to a significant difference in the neutrophil-to-lymphocyte ratio ( $p=0.03$ ). The carnitine supplement could not create a significant difference between groups in the platelet-to-lymphocyte ratio ( $p>0.05$ ). There was no significant difference in length of stay in the intensive care unit, duration of mechanical ventilation, and survival rate between groups ( $p>0.05$ ).

**Conclusions:** The present study showed that a five-day course of 3-gram daily carnitine supplement in critically ill COVID-19 patients with obesity could improve

immune response levels and subsequently increase average survival during 28 days of follow-up, although this increase was not statistically significant.

**Keywords:** Carnitine supplementation, critically ill patients, inflammation, mortality

### **Study of changes in serum vitamin D levels in mothers with or without vitamin D supplementation and their premature infants**

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**Introduction:** There are several hypotheses about the effect of vitamin D supplements on serum levels of vitamin D in mothers and infants. Therefore, the present study aims to study of changes in serum vitamin D levels in mothers with a gestational age less than 37 weeks .

**Materials and Methods:** This cross-sectional study was performed in Ghaem Hospital in Mashhad during the period of 2019-20. In this study, 310 preterm pregnant mothers with signs of labor entered the study. Mothers who consumed at least 1,000 units of vitamin D a day for at least one month were included in the case group, and mothers who did not consume vitamin D were included in the control group using available sampling method. Mothers and infants' vitamin D levels were measured at the time of delivery among live birth. The complete characteristics of the infants,



maternal history, and laboratory results were collected and recorded in a checklist and compared between the case and control groups.

**Results:** We found that 77.1% of the mothers and 87.7% of the infants had vitamin D deficiency. The means of vitamin D levels in mothers were  $23.88 \pm 15.66$  ng/ml in the case group and  $12.68 \pm 7.37$  ng/ml in the control group and  $17.55 \pm 12.23$  ng/ml in the case group neonates and  $10.38 \pm 7.35$  ng/ml in the control group neonates ( $P < 0.001$ ) using T-Test. With the use of vitamin D supplementation by the mother, the probability of vitamin D normalization in the mother increased Four-fold (34% vs. 9%), and the normalization of the neonate increased 6 times (19% vs. 3.5%) ( $P < 0.001$ ) using chi-square test.

**Conclusion:** Serum levels of vitamin D in mothers in the case group were about twice that of the control group. The percentage of severe vitamin D deficiency in mothers and infants decreased by mothers' supplementation consumption. Therefore, modification of vitamin D in pregnancy may reduce the risk of vitamin D deficiency in mothers and infants and lower the complications of vitamin D deficiency.

**Keywords:** Infants, Vitamin D, Mothers, Resuscitation, Supplement

## **informed consent in nutritional sciences and related newest laws until 2023 year in Iran**

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**Objective:** In Iran Setting up a consent form to perform Nutrition program is not a new thing and has been done for a long time. Consent of a person under 18 years of age being get from the patient's guardian and over 18 years of age from the alert patient herself or himself.

**Materials and Methods:** due to the more complicated process of Nutrition program, informing the patient about the probability of success of this program, possible risks, side effects of the treatment, is considered an inseparable part of the treatment measures, and such information can be considered as a major obstacle in obtaining informed consent.

**Results:** Informed consent is one of the most essential concepts in medical ethics and patient rights in the world, in such a way that its conscious regulation before the start of any diagnostic and therapeutic activity in Nutrition program will lead to positive moral and clinical results.

**Conclusion:** Medical staff are obliged to provide patients with information about the Nutrition program and related procedure and diagnostic test and treatment, and a medical staff who treats the patient without the patient's consent will be prosecuted.

**Keywords:** nutrition program, iran, consent, law, medical staff



## Food diversity and corona fear in children

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Improving the health of society and reducing the burden of diseases is one of the most important goals of any government. The purpose of this study is to investigate the relationship between food variety and the fear of corona in students. All first and second grade students of the regional high school in Karaj, Iran, completed the study questionnaires online under the supervision of their mothers. Anthropometry was done by self-report method. The food diversity score of the main groups of the food pyramid was obtained by Kant's method. Data analysis was done with SPSS at a significance level of less than 0.05. Depending on the type of variables, the degree of correlation was

determined by Spearman or Pearson coefficient and the relationship was determined by linear regression. The total food diversity score was determined in both crude and multiple adjusted models. After adjusting the effect of intervening variables, it was observed that the students who had a lower food score in consuming the meat food group had a weight closer to normal ( $p < 0.05$ ). Although there was no significant correlation between the fear of corona and the overall score of food intake, (OR: 0, 95% CI, -0.05, 0.05) in those who had less fear of corona the consumption of foods containing antioxidants was higher and the risk of weight gain was lower. ( $p < 0.05$ ). Since nutritional behaviors and lifestyles can be learned and the correct consumption of food, especially vegetables, fruits, and foods containing antioxidants, have a great role in disease prevention and health promotion, paying attention to healthy eating education in this age group is an investment for It will be the health of society.

## The effect of vitamin D administration during labor on transient tachypnea of the newborn incidence: A randomized trial

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**Introduction:** Transient Tachypnea of the Newborn (TTN) is the commonest cause of neonatal respiratory distress, as vitamin D deficiency is a risk factor for TTN. Therefore,



we investigated the effect of vitamin D administration during labor on TTN incidence.

**Methods:** The current clinical trial was performed in Ghaem Hospital of Mashhad, Iran, in 2020-22. Pregnant women with a gestational age of 32 to 37 weeks who presented with labor pain were randomly divided into the intervention (50,000 U injection of vitamin D, n=40; 43.5%) and control (n=52; 56.5%) groups. The vitamin D level was then measured in mothers' sera and neonates' cord blood samples. TTN was diagnosed based on the clinical criteria, chest X-ray changes, and ruling out other causes of respiratory distress, like Respiratory Distress Syndrome (RDS), pneumonia, and pneumothorax. Newborns' characteristics, maternal history, and laboratory test results were recorded on a checklist.

**Result:** According to the findings, 32 (61.5%) neonates in control and seven (17.5%) in intervention groups had TTN (P=0.000). The mean vitamin D levels of newborns in the control and intervention groups were  $15.85 \pm 9.92$  and  $21.28 \pm 13.15$  ng/mL, respectively (P=0.058). Mothers' mean vitamin D level in the control and intervention groups was  $17.05 \pm 7.64$  ng/mL and  $23.56 \pm 9.90$  ng/mL, respectively (P=0.006).

**Conclusions:** Injecting 50,000 U of vitamin D 72 hours before labor can reduce the risk

of TTN by 3.5 times. Therefore, if the risk of TTN is high, vitamin D administration may reduce the risk of respiratory problems in newborns.

**Keywords:** Newborn, Vitamin D, Transient Tachypnea of the Newborn, Mothers, Respiratory Distress

## Poster Presentation

### The intricate nature of the connection between energy consumption and obesity in adults aged over 55 who are adequately nourished

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**Introduction:** Obesity is a disease characterized by an increase in body mass index (BMI) due to an increase in energy intake. The aim of this study was to examine the relationship between energy intake and obesity in healthy individuals above the age of 55.

**Method:** 766 healthy participants with no underlying diseases were included in the





study. Body composition was assessed using a BIA device, and food intake was evaluated using an intake questionnaire and a three-day recall method. The dietary data were analyzed based on USDA2019 guidelines.

**Result:** From the population, nine (3.1%), 284 (37%), 290 (37.7%) and 183 (18.2%) were underweight, Normal, overweight, and obese. There was no difference in age between the groups, but obesity and overweight were more prevalent in females ( $p < 0.001$ ). Significant differences were found in body composition, particularly in skeletal muscle mass (SMM), percentage of SMM, and muscle-free fat-free mass ( $p < 0.001$ ). This indicated muscle loss in the population. Blood pressure did not differ between the groups. Net energy intake was significantly lower in underweight individuals compared to all other groups ( $p = 0.006$ ). However, normal, overweight, and obese individuals had similar energy intake. The estimated energy intake based on recorded recall did not include under or overestimation. Lifestyle factors were found to have a greater impact on obesity than energy intake, except in Model 3. The regression decision tree model suggested that energy per kilogram of body weight was a better predictor of obesity in males, while fat-free mass played a key role in females. The study also indicated that 30 and 25 Kcal/kg body weight were required to maintain body weight in obese and normal weight individuals, respectively.

**Conclusion:** Normal, overweight, and obese individuals had similar energy intake. Lifestyle factors were found to have a greater impact on obesity. The study highlighted the importance of body composition as predictor of obesity that higher dietary intake.

**Keyword:** Obesity, Body composition, underlying diseases

### **The association of dietary acid load with non-alcoholic fatty liver disease among Iranian adults**

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**Introduction:** Risk factors for non-alcoholic fatty liver (NAFLD) are associated with Acid-base status, which is influenced by the dietary acid load (DAL). Data on the association between DAL and NAFLD are scarce and controversial. The aim of the current study was to investigate the association between DAL and NAFLD surrogates among Iranian adults.



**Method:** This cross-sectional study was carried out on 6531 individuals aged 35-65 years, who were recruited from MASHAD study. A validated food frequency questionnaire (FFQ) was used to assess dietary intakes of the participants. DAL was estimated using the DAL score which is calculated using potential renal acid load (PRAL) and body surface area. NAFLD surrogates included alanine transaminase (ALT), triglyceride/high-density lipoprotein cholesterol (Tg-HDL), aspartate aminotransferase to Platelet Ratio Index (APRI), triglyceride-glucose (TyG) index, Triglyceride Glucose-Waist Circumference (TyG-WC), and Triglyceride Glucose-Waist Circumference- Body mass index (TyG-BMI). Multivariable ordinal logistic regression was applied to determine the association between DAL and NAFLD surrogates.

**Result:** Except for LAP, other NAFLD surrogates were significantly higher in the highest tertile of DAL compared to the lowest, with a significant increasing trend. In the crude model, a significant positive association was observed between ALT, Tg-HDL, APRI, TyG, TyG-WC, and TyG-BMI with DAL ( $p < 0.05$ ). In the fully adjusted model, a significant relationship was only observed between TyG and TyG-WC with DAL (OR=1.16, 95% CI: 1.04-1.30, and OR=1.69, 95% CI: 1.51-1.90, respectively).

**Conclusion:** There is a significant association between dietary acid load and NAFLD surrogates including TyG and TyG-

WC. Among NAFLD surrogates, TyG-WC had the strongest association with DAL.

**Keywords:** Dietary acid load (DAL), Diet, Acids, Non-alcoholic fatty liver disease (NAFLD), Iranian adults, Adult.

### The relationship between age of first Ramadan fasting and renal functions in patients with chronic kidney disease

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**Introduction:** The age of first Ramadan fasting may affect kidney function. Information on the relationship between renal functions and the age of first Ramadan fasting in patients with chronic kidney disease (CKD) are rare and controversial. This study aims to assess the association



between the age of first Ramadan fasting and renal function in the patients with CKD.

**Method:** This retrospective cohort study was conducted on 8725 people engaged from MASHAD cohort study. Kidney function was evaluated using parameters including estimated glomerular filtration rate (eGFR), blood urea nitrogen (BUN) and creatinine (Cr). A reliable and validated questionnaire consisting of 16 items was utilized to evaluate Ramadan fasting. CDK was defined on the basis of the guidelines set out by the National Kidney Foundation, eGFR < 60 ml/min/1.73 m<sup>2</sup>.

**Result:** A significant positive relationship was observed between the age of first Ramadan fasting and GFR, (p-value<0.001). In the multivariate regression, following adjustment for age, sex, marriage and job, the relationship between age of first Ramadan fasting and eGFR remains significant (p-value<0.001). However, a rise in the age of first Ramadan fasting was associated with a significant increase in eGFR level (p-value<0.05). Conclusion: A significant and positive relationship was observed between the age of first Ramadan fasting and eGFR. This study suggests that starting fasting at an older age, is associated with improved kidney function in adulthood.

**Keywords:** CKD, fasting, Ramadan, Age of Onset, kidney function tests

### **Ramadan fasting meal distribution among patients with chronic kidney disease**

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**Introduction:** Fasting in the Ramadan lunar month is one of the main principles of the Islamic faith. Muslims are required to strictly avoid eating and drinking during the fasting period. During Ramadan, two main meals are usually consumed each day: Sahar, which is served before dawn, and Iftar, which is consumed after sunset. Therefore, during this month, meals, sleep time and lifestyle change. This study investigates Ramadan fasting meal distribution among patients with chronic kidney disease (CKD).

**Method:** This retrospective cohort study was conducted on 8725 subjects recruited from MASHAD study. Ramadan fasting was investigated using a 16-item questionnaire, which was classified based on the basic information of Ramadan fasting and nutritional habits. CDK was defined on the basis of the guidelines set out by the National Kidney Foundation, estimated glomerular



filtration rate (eGFR) < 60 ml/min/1.73 m<sup>2</sup>. Participants were categorized into three groups based on eGFR levels namely eGFR ≥60 mL/min per 1.73 m<sup>2</sup>, eGFR=60–89 mL/min per 1.73 m<sup>2</sup>, and eGFR <15 mL/min per 1.73 m<sup>2</sup>. A comparison was made between groups based on how their meals were distributed.

**Result:** It was found that generally 88% of the subjects who experienced fasting in Ramadan ate Iftar, 7% of the subjects consumed both Sahar and Iftar. 1% of the respondents consumed both Iftar and dinner and 2% of fasting individuals received three meals including Sahar, Iftar, and dinner. Participants in all groups of eGFR did not differ significantly in their distribution of meals during Ramadan fasting (P=0.18).

**Conclusion:** The results of this study shows that meal distribution has no association with kidney function in CKD patients.

**Keywords:** Kidney Diseases, Fasting, Meals, Ramadan, CKD

## Analysis of some food additives, safety, and organic foods

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**Introduction:** Food additives are substances that are added to food during production, processing, storage or packaging in order to improve or maintain the nutritional value, reduce waste, increase consumer acceptance, simplify the industry and production, etc. Food additives include

preservatives, emulsifiers, thickeners, food supplements, essential oils, artificial colors and flavors.

**Method:** The food industry, today and within a few years, in order to improve the desired characteristics

It uses a variety of additives and preservatives in the food industry, which unfortunately are harmful for the blind and teenagers.

**Result:** According to the recent research of researchers, the consumption of these additives and preservatives has caused problems and complications in people. It has led to restlessness and mood changes in children and teenagers.

**Discussion:** considering these issues, the purpose of this review article is to investigate the types of pigments. food, the use of organic foods.

**Keywords:** food additives, organic foods, safety

## Relationship between night eating and depression

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**Introduction:** Depression is the most prevalent mental disorder in the world. Some eating habits such as night eating can be associated with depression. However,



there is not much information about this topic. This study aimed to investigate this hypothesis.

**Method:** A total of 604 adults aged 18 to 65 years old, from different regions of Iran participated in this cross-sectional study. Depression was assessed by the DASS-21 questionnaire. A standard questionnaire for eating habits was used to assess night eating. Logistic regression analysis in crude and adjusted models was applied to evaluate the relationship between night eating and depression.

**Result:** In the crude model, there is no significant association between individuals who had always night eating and those who did not have any night eating for depression (OR: 0.27; 95%CI: (0.06-1.12); P: 0.07). After adjustments for age, BMI, and total Kcal in model 1, a significant association was found between night eating and depression (OR: 0.17; 95%CI: (0.03-0.89); P: 0.03). However, further adjusting in model II for possible confounders such as age, BMI, total Kcal, gender, smoking, menstruation and loss of relatives disappeared association (OR: 0.15; 95%CI:(0.01-1.71); P: 0.13).

**Conclusion:** Night eating and depression were significantly linked in adjustment for age, BMI, and total Kcal. However, this association did not remain stable after further adjustments. More studies, particularly prospective ones are required to confirm these findings.

**Keywords:** depression, night eating, eating habits, mental disorder

## Duration eating and depression: A cross-sectional study of Iranian adults

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**Introduction:** Depression is a serious mental health issue. It can impair various aspects of people's live, including eating habits. The complex relationship between depression and eating behaviors needs a comprehensive understanding. Therefore, this study aims to investigate the association between length of time eating and depression.

**Methods:** In this cross-sectional study, a total of 604 Iranian adults between the ages of 18 and 65 were recruited. Length of time eating was examined using a validated eating habit questionnaire Depression score was assessed using the Iranian validated version of the DASS-21. To determine the association between duration eating and depression Binary Logistic Regression was used in unadjusted and adjusted models.

**Results:** There was no significant association between length eating time (>30 minutes vs. <10 minutes) and depression



(OR 2.18; 95% CI 0.47-10.09; P: 0.31) in the crude model. After adjusting for potential confounders such as age, BMI, and total calorie intake in Model I, this relationship remained non-significant (OR 2.05, 95% CI 0.43-9.71; P: 0.36). Similarly, after further adjustments for potential confounders, including gender, smoking, menstruation, and loss of relatives, this relationship remained non-significant as well (OR 2.12, 95% CI 0.44-10.05; P: 0.34).

**Conclusion:** No significant relationship was observed between the length of time eating and depression in this population. Further prospective studies are needed to confirm these findings, and to explore the possible mechanisms and causal pathways linking length of time eating and depression.

**Keywords:** length of time eating, depression, eating.

## The role of probiotics in the synthesis and metabolic process of folic acid and vitamin B12

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Although most vitamins are available in foods, vitamin deficiencies still occur in humans. Malnutrition and unbalanced dietary habits were resulting vitamin deficiencies. Based on studies probiotics play a role in the synthesis and metabolism of micronutrients. Some probiotics are

auxotrophic for several vitamins, it is now recognized that certain strains can synthesize water-soluble vitamins such as folate and vitamin B12. This review indicated that some types of probiotics such as *Pseudomonas*, *Erwinia*, *Bifidobacter adolescentis*, *Streptococcus thermophilus*, and *Lactobacillus Lactis* are folate-producing microorganisms; *Salmonella typhimurium*, *P. freudenreichii*, *B. megaterium*, Subsp. *Shermanini*, *ps. denitricans*, and *Lactobacillus plantarum* can produce vitamin B12. Many studies have shown that probiotics, including folate-producing bifidobacteria increase the concentration of folate in blood and tissue samples; *Lactobacillus acidophilus* and *L. reuteri* improve serum vitamin and folic acid levels; *Lactobacillus acidophilus* significantly reduce the level of plasma homocysteine and urinary methylmalonic acid. The use of vitamin B12 and folate-producing probiotic strains can be a new special productivity of probiotics since humans cannot synthesize these vitamins and consuming fermented foods with such probiotics provide these vitamins. This study aimed to assess the relationship between probiotics and the synthesis and metabolism of folic acid and vitamin B12; because the proper selection and use of folate and vitamin B12-producing microorganisms is an interesting strategy to increase "natural" folate and vitamin B12 levels in foods and prevention of malnutrition.

**Keywords:** Probiotics, Folic acid, Vitamin B12, Vitamins, fermented foods



## Association between dietary acidity and the odds of abnormality in ST-T segment of electrocardiogram

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**Objectives:** One of the leading causes of death in the world is cardiovascular diseases (CVDs). Abnormalities in ST-T segment of electrocardiogram (ECG) generally could be a sign of coronary ischaemia and is a prognostic factor for CVDs development. The dietary acidity can be considered as a risk for CVDs. In this study we investigated the association between dietary acidity and ST-T segment abnormality in an Iranian community-based adult population.

**Methods:** This cross-sectional study carried out on 6413 CVD-free individuals aged 35-65 as a part of Mashhad stroke and heart atherosclerotic disorder (MASHAD) study. Dietary acidity was determined using Dietary Acid Load (DAL) score that was extracted from a valid 65-item food frequency questionnaire (FFQ). ECGs were

coded using the Minnesota coding system. Multiple logistic regression analysis was performed to determine the association between ST-T changes and DAL.

**Results:** The results showed that although by increasing dietary acidity the chance of ST-T abnormality increases, the association was not statistically significant in the whole population. However, in the fully-adjusted model, higher dietary acidity in older adults (aged>50) was significantly associated with ST-T abnormality (Tertile3 of DAL; OR (95%CI):1.57 (1.02-2.42))

**Conclusion:** This study revealed that although there was no statistically significant association between DAL and ST-T abnormalities in the whole population, a significant positive association was observed among older adults.

**Keywords:** Electrocardiogram, Coronary Disease, Dietary Acidity, ST-T Segment Abnormality, Cardiovascular Diseases

## The impact of oatmeal on weight status and changes: A systematic review

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**Background:** The relationship between



oatmeal consumption and its impact on weight status or changes in both adults and children has garnered significant interest due to concerns about obesity and the need for evidence-based dietary interventions. However, the existing body of literature on this topic remains inconclusive and lacks a comprehensive synthesis of evidence. Therefore, this systematic review aims to address this gap by exploring the available studies in order to provide a more comprehensive understanding.

**Methods:** To conduct a thorough investigation, we performed a comprehensive search of relevant literature in databases such as PubMed, Scopus, and Web of Science, utilizing various keywords such as 'oatmeal' OR 'oat porridge' AND 'body weight' OR 'weight' OR 'waist circumference' OR 'BMI' OR 'body mass index' OR 'body composition', up until July 2023. In addition, two independent reviewers screened the titles and abstracts, resulting in the identification of six relevant articles.

**Result:** The findings of these studies are mixed. While some cross-sectional studies reported significant associations between oatmeal consumption and reduced weight, BMI, or waist circumference, the results from randomized controlled trials were inconsistent and did not consistently demonstrate significant changes in weight. Although several promising articles have examined the effectiveness of oats in weight management, and oatmeal offers numerous

nutritional benefits and serves as a versatile meal option, its direct link to significant weight loss requires further investigation.

**Conclusions:** Overall, this systematic review highlights the need for additional research to establish a clearer understanding of the relationship between oatmeal consumption and its effects on weight status. By filling this knowledge gap, we can provide more informed guidance to individuals seeking effective dietary interventions for weight management.

**Keywords:** oatmeal, weight, BMI

## **Folic acid supplementation prevents brain injury and cognitive decline in experimental hypothyroidism**

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**Background:** Folic acid (FA) is a member of vitamin B family that are essential for human health and development. Folic acid supplementation reportedly has health-promoting effects as it prevents various diseases, such as metabolic diseases and dementia or memory impairment. FA deficiency disrupts hippocampal plasticity and leads to cognitive deficits in hippocampus-dependent spatial memory performances. On the other hand, thyroid hormones (Ths) including thyroxine (T4) and triiodothyronine (T3) are very important for developmental and play a key role in neuronal maturation, migration,





differentiation, and signaling. These disorders during development and adulthood can lead to serious clinical problems including cognitive dysfunction. Hence, hypothyroidism is one of the most common diseases that lead to cognitive impairment and also FA deficiency is one of the most important dietary health problems worldwide. Aim: The above-mentioned hypothesis was examined in hippocampal rats, and its mechanism was explored.

**Methods:** Rats were orally given propylthiouracil (0.05% in drinking water) as well as were fed with FA (5, 10, 15 mg/kg, oral gavage) during 7 weeks. Finally, behavioral performance including spatial memory and passive avoidance was evaluated. Following that, oxidative stress indicators and cholinergic function of brain tissue were investigated.

**Results:** The impairing effect of hypothyroidism on cognitive performance was markedly alleviated by FA administration especially at the higher doses. The rats fed with FA spatial memory and passive avoidance performance were improved ( $p < 0.05$ - $p < 0.001$ ). Besides, FA attenuated Acetylcholine activity and malondialdehyde level while increasing activity of superoxidase dismutase enzyme and total thiol content in hippocampal tissue ( $p < 0.05$ - $p < 0.001$ ).

**Conclusions:** Folic acid supplementation may improve markers of the antioxidative defense system and brain function dysregulated hypothyroid.

**Keywords:** Folic acid supplementation, Cognitive performance, health-promoting effects, hypothyroidism

### **A healthy diet, physical activity, or either in relation to cardiovascular and all-cause mortality: A prospective cohort study**

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**Objective:** The aim of our study was to compare four lifestyles including, healthy diet low activity, unhealthy diet high activity, unhealthy diet low activity, and healthy diet



high activity in relation to the risk of CVDs and all-cause mortality.

**Method:** A total of 6504 adults with the age of 35 year and older were recruited to participate in Isfahan Cohort Study (ICS), and followed for 17 years. Diet was assessed using a validated 48-item food frequency questionnaire and quality of diet was assessed using dietary quality index (DQI). Physical activity (PA) was evaluated using The International Physical Activity Questionnaire. The primary outcomes were CVDs and all-cause mortality. Cox proportional hazards regression was used to calculate the hazard ratio (HR) and the 95 % confidence interval (CI).

**Result:** During 771440 person-year of follow-up, 390 and 147 deaths were occurred due to all-cause and CVDs. High PA either with a healthy or unhealthy diet was associated with a lower risk of death from CVDs (HR=0/43, 95% CI: 0.26-0.69; HR=0.32, 95% CI: 0.18-0.56, respectively) and also all-cause (HR=0.53, 95% CI: 0.39-0.71; HR=0.5, 95% CI: 0.36-0.68). Moreover, type of PA was important; such that when leisure time PA (LTPA) was considered, none of the lifestyles was associated with the lower risk of CVDs and all-cause mortality. However, for occupational PA,

**Conclusion:** Having a high PA (total or occupational), with or without adhering a healthy diet, is associated with a lower risk of death from any cause and CVDs. While, LTPA irrespective of adhering a healthy diet or not was not associated with a lower risk

of all-cause and CVDs mortality. the result was the same as the total PA.

**Keywords:** healthy diet, unhealthy diet, physical activity, cardiovascular mortality, All-cause mortality, Cohort Studies

## **Association between chewing food and depression, anxiety, stress and sleepiness**

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**Objectives:** High prevalence of depressive symptoms is problem affecting public health and the role of food chewing in these symptoms is still debatable. Aim of our present study was to assess the association of the chewing rate of food with depressive disorders including depression, anxiety and stress and sleepiness among Iranian adult population.

**Methods:** In this cross-sectional study chewing food was evaluated among 604 Iranian adult participants with 18-65 years of age from different areas of country by a validated food frequency questionnaire. Individuals with higher rate of chewing food had lower body mass index (BMI) but higher energy intake. The depression, anxiety and stress Scale-21(DASS-21) were used to assess these disorders and Epworth Sleepiness Scale (ESS) was used to measure



the sleepiness. The association between chewing food with sleepiness and the mentioned disorders was evaluated using logistic regression.

**Results:** Our results have shown that participants with higher rate of chewing food had lower BMI and higher energy intake compared to those with lower rate. Individuals in higher tertile of chewing food had 59% lower sleepiness in crude model (OR= 0.41, 95%CI: 0.21-0.79; Pvalue=0.008) but the significance was disappeared after adjusting for confounder variables. However, no significant associations were found between the rate of chewing food with depression, anxiety and stress in crude and adjusted models.

**Conclusion:** Higher rate of chewing food was inversely associated with feeling sleepy among Iranian adult population in crude model but depressive symptoms were not significantly different between various tertiles of chewing food.

**Keywords:** psychological disorders, sleepiness, cross-sectional, depression, chewing food

## **Estimating the risk of cardiometabolic diseases and identifying related factors among the staff of Mashhad University of Medical Sciences**

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**Objectives:** Cardiovascular diseases (CVD) are considered as the first cause of death worldwide, 17.9 million people die from CVD every year. People at risk of CVD show manifestations such as hypertension, increase in blood glucose and lipids, as well as overweight, obesity and metabolic syndrome. Metabolic syndrome (MetS) is a cluster of co-occurring metabolic abnormalities that increase the risk of cardiovascular disease and type 2 diabetes by 2-fold and 5-fold, respectively. Recent studies show that not all foods rich in animal protein are the same. So that fish and dairy products are associated with a decrease in the risk of cardiometabolic factors, while red meat is associated with an increase in the risk of cardiometabolic factors.

The purpose of this study is to estimate the risk of cardiometabolic diseases and identify related factors among the employees of Mashhad University of Medical Sciences

**Materials & Methods:** The present study was conducted in 2 phases in the Persian cohort of Mashhad. In the first phase, the effect of each variable on the risk factors of cardiometabolic diseases was investigated. Then, in the second phase of the study, the effect of replacing red meat intake with other protein sources (including: chicken, fish, eggs, dairy, beans and nuts) was determined on the desired outcomes, i.e. the risk factors of cardiometabolic diseases.



**Results:** The prevalence of cardiovascular disease in the studied population is 18%. By reducing red meat and replacing it with dairy products and especially nuts, the risk of cardiovascular disease increases up to 7% according to the amount of replacement. While reducing red meat and replacing it with fish, chicken, eggs and some legumes, the risk of cardiovascular disease decreases by 6% according to the amount of replacement.

**Conclusion:** Replacing red meat with eggs is very beneficial for reducing the risk of cardiovascular disease. And replacing red meat with chicken, fish and beans can be useful.

**Keywords:** Replacement, Meat intakes, Other protein sources intake, Cardiometabolic risk, Cardiovascular diseases

### **Association of lutein with apoptosis in cancer: A systematic review**

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**Introduction:** Lutein is one of several carotenoids that are found in many fruits and vegetables, and has antioxidant, anti-inflammatory, and anti-cancer properties. This study aimed to comprehensively review existing studies on the interactions between

lutein and apoptosis in this disease and to achieve general results.

**Method:** A comprehensive literature search was conducted using the keywords "cancer or tumor or neoplasm or carcinoma" and "lutein" in the title/abstract of multiple databases, such as PubMed, Science Direct, Cochrane Library, Web of Science, Scopus, Google Scholar, and Google from the beginning until February 17, 2022.

**Results:** The review of 50 included studies showed that lutein induced apoptosis (18:18).

**Conclusion:** According to this review, lutein may prevent cancer progression by inducing apoptosis through different mechanisms.

**Keywords:** Lutein, cancer, neoplasm, apoptosis, systematic review

### **The association between parental cardiovascular health status and the risk of obesity in their offspring: Tehran Lipid and Glucose Study**

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**Background and Aims:** Little is known about the association of parental cardiovascular risk factors with the risk of obesity in their offspring. We aimed to investigate whether parental ideal cardiovascular health (ICVH) status was associated with the risk of general and central obesity in their offspring young/adult offspring.

**Methods and Results:** Of individuals who participated in 2012-15 phase of the Tehran Lipid and Glucose Study, 2395 pairs of parent-unmarried offspring aged  $\geq 6$  years were selected in this cross-sectional study. General and central obesity were defined based on Iranian BMI percentile reference data for offspring aged  $\leq 18$  years. For subjects aged  $\geq 19$  years, central obesity was defined based on the introduced cut-off points for Iranian adults. We employed the American Heart Association's 2020 impact goal criteria of ICVH.

The mean $\pm$ SD age of fathers and mothers were respectively 55.4 $\pm$ 9.79 and 48.4 $\pm$ 9.88. About 55% of offspring were older than 19 years. Higher adherence to ICVH score in mothers was associated with lower risk of overweight/obesity in female offspring (OR for Q1-Q4: 1, 0.56, 0.57, 0.37,  $P < 0.05$  for all quartiles). Among ICVH components, only ideal BMI status in fathers was observed to be associated with lower risk of overweight/obesity in their male offspring.

The risk of abdominal obesity decreased in female offspring with increasing total ICVH score in mothers.

**Conclusion:** Higher adherence of parents to ICVH and its components positively associated with lower risk of general and abdominal obesity in their offspring. Our findings demonstrate that maternal-offspring relationship was stronger than paternal-offspring association.

**Keywords:** Obesity, Central obesity, Children, Parents, Father, Mother, Offspring, Ideal cardiovascular health status

### Exploring the relationship between family meals and depression

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**Introduction:** The prevalence of depression has been steadily increasing in recent years, highlighting the need to identify protective factors and potential interventions. Family meal has been recognized as a potential protective factor for various mental health outcomes. However, limited research has investigated the relationship between consuming meals with family members and depression. This study aimed to examine the relationship between consuming meals with family members and depression.



**Materials and Methods:** This cross-sectional study was conducted on 604 Iranian adults aged 18-65 years and a mean age =33.8. The Participants reported their demographic data and completed self-report measures, including the DASS-21 questionnaire for depression symptoms and a valid questionnaire for family meals eating. To investigate the relationship between eating meals with family members and depression logistic regression analysis in crude and adjusted models.

**Results:** The crude model showed there was no significant difference in the odds of depression between individuals who reported "always" eating with family members and those who claimed to "never" eat with family members (OR: 1.03; 95% CI: 0.66-1.59; P: 0.88). Despite the range of potential confounding factors, including age, BMI, gender, smoking, menstruation, and loss of relatives, the findings did not demonstrate a statistically significant association (OR: 0.77; 95% CI: 0.44-1.34; P: 0.36).

**Conclusion:** This study found no significant evidence to support the association between eating meals with family members and depression. Future studies should continue to explore the complexities of familial dynamics and their impact on mental health outcomes.

**Keywords:** eating, family, depression, meals, adults

### **Association of modified NUTRIC score with required and received energy and protein and nutritional adequacy in critically ill patients**

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**Introduction:** Malnutrition is a common problem in the general hospitalized population and critically ill patients admitted to an intensive care unit (ICU). Several studies have confirmed a strong positive correlation between nutritional adequacy and 28-day mortality in patients with high mNUTRIC score. The present study aimed to determine the nutritional status of patients admitted to the ICU and its relation with required and received energy and protein and nutritional adequacy.

**Method:** We performed a cross-sectional study on 426 adult patients admitted to ICU between March 2019 and February 2020 who stayed more than 24 hours in the ICU. The mNUTRIC score based on medical records, energy and protein requirements, clinical outcomes, and laboratory parameters of the patients were recorded. Required energy and protein were calculated through instructions. Also, energy intake adequacy (amount of energy intake for 5 days ÷ amount of energy prescribed for 5 days) × 100 and protein intake adequacy (amount of protein intake for 5 days ÷ amount of protein prescribed for 5 days) × 100 were calculated and patients were divided into two groups: adequate nutrition (energy adequacy ≥70%) and inadequate nutrition (energy adequacy <70%).

**Result:** There was a significant difference in daily and 5 days protein requirement (P<0.001) between high and low score groups in which those with lower scores of mNUTRIC had high protein requirements. We did not observe any significant



difference in daily and 5-day energy requirements.

**Conclusion:** We did not find an association between mNUTRIC score and required and received energy and protein and nutritional adequacy. Among the clinical outcomes, only the number of days without mechanical ventilation increased in the group of patients with enteral feeding.

**Keywords:** intensive care units, critical illness, NUTRIC score

### **Association between the frequency of breakfast consumption and the risk of depressive symptoms among adults**

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**Introduction:** Skipping breakfast can be potentially harmful because breakfast consumption is regarded as one of the important health-related behaviors. As the rate of depression is increasing day by day, an estimated 3.8% of the population experience depression, this study investigated the association between the frequency of eating breakfast and depression in adults.

**Methods:** A total of 604 adults aged 18 to 65 years old and a mean age of 33 were recruited from different regions of Iran. A

Persian translation version of the DASS-21 questionnaire was used to assess depression scores. Frequency of eating breakfast assessed by a valid eating habits questionnaire. To assess the relationship between breakfast frequency and depression used logistic regression analysis in crude and adjusted models.

**Results:** In the crude model, individuals who consumed their breakfast “never or once a week” did not have a different chance for depression compared with those who ate breakfast “every day” (OR: 1.11; 95%CI:(0.62-1.99); P: 0.70). In model I, this relationship was also not significant after adjustment for age, body mass index (BMI) and total Kcal, (OR: 1.04; 95%CI: (0.55-1.95); P: 0.88). Association remained not significant in Model II after additional adjusting for gender, smoking, menstruation and loss of relatives (OR: 1.37; 95% CI: (0.67-2.77); P: 0.38).

**Conclusion:** No significant relationship was observed between the breakfast frequencies with depression in this population. Further prospective studies are needed to confirm these findings.

**Keywords:** breakfast, breakfast frequency, depression, adults, dietary habits

### **Zinc oxide effects on normal and cancerous ovarian cells: Dual action**

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**Background:** Zinc contributes to wide ranges of cellular functions and metabolisms including gene expression, providing the synthetic requirements, altering cell proliferation, migration and apoptosis. As there are controversial findings on zinc effects on ovarian cell proliferation and apoptosis, this review aims to summarize available evidences in this regard.

**Method:** Databases including PubMed, MEDLINE, EMBASE and Web of Science were searched until January 10th, 2023.

**Findings:** Based on experimental studies, zinc oxide Nano particles (ZnO-NPs) could induce cytotoxicity in the maturing oocyte by activating autophagy and apoptosis in a caspase-dependent manner and could induce oxidative stress by generating reactive oxygen species (ROS) that elevated the mutated ovarian t-P53 protein. ZnO-NPs create a suitable necrotic environment and follicular developmental retardation that alter oocyte ovulation and reduces fecundity of female zebrafish. CIZAR; a zinc-citrate compound increases the expression of p21waf1 which is a part of p53-independent pathway and induces reduction of telomerase activity. CIZAR induces

apoptosis of OVCAR-3 (human epithelial ovarian cancer cell line) cells by activation of caspase-12 and caspase-3 pathway which is important in normal cell development.

**Conclusion:** Few pre-clinical studies reported that zinc deficiency has strong effects on Ovarian cell apoptosis. ZnO-NPs could induce cytotoxicity in the maturing oocyte while it can induce acute oxidative and proteotoxic stress in ovarian cancer cells leading to their death via apoptosis. More clinical and pre-clinical studies are needed to assess the effect of Zinc supplementation on ovarian cell development or adjacent therapy in ovarian cancer.

**Keywords:** Zinc, Ovarian cell, Apoptosis, Proliferation

## **The effects of non-nutritive sweeteners on blood pressure in adults: A systematic review and meta-analysis of randomized controlled clinical trials**

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**Introduction:** Non-nutritive sweeteners (NNSs) are widely used as sugar substitutes





by people; meanwhile, their effects on various aspects of health are still controversial. Previous studies have reached different conclusions about the effects of NNS on blood pressure. This systematic review and meta-analysis aimed to determine whether NNS consumption affects resting systolic and diastolic blood pressure in human adults.

**Method:** We searched electronic databases, including PubMed, Scopus, ISI Web of Science, and Google Scholar, up to May 2023 and identified relevant controlled clinical trials. We used a random-effects model to calculate the overall effects. The methodological quality of the included articles was evaluated using the Cochrane Collaboration tool.

**Result:** The meta-analysis of fourteen clinical trials showed that NNS consumption significantly reduced SBP (WMD = -4.68, 95% CI: -7.81, -1.55;  $P < 0.001$ ) and DBP (WMD = -3.06, 95% CI: -5.67, -0.45;  $P = 0.02$ ). The results of subgroup analysis showed that the consumption of artificial sweeteners for more than 13 weeks significantly reduced the level of systolic blood pressure (WMD = -5.75 (mmHg), 95% CI: -9.68, -1.82,  $P < 0.001$ ). The mean difference of DBP was significantly reduced when artificial sweeteners were compared with sugar-sweetened beverages as control (WMD = -3.25 (mmHg), 95% CI: -5.70, -0.79,  $P = 0.01$ ) and among participants with hypertension (WMD = -5.91 (mmHg), 95% CI: -11.23, -0.59,  $P = 0.03$ ).

**Conclusion:** Non-nutritive sweetener consumption might be beneficial in improving SBP and DBP, especially when compared with SSB.

**Keywords:** non-nutritive-sweeteners, systolic blood pressure, diastolic blood pressure

## The association between Ramadan fasting during life and depression

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**Background:** Ramadan fasting is a type of intermittent fasting that is one of the religious rituals of Muslims all over the world. Depression is a mood-related disease that affects a person's way of thinking, decision-making, and activities. The association of Ramadan fasting on physical and mental health, including depression, have been investigated in some previous studies. Therefore, this study also investigates the relationship between fasting during Ramadan and depression.



**Method:** This study was a retrospective cohort study based on the data of the MASHAD (Mashhad stroke and heart atherosclerotic disorder) study. Depression was measured using Beck's depression inventory II (BDI II). Telephone interviews were conducted to obtain responses to a validated Ramadan fasting questionnaire. The study subjects included 3 groups including Group 1: healthy individuals, Group 2: subjects who developed depression during the 10-year follow-up (Dep1-, Dep2+), and Group 3: subjects who were depressed since the study was began during the 10-year study (Dep1+, Dep2+).

**Result:** Finally, 8388 participants enrolled the study. The results of the study showed that there was no significant relationship between fasting during life and fasting in Ramadan and the occurrence of depression (P-value>0.05). Moreover, there was no significant relationship between mothers' fasting during the fetal period and the incidence of depression (P value>0.05). The results of the study also reported a significant relationship between fasting in other months and the age of first Ramadan fasting (P-value = 0.008 and P-value < 0.001, respectively).

**Conclusion:** Fasting during the holy month of Ramadan did not affect the occurrence of depression in the participants of the study, but the age at which fasting began had a significant inverse relationship with the occurrence of depression, so the older the

age at which fasting began, the lower the chance of depression.

**Keywords:** Depression, Ramadan fasting, association

## **The effect of supplementation with ginger on neurofilament light polypeptide, matrix metalloproteinase-9, interleukin-17, quality of life, and disability status in patients with relapsing-remitting multiple sclerosis: A randomized controlled trial**

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**Objectives:** In vivo and in vitro studies have suggested that ginger administration may be beneficial for patients with relapsing-remitting multiple sclerosis (RRMS). Nevertheless, to the best of our knowledge, no randomized controlled trial has been conducted on this topic. Therefore, we sought to investigate the effect of ginger supplementation on quality of life, disability status, neurofilament light polypeptide (NF-L), matrix metalloproteinase-9 (MMP-9),



and interleukin-17 (IL-17) in RRMS patients.

**Materials and Methods:** This study was a 3-month double-blind randomized controlled trial with a 3-week run-in period. The intervention (n = 26) and control (n = 26) groups received 1500 mg/d ginger and placebo (corn) tablets, respectively. Quality of life was assessed by the Multiple Sclerosis Impact Scale (MSIS-29). Disability status was evaluated by the Expanded Disability Status Scale (EDSS). Serum concentrations of NF-L, MMP-9, and IL-17 were measured by the enzyme-linked immunosorbent assay method. All outcomes were assessed at the beginning and end of the trial and analyzed by the intention-to-treat approach.

**Results:** In comparison with the control group, ginger supplementation caused a significant reduction in MSIS-29 psychological subscale ( $-15.71 \pm 19.59$  vs.  $6.68 \pm 10.41$ ,  $P < 0.001$ ), MSIS-29 physical subscale ( $-8.15 \pm 15.75$  vs.  $4.23 \pm 8.46$ ,  $P = 0.001$ ), EDSS ( $-0.54 \pm 0.58$  vs.  $0.08 \pm 0.23$ ,  $P < 0.001$ ), NF-L ( $-0.14 \pm 0.97$  vs.  $0.38 \pm 1.06$  ng/mL,  $P = 0.049$ ), and IL-17 ( $-3.34 \pm 4.06$  vs.  $1.77 \pm 6.51$  ng/L,  $P = 0.003$ ). However, the between-group difference in MMP-9 was not statistically significant.

**Conclusion:** Supplementation with ginger may be a safe and effective adjuvant therapy for RRMS patients.

**Keywords:** Ginger, Multiple sclerosis, Randomized controlled trial, Neurofilament light polypeptide, Interleukin-17

## Well-known diets are associated with improved total antioxidant content of human breast milk and infant urine

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**Introduction:** Breast milk (BM) is a complex fluid with a variable composition within women over time and between women in the population. The BM components are related to maternal lifestyle factors, such as nutritional status and diet. This study aimed to investigate the association between well-known dietary patterns such as the DASH (Dietary approach to stop hypertension), Mediterranean, and LCD (low carbohydrate diet) and the total antioxidant content of BM and infant urine.

**Methods:** We collected 700 milk urine samples obtained from 350 lactating women and their infants. The dietary intakes of the mothers were recorded using a validated 65 items-food frequency questionnaire (FFQ). The total antioxidant status of the samples was assessed using the ferric reducing/antioxidant power (FRAP), the 1, 1-diphenyl-2-picrylhydrazyl (DPPH), thiobarbituric acid reactive substances (TBARS), and thiol quantification assays. Milk protein, calcium, and triglyceride (TG)



were also determined using standard biochemical kits.

**Results:** Individuals in the 3rd tertile of adherence to the DASH and Mediterranean diet (highest adherence) consumed more dietary fiber, fruits, vegetables, nuts, legumes, and seeds, low-fat dairy, whole grain, less red and processed meat, sweetened beverages, and sodium than those in the first tertile (lowest adherence). After adjustment for potential confounders, the individuals in the highest tertile for DASH and MedDiet score had a significantly higher level of milk DPPH, and infant urinary DPPH than the lowest tertile and had a significantly higher level of milk protein, FRAP and infant urinary FRAP compared to the T2 ( $P < 0.05$ ). In addition, the mothers in the T3 for the MedDiet pattern had a significantly lower level of milk TG compared to those within the T1 ( $P < 0.05$ ). Multivariate linear regression analyses indicated that a higher score of the LCD pattern was associated with a higher level of milk thiol, protein, and a lower level of milk MDA ( $p < 0.05$ ).

**Conclusion:** Our study showed that high adherence to the Med and DASH diet was associated with higher BM DPPH and calcium levels and lower amounts of BM MDA and triglyceride. Adherence to healthy dietary pattern improves the quality of BM in lactating women. Furthermore, LCD as defined by a low level of carbohydrates in daily food intake, is linked with improved

BM quality and markers of oxidative stress in infant urine.

### **Association of depression score with the age and season of first Ramadan fasting experience**

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**Background:** Ramadan is a holy month that is mandatory for Muslims all over the world and they practice it for 1 month. Depression is a kind of mood disorder that affects human's wellbeing. Ramadan fasting has different influences on human body as shown in studies therefore this article investigates the association of depression score with the age and season of first Ramadan fasting experience.

**Method:** This is a cohort study based on the population of the MASHAD study. Depression was measured using Beck's depression inventory II (BDI II). Telephone interviews were operated to obtain responses to a validated Ramadan fasting



questionnaire. This study consists of 3 groups: A group of healthy people, A group of people who developed depression during the 10-year follow-up (Dep1-, Dep2+), and the third group of people who had depression during the 10-year study (Dep1+, Dep2+).

**Result:** A total of 8388 subjects completed the study. Multivariable logistic regression showed that increasing fasting age decreases the chance of depression (P-value < 0.05). Furthermore, increasing the years of fasting also reduces the chance of depression in Dep1-, Dep2+ and Dep1+, Dep2+ (P-value = 0.001 and 0.000 respectively). Regarding the season of fasting, it was also found that in individuals who were suffering from depression in both phases of the study; fasting in all of the seasons had no significant relationship with depression (P-value > 0.05).

**Conclusion:** Fasting in the holy month of Ramadan showed a significant and inverse relationship with the incidence of depression in terms of the age at which fasting began and also the years of fasting, so that increasing the age of starting fasting and increasing the number of years of fasting leads to a decrease in depression incidence but the season in which fasting was done did not show any significant relationship with the incidence of depression.

**Keywords:** Depression score, Ramadan fasting, Season, Age

## Adherence to a mediterranean diet style and psychological distress and quality of life in young women

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**Introduction:** A Mediterranean diet (MD) meets several important criteria for a healthy diet. This dietary pattern may be beneficial for psychological function. The aim of this study was to investigate the relationship between the adherence to MD and psychological performance in young women.

**Methods:** The study included 181 volunteers with an average age of 20.8±1.7 years. Neuropsychological performance was assessed using a number of standard instruments, including Cognitive Ability Questionnaire (CAQ), Depression Anxiety Stress Scales (DASS-21), Insomnia Severity Index (ISI), Epworth Sleep Scale (ESS) and Quality of Life Questionnaire (QLQ). A validated food frequency (FFQ) questionnaire, that included 65 types of foods, was used to evaluate the amount of different food types consumed.

**Results:** The individuals in the lowest quartile for the MD pattern had a significantly higher prevalence of a high stress score, poorer quality of life, and higher degrees of insomnia and sleepiness during



the day than the highest quartile. Linear regression showed an inverse relationship between fruit consumption and stress scores ( $\beta = 0.012$ ;  $p = 0.022$ ) and a direct relationship with quality of life ( $\beta=0.005$ ;  $p=0.043$ ). The monounsaturated fatty acid (MUFA)/Saturated fatty acids (SFA) ratio was negatively related to the insomnia score ( $\beta=53.0$ ;  $p=0.043$ ). Dairy products were significantly associated with stress scores ( $\beta = 0.011$ ;  $p=0.035$ ). Dietary meat products were also directly related to stress and insomnia scores ( $\beta = 0.021$ ;  $P = 0.049$  and  $\beta = 0.015$ ;  $P = 0.049$ , respectively) and reversely associated with a score of cognitive abilities ( $\beta = -0.034$ ;  $P = 0.032$ ).

**Conclusion:** Adherence to a MD is associated with a lower degree of stress, insomnia and daytime sleepiness, as well as higher quality of life.

### **The association between dietary phytochemical index with sleepiness and sleep quality applying the pittsburgh sleep quality index in Iranian adults: A cross-sectional study**

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**Objectives:** Excessive sleepiness is a common problem that can affect your health

and quality of life. High intakes of phytochemical-rich foods might have beneficial effects on sleep quality. This paper examines the association between dietary phytochemical index (DPI) and sleep quality in adults.

**Materials and Methods:** In this cross-sectional study, we included 604 students and their families aged over 18 years who were living in different cities in IRAN. We used a valid and reliable food frequency questionnaire (FFQ), for assessment of dietary intake. DPI was calculated as [dietary energy deduced from phytochemical-rich foods (kcal)/total daily energy intake (kcal)]  $\times$  100. Epworth Sleepiness Scale (ESS) was used for day somnolence assessment. The Pittsburgh Sleep Quality Index (PSQI) was used to estimate the quality of sleep. To analyze the relation between DPI and sleep quality, Logistic regression was used in crude and adjusted models.

**Results:** The prevalence of daytime sleepiness and poor sleep quality were 19 and 24.2 percent, respectively. There was no significant association between DPI and odds of sleepiness (OR: 1.09; 95% CI: 0.60-1.96,  $P = 0.76$ ). No significant association was found between DPI and poor sleep quality (OR: 0.65, 95% CI: 0.39-1.09;  $P=0.1$ ).

**Conclusions:** Our analysis found no significant link between DPI and sleep quality. Further studies are needed to clarify these findings.

**Keywords:** Dietary phytochemical index, sleepiness, Adults DPI was calculated as



(salutary energy deduced from phytochemical-rich foods (kcal)/ total diurnal energy input (kcal))  $\times$  100. Epworth Sleepiness Scale (ESS) was used for day somnolence assessment.

### **Effects of ginger supplementation on complete and differential blood count and nitric oxide in patients with multiple sclerosis: A double-blind randomized placebo-controlled trial**

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**Objectives:** Ginger has antioxidant, anti-inflammatory, and immunomodulatory properties. Nitric oxide (NO), as a biomarker of oxidative stress, and neutrophil to lymphocyte ratio (NLR), as a biomarker of inflammation, are found at higher than normal levels in patients with multiple sclerosis (MS). Therefore, for the first time, we assessed the effect of ginger supplementation on complete and differential blood count and NO in MS patients.

**Materials and Methods:** The present study was a 12-week double-blind parallel randomized controlled trial with a 3-week run-in period. The intervention (n = 26) and control (n = 26) groups received 500 mg

ginger and placebo (as corn) supplements 3 times a day along with main meals, respectively. At the beginning and end of the study, complete and differential blood count were determined by Sysmex XP-300™ automated hematology analyzer. Serum levels of NO were measured using colorimetric method. All outcomes were analyzed using the intention-to-treat approach.

**Results:** In comparison with placebo, ginger supplementation caused a significant reduction in NO ( $-1.46 \pm 5.97$  vs.  $3.06 \pm 3.55$ ,  $P = 0.001$ ) and NLR ( $-0.09 \pm 0.53$  vs.  $0.53 \pm 1.90$ ,  $P = 0.038$ ). However, differences in leukocytes, monocytes, basophils, eosinophils, erythrocytes, hemoglobin, hematocrit, mean corpuscular volume, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, and platelets were not significant between the groups.

**Conclusion:** Ginger supplement can improve oxidative and inflammatory status in MS patients by reducing NO and NLR.

**Keywords:** Ginger, Multiple sclerosis, Oxidative stress, Inflammation, Clinical trial

### **Depression and 10-year Ramadan fasting adherence**

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**Background:** Ramadan is the ninth lunar month in which Muslims must fast for 1 month and fulfill their spiritual and religious duties. Depression is a mental disorder of low mood and incompatibility to activity that affect an individual's body and mind. Several studies have proved the relationship between Ramadan fasting and the indication of depression. So, our aim of this study is to explore the relationship between depression and 10-year Ramadan fasting adherence.

**Methods:** We conducted a cohort study using data from the MASHAD cohort study. The depression score was recorded using Beck's depression inventory II (BDI II). The response to the validated Ramadan questionnaire was done over the telephone interview. The study subjects were 3 groups: one group was healthy people, one group was people who developed depression progressively during the 10-year cohort (Dep1-, Dep2+), and the third group was people who were depressed since the beginning of the study (Dep1+, Dep2+).

**Result:** This was a cohort involving 8388 subjects. Results showed that people who were depressed since the beginning of the study had less adherence to Ramadan fasting and higher rates of depression disorder than people in the healthy or Dep1-, Dep2+ group.

There was a significant relationship between adherence to fasting and deterioration of depression (P-value < 0.001).

**Conclusion:** Low adherence to Ramadan fasting was associated with a higher incidence of depression in all three groups especially people who were depressed (Dep1+, Dep2+).

**Keywords:** Depression, Ramadan fasting, adherence

### **The effect of dietary approaches to stop hypertension on sleepiness and sleep quality applying the Pittsburgh sleep quality Index in Iranian adults: A randomized clinical trial study**

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**Introduction:** Mental and sleep disorders are global public health problems. The Dietary Approach to Stop Hypertension (DASH) diet is a dietary pattern that has been shown to have a positive effect on several metabolic factors. This paper examines the effect of the DASH diet on daytime sleepiness scores and PSQI in college students and their families residing in different cities across Iran.

**Methods:** This randomized clinical trial study was conducted on 563 students and their families who were 18 years old and above. Participants were divided into two





groups: a control group that followed their regular diet and an intervention group that adhered to the DASH diet. Epworth Sleepiness Scale (ESS) was used for daytime sleepiness assessment. Sleep quality was assessed by the Pittsburgh Sleep Quality Index (PSQI) to analyze the effect of adherence to the DASH diet on sleep quality. Logistic regression was utilized in crude and adjusted models.

**Results:** The prevalence of daytime sleepiness and poor sleep quality were 19 and 24.2 percent, respectively. Adherence to the DASH diet did not significantly affect PSQI or daytime sleepiness in students, families, or the total population. After adjusting for the confounders, these results remained non-significant; however, a significant effect of the adherence DASH diet on the PSQI score was observed in the students (P:0.01)

**Conclusion:** Our analysis found no significant effect of the DASH diet on sleep quality. However, after adjusting, significant results for the PSQI were observed. Further studies are needed to clarify these findings.

**Keywords:** DASH diet, sleepiness, sleep quality

### **Investigating the effect of dietary protein source on appetite status during the postprandial phase in overweight and obese men**

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**Introduction:** Dietary protein is the most satiating macronutrient. Since animal and plant proteins have different amino acid profiles, bioavailability, and digestibility, they appear to have different short-term effects on metabolic responses. Due to lack of sufficient evidence, we are doubtful whether using animal protein-rich meals has a different impact in comparison with plant protein-rich meals on appetite status.

**Objectives:** This study aimed to investigate the effect of dietary protein source on appetite status during the postprandial phase among overweight and obese males.

**Methods:** 46 healthy, overweight or obese men were recruited in a randomized crossover clinical trial. Patients consumed both isocaloric protein-rich (30% protein, 40% carbohydrate, 30% fat) breakfast meals with the animal or plant source of protein with the same amount of fiber, in two days separated by a 7-day washout. Participants completed a visual analog scale (VAS) questionnaire to assess appetite status before, 1, 2, 3, 4, and 5 hours after meal consumption.

**Results:** In the postprandial phase, immediately after consuming food, animal-based protein elevated satiety and fullness more than plant-based protein. But patients



who ate plant protein felt fuller and less hungry 5 hours after meal in comparison to animal protein. However, none of the mentioned differences were statistically significant.

**Conclusion:** Although Animal-based protein was more satiating than plant protein, patients who consumed plant protein had less desire to eat later.

**Keywords:** Obesity, plant protein, animal protein, appetite

### **The acute effects of dietary protein sources on appetite response in overweight and obese men**

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**Introduction:** Dietary protein is the most satiating macronutrient. Since various proteins have different amino acid profiles, bioavailability, and digestibility, they appear to have different short-term effects on metabolic responses. Due to the lack of sufficient evidence, we are doubtful whether using animal proteins has different effects on appetite response compared with plant proteins.

**Objectives:** This study aimed to investigate the acute effects of dietary protein sources

on appetite response in overweight and obese men.

**Methods:** 46 healthy, overweight, or obese men were recruited in the randomized crossover clinical trial. Patients consumed both isocaloric protein-rich (30% protein, 40% carbohydrate, 30% fat) breakfast meals with the animal or plant source of protein, in two different days with a 7-day washout. Participants completed a visual analog scale (VAS) questionnaire to assess satiety and hunger responses before, 1, 2, 3, 4, and 5 hours after meal consumption.

**Results:** In the acute phase, one hour after consuming the animal-based protein meal, hunger decreased to a greater extent, and more satiety was induced. It was also demonstrated that after 5 hours, in participants who consumed plant-based protein satiety lasted longer. However, none of the mentioned differences were statistically significant.

**Conclusion:** Results of this acute phase randomized controlled trial showed no significant differences in postprandial satiety and hunger responses between various protein sources consumption.

**Keywords:** Obesity, plant protein, animal protein, appetite

### **Association between dietary patterns and risk of brain tumors**

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**Introduction:** Although the association of individual foods and nutrients with brain tumors have been investigated, studies on the association of major dietary patterns and brain tumors are scarce. The aim of this study was to examine the association between major dietary patterns and risk of brain tumors in a group of Iranian adults.

**Method:** In this hospital-based case-control investigation, we recruited 128 newly diagnosed brain tumors cases and 256 controls in Tehran from 2009 to 2011. A Willett-format-validated 126-item semi-quantitative FFQ was used to assess participants' dietary intake. Factor analysis was used to identify major dietary patterns.

**Result:** We identified 3 major dietary patterns using factor analysis: high protein dietary pattern, vegetarian dietary pattern and western dietary pattern. After several adjustments for potential confounders, adherence to the high protein dietary pattern was inversely associated with risk of brain tumors (OR: 0.46; 95% CI: 0.24, 0.89). Consumption of vegetarian dietary pattern was also associated with a reduced risk of brain tumors (OR: 0.19; 95% CI: 0.09, 0.41). Greater adherence to the western dietary pattern was associated with a greater chance of brain tumors (OR: 3.90; 95% CI: 1.86, 8.20).

**Conclusion:** We found that high protein dietary pattern, vegetarian dietary pattern and western dietary pattern were significantly associated with brain tumors risk. More prospective studies are needed to confirm these findings.

**Keywords:** brain tumors, cancer, diet, dietary pattern,

### **Dietary insulinemic index in relation to risk of severe Covid-19 infection and inflammatory biomarkers**

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**Introduction:** Covid-19 has become one of the biggest global pandemics in the current era. Diet has a direct effect on the level of blood sugar and insulin and can affect the function of immune system against Covid-19. This study was conducted to investigate the association between dietary insulinemic index (DII) and Covid-19.

**Method:** This cross-sectional study was conducted in 683 adults who recovered from the Covid-19 disease. individuals' dietary intake was evaluated using validated 168-item FFQ and DII was calculated. Covid-19 severity was assessed based on symptoms, lung imaging, blood oxygen saturation, need



for mechanical ventilation, and hospitalization in ICU. Information about level CRP and ESR and duration of disease and hospitalization were collected through patient's medical record.

**Result:** After controlling for potential confounder, comparing individuals in the highest tertile of DII with those in the lowest tertile, DII was not significantly associated with risk of severe Covid-19 infection (OR: 1.03; 95% CI: 0.88, 1.54). But, Patients at the highest tertile of DII score had lower levels of inflammatory markers, including CRP ( $15.8 \pm 2.3$  vs.  $28.4 \pm 3.1$ ,  $p < 0.001$ ) and ESR ( $14.4 \pm 1.1$  vs.  $29.7 \pm 1.9$ ,  $p < 0.001$ ), than those at the lowest tertile. In addition, we did not observe a significant association between DII and duration of disease symptoms hospitalization.

**Conclusion:** Our findings failed to show a significant association between DII and Covid-19 outcomes. Due to limitations of cross-sectional design, our findings should be interpreted with caution and more prospective studies are needed.

**Keywords:** DII, insulin, diet, Covid-19, blood sugar

## Dietary inflammatory index in relation to risk of severe covid-19 infection and inflammatory biomarkers

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**Introduction:** Covid-19 has threatened people's lives as an epidemic in the world. Diet has a great impact on the level of inflammation. This study was conducted with the aim of investigating the relationship between dietary inflammatory index (DII) and Covid-19.

**Method:** Participants of this cross-sectional study were 683 individuals who recovered from the Covid-19 disease. Participants' dietary intake was assessed through a validated 168-item FFQ and DII was calculated based on 30 food items and nutrients. Severity of Covid-19 was evaluated based on disease symptoms, lung involvement, Spo<sub>2</sub>, need for mechanical ventilation, and hospitalization in ICU. Data on level of inflammatory markers and the duration of symptoms and hospitalization were collected through medical records patient interviews.

**Result:** After controlling for confounding factors, participants who were in the highest quartile of the DII, compared to those who were in the lowest quartile, had a higher risk of contracting severe Covid-19 and this association was nearly significant (OR:1.80; 95% CI: 1.01, 3.20). In addition, an increase in DII score was associated with an increase in levels of CRP ( $42.05 \pm 37.88$  in the highest quartile vs.  $13.59 \pm 19.82$  in the lowest



quartile) and ESR ( $41.48 \pm 31.34$  vs.  $18.59 \pm 19.74$ ), increased duration of disease symptoms (OR: 2.63; 95% CI: 1.41, 4.89). Our findings failed to show a significant association between DII and duration of hospitalization (OR: 1.29; 95% CI: 0.65, 2.53).

**Conclusion:** Following a diet with higher inflammatory characteristics is associated with an increased risk of the Covid-19 outcomes.

**Keywords:** DII, inflammation, diet, Covid-19

### **The pomegranate peel extract supplementation and oxidative stress in obese women with knee osteoarthritis: A double blind, randomized, placebo-controlled study**

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**Introduction:** Osteoarthritis (OA) is the most common disease of joints in adults that women are more severely affected by knee OA. The OA progression increases in patients with oxidative stress and obesity. This study aimed to evaluate the effects of pomegranate peel extract (PPE) supplementation on the antioxidant status in obese women with knee OA.

**Method:** This randomized, double-blind placebo-controlled clinical trial was conducted on 66 obese women aged 38-60 years old with knee OA. Subjects in the intervention group (n=33) received PPE capsules (500 mg) twice daily for 8 weeks along with standard drug therapy and control group (n=33) received placebo for the same period. ANCOVA analysis was used for the comparison of post-treatment values between the groups.

**Result:** PPE supplementation significantly decreased serum malondialdehyde levels (MD (95%CI): -0.455 nmol/L (-0.88 to -0.21),  $p = 0.040$ ) and increased erythrocyte superoxide dismutase (MD (95%CI): 67.91 U/gHb (40.64 to 95.17),  $p = 0.000$ ), glutathione peroxidase (MD (95%CI): 4.734 U/gHb (1.50 to 7.96),  $p = 0.005$ ) and serum total antioxidant capacity (MD (95%CI): 0.18 mmol/L (0.31 to 0.34),  $p = 0.020$ ) compared to the control group at the end of study.

**Conclusion:** According to the findings, short-term PPE supplementation had useful effects on the antioxidant status in obese women with knee OA. Therefore, PPE treatment could be used to ameliorate knee OA and its related disorders. Well-designed clinical trials are recommended to clarify the PPE effects on the other contributing factors of knee OA such as inflammatory markers.

**Keywords:** Pomegranate peel extract, Knee osteoarthritis, Oxidative stress, Obese, Women



## Anthropometric indicators of 12 to 18-year-old adolescents in Lar city and its relationship with the level of emotional intelligence

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**Introduction:** As a determinant of health behaviors, emotional intelligence can influence body weight and other anthropometric factors. Adolescence is a critical, vital and a transitional period of growth in a person's life. At this stage, the person undergoes physical, psychological, cognitive and emotional-social transformations. One of the factors that can be effective in dealing with adolescent problems is emotional intelligence.

This study aimed at investigating the relationship between anthropometric factors and emotional intelligence in students of Lar city, Iran.

**Methods:** This is a descriptive-analytical, cross-sectional study in type and nature, and in terms of purpose, it is an applied study. The data was collected through field and survey method (using a questionnaire) as well as hypothesis testing. The statistical population of the study included 177

adolescents aged 12-18 in the cities of Lar, who were selected by cluster random sampling method.

**Results:** Based on the multiple regression results, children's anthropometric indices had no significant relationship with emotional intelligence. The effect of body mass index on emotional intelligence was not statistically significant at any level ( $p < 0.05$ ) and there was no statistically significant relationship between activity level and emotional intelligence ( $p = 0.457$ ).

**Conclusions:** According to the results, there was no strong and significant relationship between anthropometric indicators and emotional intelligence.

**Keywords:** Body Mass Index, exercise, anthropometry, emotional intelligence.

## Food-mediated synthesis of superparamagnetic iron oxide nanoparticles and its cell viability assessment

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**Introduction:** Oleic acid (OA) is a monounsaturated omega-9 fatty acid present in vegetable and animal sources, especially olive oil and nuts. Magnetic nanoparticles are widely used as drug delivery carriers and/or contrast agents in



theranostic applications. To prevent nanoparticle aggregation and stabilization, OA is a biocompatible coating agent that has hydrophilic behavior, non-immunogenic, and non- or low-toxic properties. Therefore, we synthesized maghemite ( $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticles using the co-precipitation method by OA as a capping agent to enhance nanoparticle monodispersity and, biocompatibility.

**Method:** An analysis of superparamagnetism was carried out by vibrating sample magnetometer (VSM). The structure, and morphology of magnetic nanoparticles were obtained by transmission electron microscopy (TEM), Fourier transforms infrared spectroscopy (FTIR), and X-ray diffraction (XRD). Additionally, the in vitro cell viability was studied through an MTT test on a human cervical cancer cell line.

**Result:** The maghemite nanoparticle was found to be superparamagnetic (SPIONs) (36.5 emu/g). Their size ranges between 16-27 nm. The MTT results on various concentrations of SPIONs were not cytotoxic, even when dosed at 50  $\mu$ g/mL.

**Conclusion:** The OA coating over the SPIONs does not affect the superparamagnetic behavior of the nanoparticles. Moreover, OA stabilizes the surface and controls the size of the nanoparticles making it valuable for further therapeutic and diagnostic applications in biomedicine.

**Keywords:** Oleic acid, Superparamagnetism, Cytotoxicity, Biocompatible,  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>.

## The effects of resveratrol intake on obesity: A systematic review of human studies

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**Introduction:** Obesity is a severe health problem worldwide due to its association with various adverse health consequences. The prevalence of obesity is increasing year by year and has been consolidated as a nutritional problem. Resveratrol as a natural polyphenol might be useful in managing obesity. The present systematic review aimed to summarize the findings of human studies regarding the anti-obesity effects of resveratrol.

**Method:** PubMed, Scopus, Web of Sciences, and Google Scholar databases were searched up to July 2023 using relevant keywords. All original human articles, written in English, evaluating the anti-obesity effects of resveratrol were eligible for this review.

**Result:** Initially, 1361 records were found in the electronic search databases. After removing duplicates and irrelevant studies according to the title and abstract, the full text of the 71 articles was critically screened and 38 human studies were included in this review. Majority of the included studies reported that resveratrol supplementation reduced the anthropometric indices such as weight, BMI, and WC.



**Conclusion:** The findings indicate that resveratrol has anti-obesity effects. These effects may be through various mechanisms such as induction of adipocytes apoptosis, a decrease of fat accumulation and adipogenesis, promotion of white adipocytes browning, and inhibition of preadipocyte proliferation and consequent differentiation. Therefore, resveratrol intervention could be used to prevent and treat obesity and its related disorders. Well-designed randomized clinical trials with different doses of resveratrol are recommended to be performed on obese subjects.

**Keywords:** Resveratrol, Obesity, Weight, Body mass index, Waist circumference

### **Cardiovascular protective effects of vitamin D in a rat model of inflammation induced by lipopolysaccharides**

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**Introduction:** Background: Inflammation and oxidative stress are contributed to cardiovascular diseases. Vitamin D (Vit D) has antioxidant and anti-inflammatory properties. In the current research, cardiovascular protective effects of Vit D in a rat model of inflammation induced by lipopolysaccharides (LPS) was investigated

**Method:** Rats were distributed into 5 groups and were treated for 2 weeks. Control: received vehicle (saline supplemented with tween-80) instead of Vit D and saline instead of LPS, LPS: treated by 1 mg/kg of LPS and was given vehicle instead of Vit D, LPS-Vit D groups: received 3 doses of Vit D (100, 1000, and 10000 IU/kg) of Vit D in addition to LPS. Vit D was dissolved in saline supplemented with tween-80 (final concentration 0.1%) and LPS was dissolved in saline. The white blood cell (WBC) was counted. Oxidative stress markers were determined in serum, aorta, and heart.

**Result:** WBC and malondialdehyde (MDA) were higher in the LPS group than the control group, whereas the thiol content, superoxide dismutase (SOD), and catalase (CAT) were lower in the LPS group than the control group ( $P < 0.01$  and  $P < 0.001$ ). Administration of Vit D decreased WBC ( $P < 0.001$ ) and MDA ( $P < 0.05$  and  $P < 0.001$ ) while enhanced thiol (dose 10000 IU/Kg) ( $P < 0.001$ ), SOD (dose 10000 IU/kg)





( $P < 0.001$ ), and CAT ( $P < 0.05$  and  $P < 0.001$ ) compared to the LPS group.

**Conclusion:** Vit D protected the cardiovascular against the detrimental effect of LPS. This cardiovascular protection can be attributed to the antioxidant and anti-inflammatory properties of Vit D.

**Keywords:** Lipopolysaccharide, Cardiovascular, Vitamin D, Oxidative stress, Inflammation

## **The effects of taurine supplementation on metabolic syndrome criteria: a systematic review of randomized controlled trials**

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**Introduction:** Taurine's cytoprotective, antioxidant, and anti-inflammatory properties play an important role in regulating blood pressure, lipid and glucose metabolism, as well as obesity which are metabolic syndrome markers according to ATP3 criteria. Despite promising results from animal studies, the effectiveness of taurine supplementation in human trials is still under debate.

**Objectives:** This systematic review of randomized controlled trials was performed to assess the effect of taurine supplementation on metabolic syndrome criteria.

**Methods:** This systematic review was performed based on the PRISMA checklist. Databases including PUBMED, Scopus, Google Scholar, and Web of Science were searched for randomized controlled trials on the effect of taurine supplementation on metabolic syndrome criteria (published from inception to June 29, 2023; no language restrictions). The titles and abstracts of the most relevant RCT studies were obtained and the papers that met the inclusion criteria were read in full text.

**Results:** Based on inclusion criteria, 15 studies were reviewed. Compared with the control group, 16% of studies (Blood pressure), 41% of studies (Triglyceride), and 12.5% of studies (Fasting blood glucose) reported a significant change after taurine supplementation, and no study showed a significant change in HDL and Waist circumference values.

**Conclusion:** In conclusion except for triglyceride, taurine supplementation could not implicate a major improvement in metabolic syndrome criteria and markers.

**Keywords:** Taurine, Metabolic Syndrome, Hypertension, Dyslipidemia, Hyperglycemia



## Should anesthesiologists be aware of a preoperational vitamin deficiency? A systematic review

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**Background:** For anesthesia, it is necessary to assess preoperative risks and then create a specific anesthesia plan for each patient undergoing anesthesia. The authors point out that anesthesia can lead to some complications in patients with vitamin deficiencies, while routine vitamin testing before surgery is not common. In this study, we aimed to review previous studies examining the health problems caused by anesthesia in patients with deficient serum vitamin levels before surgery.

**Methods:** A literature search including titles/abstracts was conducted to combine data from different study designs and literature. PubMed, Cochrane, Scopus, and Web of Science articles were searched from

January 2000 to August 2023 with specific inclusion and exclusion criteria. The full text of the selected articles was analyzed.

**Result:** We included thirteen studies that covered various vitamins including B1, B12, Folate, C, D, and K. Lower levels of vitamin B12 and Folate were associated with elevated homocysteine levels which can lead to spontaneous thromboembolic phenomena and postoperative cognitive issues. Another problem is that induction of anesthesia with nitric oxide may cause acute megaloblastic anemia and myelopathy in B12-deficient patients. Scurvy, which is a vitamin C deficiency, may cause dysfunction in autonomic nervous system processes or pulmonary hypertension during anesthesia. Vitamin D deficiency can lead to stiffness and delirium after anesthesia. Patients with vitamin K deficiency may be at risk of epidural or spinal hematoma following local anesthesia.

**Conclusions:** Based on the evidence from the reviewed studies, we recommend that preoperative vitamin serum levels should be evaluated in patients who are susceptible to vitamin deficiency or exhibit clinical signs of deficiency. If a deficiency is detected, vitamin supplementation should be administered, and the anesthesia plan should be modified accordingly.

**Keywords:** Anesthesia, Avitaminosis, Postoperative outcome, Postoperative complication



## The association between socioeconomic status with the sustainability of diet among staff of Mashhad University of Medical Sciences

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**Introduction:** The general point of view that sustainable diet implies is to examine environmental concerns along with nutritional adequacy, economic access and cultural acceptance of diets. Socio-economic characteristics of people can be quite effective on their choices. What can be expected is that socio-economic variables can have an effect on the sustainability of the diet through such an effect on food choices. Determining the relationship between socio-economic status and diet sustainability helps researchers and policy makers to be aware of the differences in the nutritional behaviors of different socio-economic groups of the society from the point of view

of sustainability and in making policies and plans for different target groups. Therefore, the aim of the present study is to investigate such a relationship in Mashhad.

**Method:** In the present study, data from the Mashhad Persian cohort study was used. Based on the linear programming method and based on the indicators of water footprint, carbon footprint, nutritional health index and food cost, a sustainable basket was determined for the target population. Then, the distance between the food basket of each study subject was measured with a stable food basket. The greater the distance between the current consumption and the sustainable food basket pattern, the lower the individual's diet sustainability score. The general socio-economic variable was made from the principal component analysis (PCA) method of the variables of income status, educational status, and job status. Then the desired relationships were investigated with appropriate statistical tests.

**Result:** Gender and age were directly related to the index of diet stability. Marriage and the number of family members were inversely related to the diet sustainability index. Among the indicators of socioeconomic status of ethnicity, place of residence and socioeconomic class, education was not related to the index of diet sustainability. In general, the socio-economic status index was not related to the diet sustainability index.



**Conclusion:** The results of the study showed that women and older people had a more sustainable diet. Also, the results showed that larger families and married people have a more unsustainable diet. In general, it was shown that in the population of Mashhad, the socio-economic status index has no significant relationship with the sustainability of the diet.

**Keywords:** Diet sustainability, socio-economic status, sustainable diet, Mashhad

### **Iron status is related to thyroid function in children**

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**Introduction:** Iron deficiency is a prevalent nutritional problem and a significant health concern in children, often linked to inadequate growth, behavioral changes, and intellectual activity. Additionally, it may disrupt the peripheral metabolism of thyroid hormones, potentially leading to hypothyroidism, and may negatively affect the growth and development of children. This study aimed to assess the relationship between iron status and thyroid hormones in preschool children.

**Method:** This cross-sectional study was conducted on 305 randomly selected preschools aged 2-6 years. Demographic and anthropometric indices were collected. The CBC tests, serum Ferritin and thyroid hormones (T3, T4, TSH) were also measured. Iron deficiency was defined based on WHO's recommendation in this age group (<15 ng/ml). Statistical analyses were analyzed using SPSS version 26.

**Result:** Based on the serum ferritin and TSH levels, the prevalence of iron deficiency and hypothyroidism in the studied population were 21.2% and 10% respectively. 4.93% of the studied population had a low RBC. Strong positive correlations were found between ferritin and T4 ( $r=0.138$ ,  $p=0.017$ ), and a significant but weak correlation was found between ferritin and T3 ( $r=0.155$ ,  $p=0.046$ ). No significant correlation was found between ferritin and TSH.

**Conclusion:** Iron deficiency is expected to cause disturbances in thyroid hormones and hypothyroidism. More research is needed to



investigate the relationship between iron deficiency and thyroid hormones. More comprehensive studies are recommended to clarify whether the effect of iron deficiency on thyroid status is reversible or not.

**Keywords:** Preschool children, Thyroid hormones, Iron, Deficiency, Growth

## Can the educational intervention based on health belief model

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**Introduction:** good and perfect breakfast has important role to students thought and body health. The research was performed the effects of education based on health belief model on breakfast and snack food in students.

**Method:** This study was quasi-experimental research on 100 girl students who were selected by multistage random sampling. The instruments used in the current study were perceptions of nutritional assessment questionnaire. In order to analyze the data, SPSS16 package was employed and independent-sample t- test, Chi-square and ANOVA were utilized.

**Result:** The demographic features of the studied population in the two groups were similar before the intervention ( $p>0.05$ ).

Paired T test and Chi-square after the intervention showed a significant increase in mean scores for perceived susceptibility ( from 2 to 3.1 ), perceived severity ( from 4.6 to 9.7 ), perceived benefits of ( 5.3 to 8.2 ), perceived barriers ( 3.4 to 10.6 ) and efficacy ( 2.9 to 12.3 ) was observed in the intervention group .

**Conclusion:** The results of this study and the low cost health education activities compared to other activities, it seems necessary extend and expand such programs.

**Keywords:** Education, Breakfast, Health Belief Model, Student

## Association between nutrient patterns and odds of irritable bowel syndrome

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**Introduction:** Irritable bowel syndrome (IBS) is the most commonly diagnosed gastrointestinal condition characterized by altered bowel habits and abdominal pain in the absence of detectable and obvious abnormalities. Despite several strategies to manage IBS, medical interventions have yet to be discovered. Observational studies identify the most effective nutrients in reducing IBS symptoms but individuals do not consume isolated nutrients. Therefore, this study aimed to determine the association between nutrient patterns and IBS symptoms in Iranian adults

**Method:** In this cross-sectional study, dietary intakes of 3,362 Iranian adults were examined using a validated dish-based 106-item Semi-quantitative Food Frequency Questionnaire (DS-FFQ). Daily intakes of 41 nutrients for each participant were calculated using the US Department of Agriculture's (USDA) national nutrient databank to identify nutrient patterns. IBS was assessed using a modified Persian version of the Rome III questionnaire

**Result:** Based on factor analysis, three major nutrient patterns including traditional nutrient pattern, Western nutrient pattern, and antioxidant-rich nutrient pattern were identified. There was no significant association between adherence to the traditional, Western, and antioxidant-rich nutrient patterns and odds of IBS in the whole population. When we performed analyses stratified by gender, we observed that greater adherence to the antioxidant-rich nutrient pattern was associated with 33% lower odds of IBS (OR: 0.67; 95% CI: 0.50-0.91)

**Conclusion:** We found a significant inverse association between adherence to the antioxidant-rich nutrient pattern and odds of IBS among subjects with BMI text

**Keywords:** Nutrient, Patterns, Irritable bowel syndrome

## Preschool children are at risk of iodine deficiency

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**Introduction:** Iodine deficiency is one of the most important and preventable nutritional problems in the world and it is the most common cause of brain damage in childhood. Due to limited food sources, it is imperative to provide daily iodine needs through Iodized salts. This study aimed to explore the Iodine intake among children aged 2 to 6 years and the awareness of the importance of supplying Iodine in Evaz City.

**Method:** This cross-sectional study was conducted in collaboration with the Child-Friendly City Association on 305 children. Anthropometric indices of the participants and parental awareness of iodine and iodine resources were carefully measured. Blood and urine sampling was conducted to measure thyroid hormones, urine iodine, and creatinine concentration. Subsequently, the 24-hour iodine intake of each child was calculated.

**Result:** According to the study, only 21% of the participants had enough iodine intake. In addition, examining parents' awareness

showed that only 35% of people pay attention to the iodized salt label when buying salt. It has an insignificant effect on their children's iodine intake (Figure 2). There was no significant correlation between the daily intake of iodine and thyroid hormones. However, the mean of TSH was significantly ( $p$ -value = 0.047) lower in the moderate iodine-deficient group and the excess group

**Conclusion:** The results indicate that most preschool children do not intake an adequate amount of iodine and we may have a lack of sufficient parental awareness about the importance of iodine. Further studies are needed to elucidate defects in policies and education programs.

**Keywords:** Preschool children, iodine, urine iodine, thyroid function, growth

## Investigating combination of cisplatin and thymoquinone in cancer treatment: a systematic review of Experimental Animal Studies

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**Introduction:** Cancer is a kind of disease with many spatial and temporal changes in cell physiology that can lead to a malignant tumor. *Nigella sativa* is a medicinal plant from the Ranunculaceae family that is used all over the world due to its amazing properties. A big part of the amazing properties of *Nigella sativa* seed return to its active extract thymoquinone. thymoquinone



has a negative effect on the survival and growth of cancer cells. also protects against hepatotoxicity, nephrotoxicity, and other organs, because of anti-oxidant and anti-inflammatory properties. cisplatin is an organic-metallic platinum compound and the first platinum-based chemotherapy introduced by Michele Peyrone in 1845. cisplatin is used for chemotherapy but has many restrictions to use such as recurrence and resistance to treatment or toxicity for organs...

**Method:** The literature search was conducted using various scientific databases, including Med-line, Scopus, Google Scholar, and Web of Science. All animal studies that evaluate the effects of using thymoquinone with cisplatin from 2000 to 2023 in English have entered to this study...

**Result:** ↓brain damage induced by cisplatin treatment - ↓neurotoxicity - ↓ CP-induced oxidative stress in different tissues - ↑ liver functions - Detection of Apoptosis in cancer tissue - ↑Brain function - ↑ intestinal functions - ↓ gastrointestinal toxicity - ↑kidney excretory and reabsorptive functions - ↓severe damage to structural tissue architectures - ↓tubular damage - ↓inflammatory - ↓lipid peroxidation - ↓ cisplatin-induced ototoxicity - ↓ CDDP resistance - ↑ CDDP efficacy – protection against neural damage through amelioration of the learning and memory impairments.

**Conclusion:**The production of new platinum compounds represents the main

focus to make cisplatin-based chemotherapy safer for patients by minimizing side effects, cisplatin-induced nephrotoxicity, relapse, and resistance. showed that it is possible to increase liver and kidney toxicity, neurodegenerative effects, etc. that treatment with thymoquinone along with cisplatin has reduced side effects. since thymoquinone has properties against these limitations, it has been shown in many studies that it can be a good option as a combination therapy in the treatment of cancer along with Cisplatin should be used.

**Keywords:** Cancer,cisplatin,thymoquinone, hepatotoxicity, nnephrotoxicity

## The effects of dietary supplements in patients with cervical cancer: a comprehensive systematic review

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**Introduction:** Recent studies reported that complementary therapy including dietary supplements may have a beneficial role in cervical cancer. However, the results are inconsistent. This study aimed to investigate





the association between cervical cancer and dietary supplements.

**Method:** A systematic literature review was conducted to summarize and quantify the most recent findings on dietary supplement and cervical cancer. Several databases were checked for relevant publications published in English up to March 2023. Of the 32 articles identified, only 20 met the inclusion criteria and were included.

**Result:** Women with cervical intraepithelial neoplasia may benefit from folate supplementation against oxidative stress and inflammation. Vitamin D may reduce oxidative stress and may have a therapeutic effect. Zinc promotes the clearance of the human papilloma virus and reduces the chance of viral infection. The use of probiotic supplements may improve the complications associated with chemotherapy in patients with cervical cancer, such as diarrhea and abdominal pain. Radiotherapy and chemotherapy complications may also be reduced by omega-3 fatty acids.

**Conclusion:** Some dietary supplements including folate, vitamin D, zinc, probiotics, and omega-3 fatty acids may have beneficial effects in patients with cervical cancer. Further studies are warranted to confirm these results.

**Keywords:** Cervical cancer, Dietary supplements, Nutrient, Cervical, Diet

## The association of egg consumption and ischemic changes in ECGs: A population based study

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**Background:** Cardiovascular diseases (CVDs) are one of the principal causes of death worldwide. Electrocardiogram (ECG) ischemic changes are deliberated to forespeak CVDs risk. As there are conflicting results regarding the relevancy of egg consumption and heart ischemic changes, this study aimed to investigate this association.

**Methods:** In this cross-sectional study 5928 individuals aged 35–65 years were recruited as part of the Mashhad stroke and heart atherosclerotic disorder (MASHAD) study. Egg intakes was determined using a 65-items food frequency questionnaire (FFQ) and was classified as <1/week, 1-2/week, 2-



4/week, >4/week based on the number of consumption per week. Major and minor ischemic changes in ECGs were coded using the Minnesota coding system. Multivariable logistic regression models in SPSS version 16 were applied to determine the association between egg consumption and ischemic changes in ECGs.

**Results:** According to the full-adjusted model, there was a meaningful association between higher quartiles of egg consumption and major ischemia in men ( $p = 0.05$ ,  $OR=0.60$ ,  $95\%CI (0.39_0.93)$ ), but there was no significant association in women ( $p > 0.05$ ). Although egg consumption was associated with a reduction in the risk of minor ischemia in women and men, this association was not statistically significant ( $p > 0.05$ ).

**Conclusions:** Egg consumption has significantly reduced the risk of major ischemia in men; but despite the reduction in the risk of minor ischemia with egg consumption in men and women, this association was not significant.

## **Production of crocin nano carriers for anti-depressant chocolate**

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**Introduction:** Depression is a multifactorial, chronic disease with a high prevalence. Numerous side effects of chemical

antidepressants, such as Xerostomia, constipation, inability to drive and sexual dysfunction, have also been reported with these drugs. However, the rate of recovery is low, and the risk of recurrence of the disease is high. Therefore, more effective and less toxic agents are needed. Extracts from some plants are an effective source of new and promising drugs for the treatment of depression. In this study, the extraction of saffron's active ingredients, microencapsulation, release, stabilization, and increasing its bioavailability in a food model system were studied.

**Method:** Crocin extracted from saffron was finely coated using nanoemulsion and a cellular automated model was used to investigate crocin release. Crocin release was investigated in simulated gastric and intestinal environments. The efficiency of the emulsion in the food model system (chocolate) was also investigated.

**Result:** The results showed that with increasing the concentration of gelatin and gum arabic, the particle size decreased, but with increasing the concentration of pectin, the droplet size increased. Also, the lowest crocin release was related to stabilized samples of pectin, and the highest was related to gelatin.

**Conclusion:** The food model system was subjected to sensory analysis, and results indicated that the crocin nano emulsion did not show any significant difference from the control chocolate sample.



## Review of antidepressant effect of cocoa phytochemicals

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Depression is a mood disorder that affects the lives of many people. Drug treatments may cause many side effects or be ineffective. The phytochemicals of medicinal plants, especially phenolic acids, have been proposed as alternative therapies. These bioactive molecules are known for their antioxidant and anti-inflammatory activities. They are found in some fruits, vegetables, and herbs. This review examines the possibility that cocoa contains large amounts of flavanols that are useful in the prevention and treatment of mood disorders. Products containing cocoa have been studied in both neuromolecular and psychological experiments. The neuromolecular effects of flavanols in cocoa include antioxidant and anti-inflammatory properties that may be useful in dealing with depressive disorders of the brain. Psychological studies in humans have described an association between the consumption of cocoa-containing products such as dark chocolate and improved mood, while behavioral studies in laboratory animals have reported antidepressant effects of flavanols. Therefore, products containing cocoa, such as dark chocolate,

may have beneficial effects as an antidepressant supplement.

**Keywords:** cocoa, phytochemicals, antidepressant.

## The Effect of Nutritional Care on Reducing Depression symptoms, A systematic Review

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**Background:** Depression is a mood disorder characterized by persistent sadness and loss of interest in previously enjoyed activities. If left untreated, it can worsen and lead to more severe mood disorders. Nutritional interventions have shown promise in reducing symptoms of depression. This systematic review aims to provide an overview of recent updates on the nutritional status and interventions related to patients with depression.

**Methods:** A comprehensive search was conducted in PubMed, Web of Science, and Scopus databases for randomized clinical trials, systematic reviews, and meta-analyses published up to 2023. A total of 314 studies were found, of which 38 reviews, meta-analyses, and clinical trials were selected for further analysis.

**Results:** The findings indicate that dietary interventions hold promise as a novel approach to reducing depressive symptoms across the general population. These



interventions have been found to significantly decrease depressive symptoms, with studies focusing on female samples reporting greater benefits for both depressive and anxiety symptoms. Adopting a healthy lifestyle and diet with adequate nutrient intake can aid in the treatment and prevention of depression. Meta-analyses of prospective studies have demonstrated that healthy eating interventions significantly reduce depressive symptoms with moderate quality evidence. Additionally, older women with poor diet quality are twice as likely to develop depressive symptoms compared to men with similar dietary habits.

**Conclusions:** Overall, the evidence suggests that nutritional care can positively impact the reduction of depressive symptoms. However, further research is needed to fully comprehend the relationship between nutrition and mental health, as well as identify specific nutritional characteristics associated with depression prevention.

**Keywords:** Nutritional Care, Depression, Dietary

## **The effect of Chia seed mucilage on the viability of *Lactobacillus acidophilus* in chocolate dairy dessert**

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**Introduction:** Dairy dessert is a product that contains milk or milk products as the main component in the formulation. The present study was conducted with the aim of investigating the mucilage obtained from chia seeds for the survival of *Lactobacillus acidophilus* in probiotic dairy dessert during the storage period.

**Method:** In this study, dried chia seed mucilage was added to milk chocolate dessert at three levels of 0.5%, 1% and 1.5%, and physicochemical tests included: pH, acidity, dry matter, moisture and syneresis, texture and microbial analysis were done on days 0, 4 and 8 and sensory evaluation was done on the first day after production. Also, the samples were done with 3 replication using SPSS version 20 software.

**Result:** The results showed that with the increase in the percentage of chia mucilage consumed in the probiotic dessert formulation, the pH of the samples decreased significantly. The highest and lowest levels of acidity in the examined samples during the storage period belonged to the 3A sample on the eighth day (1.66) and the control sample on the first day



(0.165), respectively, which has a statistically significant difference with each other. They had. In each period, with the increase in the level of chia seed mucilage, the amount of moisture and texture increase; But during the storage time, there was a decreasing trend in all the investigated samples. The amount of dry matter in all samples had an increasing trend. With the increase in the concentration of chia seed mucilage during the storage period, the hardness of the tissue, the percentage of syneresis and the amount of *Lactobacillus acidophilus* bacteria increased.

**Conclusion:** Overall, this work shows the possibility of using mucilage from chia seed in chocolate dairy dessert formulations as a prebiotic compound.

**Keywords:** Chia mucilage, Dairy dessert, *Lactobacillus acidophilus*, physicochemical properties, Probiotic.

## **Evaluation the effect of processed quinoa on physicochemical and sensory properties of Quinoa Bar**

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**Introduction:** Quinoa is a valuable food source that has attracted many people

attention today. Roasted quinoa has high resistance to microbial and enzymatic spoilage. Phytic acid in roasted and flaked quinoa is less than raw quinoa. Color, odor and taste of roasted grain are better compared to raw grains.

**Method:** Physicochemical (protein, ash, water activity, texture and color) and sensory properties of compact food bars affected types of quinoa flour (raw, roasted and flaked) and its partial replacement with roasted rice flour (0, 15 and 30%) were investigated.

**Result:** The flaking and roasting applied on quinoa while improving the quality of the product led to a decrease in water activity and L\* and b\* and an increase in ash, texture firmness and a\*. This was while the process of roasting and flaking led to a decrease and an increase in the protein of the produced samples, respectively, compared to the samples containing raw quinoa flour. On the other hand, by increasing the rice flour, protein, ash and a\* decreased and the values of texture firmness and L\* and b\* increased. The results showed that the processing done on quinoa and the presence of rice flour led to an increase in the score of sensory properties and finally the overall acceptance of final product.

**Conclusion:** The sample produced with quinoa flaked flour and containing 30% of rice flour (5.74% protein, 0.781% ash and overall acceptance score of 4.52) was introduced as the best sample.



**Keywords:** Flaking, Quinoa bar, Rice flour, Roasting.

## **Studies of the correlation between qualitative and quantitative properties of doughnut affected by the added natural antioxidants with the use of PCA**

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**Introduction:** Principal Component Analysis (PCA) approach expresses the alteration rate between different parameters. In the present research the relationship between different physicochemical and sensory properties of Doughnut affected by the added green Tea infusion (natural antioxidant) and ascorbic acid with the use of PCA has been studied.

**Method:** The physicochemical and sensory parameters of fried Doughnut affected by the added green tea infusion with different concentrations of (0, 100, 150 and 200 ppm) and ascorbic acid (0, 50, 100, 150 ppm), were studied with the use of PCA.

**Result:** The alterations between the studied parameters and their relationships were detected negatively on the peroxide index of the product. The addition of green tea

infusion and ascorbic acid showed that, they might affect positively on the samples and create novel relationships among the studied parameters of the products. While the higher level of ascorbic acid in the concentration of (100 and 150 ppm), in the presence of three concentrations of the green tea, presented considerable effects on the general acceptance among different parameters detected with the use of Principal Component Analysis. On the other hand the tiny presence of the green tea infusion as well as ascorbic acid in the extracted oil presented more predominant effect of green tea infusion on the studied physico-chemical properties of the product in comparison to ascorbic acid.

**Conclusion:** Regarding the synergistic effects between both antioxidants, the obtained results demonstrated ascorbic acid's synergistic effect on green tea infusion in concentration over 50 ppm.

**Keywords:** Green tea, Texture, Image processing, PCA, Doughnut.

## **Optimization of Banana Spread Formulation with Modified Starch and Pectin by RSM method**

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**Introduction:** Due to the interest of the people and their change in taste towards products with new compounds and flavors, products with nutritional value should be provided.

**Method:** To prepare the formulation of this product, composite statistical design has been used for selecting the levels of pectin and modified starch. The amount of pectin and modified starch was selected from 0.1 to 0.2 percent. Physicochemical tests (including pH and dry matter measurements), colorimetric parameters (L, a and b), and also texture tests and sensory tests..

**Result:** It was determined that different amounts of pectin has little effect on the physico-chemical and colorimetric properties of banana butter and only slightly increases the pH, while significantly improving the sensory parameters. The texture parameters also increase the stiffness, toughness, cohesion, adhesion and adhesion of the product. Also, the selection of different amounts for modified starch showed that by increasing the amount of modified starch, the stiffness, elasticity and adhesion of the sample increased, and the toughness, continuity and brittleness

decreased and improved the sensory acceptance parameters of the product. Also, by increasing the modified starch, the pH and a\* index decreased but did not have a significant effect on dry matter content.

**Conclusion:** The banana spread got an excellent score in overall acceptance, which indicates its commercialization capability.

**Keywords:** Banana spread, Colorimetric, Pectin, Physicochemical, Starch

## **A review of the effect of probiotics on the prevention and treatment of digestive system diseases.**

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Nowadays, more and more studies are conducted on probiotics as a beneficial food and a factor for the prevention and treatment of various diseases such as digestive, skin, liver, diabetes, cancer, etc.

Probiotics are living microorganisms that have positive effects on the health and treatment of the digestive system by modulating the intestinal flora. The purpose of the present study is to review the past studies on the effects of probiotics on health



and treatment of gastrointestinal diseases. Articles related to the subject were examined in SID and Google Scholar electronic databases and included in the study. In studies and reviews, the therapeutic effects of probiotics on infectious diarrhea, Weibost's irritable bowel syndrome, and Helicobacter pylori patients were investigated, and positive effects on cancer prevention and treatment were also obtained; Most studies and clinical trials indicate the effect of probiotics treatment and probiotics can be used as an adjunctive treatment, but due to reasons such as the low sample size and the specificity of different strains of probiotic bacteria, it is difficult to make a definite opinion and plans for detailed clinical studies on the effective dose and type of probiotics strain are needed.

Keywords: Probiotics, digestive system, prevention, treatment

## **Development of low cost and gluten free complete nutrition bar using linear programming and mixture design**

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**Introduction:** The aim of this study was to determine the formulation of a gluten-free complete food bar and investigate the effect of binder combinations on its texture and sensory properties.

**Method:** Using linear programming, a combination of various food groups was selected to meet daily requirements of energy, fiber, essential amino acids, and essential fats, while also considering cost. The dry ingredient formula consisted of oat bran (25%), corn flour (10%), sesame seeds (18.75%), flaxseed (10%), carrot pulp powder (15%), canola oil (18.75%), soy lecithin (1.25%), and glycerol (1.25%). Binders were produced in a mixture design with honey, glucose syrup, and candy syrup at ratios ranging from 0 to 1.

**Result:** Results showed that increasing the amount of candy syrup increased hardness, chewiness, and the b\* (yellowness) of the product, while decreasing scores for appearance, color, flavor, texture, cohesiveness, and overall acceptance. The effect of adding glucose syrup on color score was less than that of the other binders.

**Conclusion:** The highest overall acceptance score (64.5) was obtained for the sample containing 50% honey and 50% glucose syrup. However, considering cost, the optimal sample consisted of 36% honey, 41% glucose, and 23% candy syrup.





**Keywords:** Formulation model, Binding syrup, Ready-to-Use foods, Emergency food, Functional food

## **Investigating the ratio of neutrophils to lymphocytes in the incidence of colitis in benign neutropenia: the effect of taking probiotics encapsulated by carbon nanotubes**

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**Introduction:** Benign neutropenia is a disease that can turn into colitis. It is clinically defined as a neutrophil count of less than 2000/ $\mu$ L. These people are at risk of inflammation of the physical barrier of the intestine or its epithelial cells (colitis). Because the physical barrier of the intestine not only acts as a barrier, but also plays a role in maintaining the stability of the immune system involved in the intestinal

lumen. In this study, the prevalence of benign neutropenia in native and Arab residents of Mashhad was investigated. A total of 70 native people and 70 healthy Arab residents (male/female) from the city of Mashhad in Iran were studied. A blood sample was taken and analyzed for ethnic benign neutropenia. The results of this study showed that the prevalence of ethnically benign neutropenia was 1.42% (1.70) in native residents of Mashhad and 9.28% (9.70) in Arab residents. The use of capsule probiotics with nanoparticles in the form of carbon nanotubes in the group suffering from enterocolitis neutropenia can eliminate this link between immune deficiency and the occurrence of colitis. as a result; The severity of inflammatory colitis in people with neutropenia can be investigated after receiving probiotics.

**Methods:** Totally 140 native and 140 Arabian healthy residents (male/female) from Mashhad city in Iran were studied. they were asked for their familial background of these diseases. The data were expressed as the Mean $\pm$ SE (Standard Error Mean). Student t-test was used for analysis. Statistical analysis was done using Prism version 6.07 software. P-values less than 0.05 were considered significant.

**Results:** Results showed that prevalence of benign ethnic neutropenia in native residents was 1.42% (2/140) and in Arabian residents was 9.28% (13/140). Differential hematologic aspect of each group was determined. There is a significant decrease



in number of neutrophils and also in their differential count in patients than health peoples.

**Conclusion:** This targeted study shows that the ratio of neutrophils to lymphocytes in the state of neutropenia should be taken into consideration in the studies related to the treatment of inflammatory colitis. The consumption of probiotic capsules with carbon nanotubes is effective in the process of preventing the complications of colitis caused by neutropenia.

**keywords:** Neutrophil to lymphocyte ratio, neutropenia, colitis, probiotic encapsulated with nanoparticles.

### **The effects of thyroid hormones on cardiac hypertrophy through the oxidative stress mediators: Approaches to phenolic compounds**

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Thyroid hormones (THs) are critical modulators of body activities, regulating the whole-body metabolism and cardiovascular system. Increased levels of THs lead to physiological and pathological cardiac hypertrophy through the oxidative stress pathway and genomic changes. So the use of new therapies, such as a combination of various antioxidants with antithyroid compounds and other drugs effective in the treatment of heart disorders, may improve cardiac disease such as hypertrophy. The phenolic compound is a crucial and effective agent in improving thyroid hormone disorders by disrupting oxidative stress pathways. In this review, we discussed the effects of thyroid hormones on heart function through anti-oxidation responses and the potential therapeutic effects of flavonoids leading to reducing cardiac abnormalities induced by thyroid hormones. Moreover, various mechanisms of physiological and pathological hypertrophy and their effective factors have also been debated. However, further high-quality research studies are needed to confirm the therapeutic effects of phenolic compounds in improving thyroid hormone disorders, including flavonoids, which is necessary.

**Keywords:** Thyroid Hormone, Cardiovascular System, Hypertrophy, Oxidative Stress, Phenolic Compounds, Flavonoid.



## Investigation and importance of the role of nutrition in the prevention of osteoporosis

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**Introduction:** Osteoporosis is a silent disease and manifests itself when a person suffers a fracture. Bone pathology can be divided into two groups: primary and secondary. primary osteoporosis is more affected by sex hormones and as people age, the bone mineral parts are progressively lost, actually as a function of It is the aging of people. Secondary osteoporosis is caused by the use of certain drugs that people have taken during their lifetime and has affected their skeletal health. In addition to economic and social consequences, osteoporotic fractures cause severe complications and increase health care costs. Therefore, it is very important to promote healthy eating habits to prevent and even treat this disease.

**Method:** A systematic literature review was conducted to identify the definitions and conceptual frameworks of the role of nutrition in diseases. Three databases that systematically dealt with studies on the role of nutrition in the prevention and treatment of diseases and the importance of proper nutrition were reviewed. The results of the included studies were presented in the form of a conference paper in the form of a poster.

**Result:** After reviewing the studies, we came to the conclusion that diverse diets play a role in preventing osteoporosis and in some cases improving treatment methods, so that calcium and vitamin D as calcium phosphate form part of the bone mineral matrix and They are needed for bone strength. Food sources of calcium are mainly obtained from dairy products (milk and yogurt), fish and legumes, as well as nuts and seeds. Dairy products are also a source of protein, vitamin B-12, zinc, potassium and riboflavin.

**Conclusion:** Dietary pattern approaches unify contributions from different aspects of diet. Among the different types of diets, the Mediterranean diet is a protective diet for osteoporosis and is associated with a lower risk of fracture as well as a higher average bone density and the Western diet, which is rich in processed proteins (with A high percentage of protein intake from processed cheese, meat, pastries, pizza, French fries, snacks, and refined grains) is associated with lower bone density and more brittle bones.

**Keywords:** Osteoporosis, Nutrition, Diet

## Relationship between malnutrition and liver diseases

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**Introduction:** Malnutrition is one of the most important complications of patients with liver cirrhosis. It occurs in about 50% of



people with uncompensated cirrhosis and in 20% of people with compensated cirrhosis. The prevalence of malnutrition in cirrhosis is 65-90%. Patients with liver cirrhosis usually suffer from a deficiency of micronutrients, especially B vitamins. Therefore, nutritional interventions and early detection of micronutrient deficiency in these patients are necessary and important and can improve liver function to some extent. A number of factors are associated with malnutrition, including anorexia, early satiety, nausea, vomiting, and malabsorption and poor digestive problems. Evaluation of nutritional status in these patients is complicated and the best way to evaluate their nutritional status is to perform a complete clinical history of the patient; Dietary review of At least 2 days (one in the day and one in the weekend) for identification lack of micronutrients and vitamins; physical examination; anthropometry; measuring the thickness of skin folds; and measuring the circumference of the arm muscle to determine, The amount of muscle mass.

**Method:** Scopus, PubMed and Google Scholar English language databases were searched with the aim of finding relevant sources. This search includes all time periods under. The coverage of the relevant databases was from 2000 to 2023. The initial key words were: "Nutrition" OR "Nutritional status" OR "Malnutrition" AND "Liver cirrhosis" OR "Chronic liver disease".

**Result:** After reviewing the studies, we came to the conclusion that various causes lead to malnutrition in patients with liver cirrhosis, which include: decreased energy and protein consumption, inflammation, malabsorption, changes in nutrient metabolism, hormonal disorders, hypermetabolism, and Intestinal dysbiosis. Microbiome. Among the various causes, decreased energy and protein intake is the most common cause, and several mechanisms have been identified as causes of decreased energy and protein intake, including ascites (causing early satiety), impaired gastric motility, and stress-induced relaxation Portal blood (decreased intake of nutrients), decreased sense of smell due to lack of micronutrients and low salt diet. It should be noted that in these patients, the overgrowth of small intestinal bacteria leads to malabsorption of fat, which should be considered in nutritional evaluation and using biomarkers such as fecal elastase or fecal alpha-1-antitrypsin. and tests to detect micronutrient deficiencies.

**Conclusion:** Malnutrition is common in chronic liver diseases and worsens the prognosis. Many of these liver disorders are related to nutritional deficiencies such as vitamins and are minerals. For this reason, the goal of nutritional interventions in chronic liver disease is to improve the level of energy-protein malnutrition, ensure adequate intake of nutrients and establish a positive nitrogen balance to prevent



hepatotoxicity. It is worth noting that in order to maintain proper nutritional status and increase liver regeneration, patients suffering from cirrhosis need 35 to 40 kcal of energy and it is better to provide 50-60% of daily energy in these patients from complex carbohydrates.

**Keywords:** Malnutrition, Liver cirrhosis, Liver diseases, Nutrition assessment

### **The association of triglyceride glucose index with coronary artery stenosis**

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**Introduction:** The aim of this study is to investigate the association of TyG

(triglyceride to glucose ratio) index and coronary atherosclerosis extent

**Method:** We performed a case control study on 1538 individuals with age between 18 to 80. patients were included in this study were classified into 3 groups; angiography+ (angiographically-confirmed coronary artery disease with stenosis equal or above 50%), angiography- (angiographically-confirmed coronary artery disease with artery stenosis below 50%), and subjects with CVD history-. The TyG were compared between participants' groups.

**Result:** In this study, angiography+ and angiography- groups have significantly lower LDL, cholesterol than the healthy group (p value<0.05). Also, hsCRP was significantly higher in both angiography+ and angiography- groups than the CVD history- group (p value<0.05). Increase of TyG index was independently associated with higher risk of artery stenosis above 50% (angiography+) (P value <0.001 OR: 1.183 (1.410-2.514)).

**Conclusion:** The TyG index was significantly higher in patients with severe coronary stenosis independently and it can be used as an inexpensive marker to identify patients with severe coronary artery stenosis.

**Keywords:** TyG index, cardiovascular disease, Coronary artery disease



## Optimizing the formulation of German sausage produced by substituting Erinji mushroom and quinoa instead of meat

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**Introduction:** Meat and meat products are as a nutrient in the diet due to has a significant amount of fatty acids, vitamins and minerals and has been allocated a significant for study and research. Researchers was proved that the consumption of meat products has high calories and high in fat causes a wide range of chronic diseases, including, colon cancer, obesity, heart diseases - the diseases become big. Therefore, the aim of this study was optimized the formulation of German sausage production by substituting quinoa and Erinji mushroom instead of chicken meat and investigated the effect of this substitution on the physicochemical properties.

**Method:** The meat at the level of 50-100% replaced with quinoa flour at the level of 0-30%, Erinji mushroom at the level of 0-20%

in the sausage formulation. The measured indicators of color, texture, moisture content, water activity, cutting test and sensory evaluation were fitted with the first, second and third degree models.

**Result:** The use of quinoa flour and the mushrooms increased the protein and ash of sausages. Adding quinoa flour increased the amount of fat, but mushrooms reduced its. Substitution of quinoa and mushrooms reduced the amount of free water (water activity) and improved the moisture content of sausages. The lower level of quinoa and the upper level of mushrooms and meat reduced the stiffness and, as a result, softened the texture and improved the cut of the sausage. The addition of quinoa decreased the brightness but improved the color index of the sausage. The use of medium amount of quinoa flour and mushroom improved the sensory properties of the sausage and acceptable by the panelists.

**Conclusion:** Optimization of the predicted model showed that sausage production using quinoa, Erinji mushroom and chicken meat at 21.148%, 15.131% and 63.721%, respectively has the best texture and sensory properties.

Keywords: Erinji mushroom, Sausage, Quinoa, Vegetable substitutes for meat

## The role of nutrition in improving sports injuries

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**Introduction:** sports injuries are an undeniable part of sports and during the sports period, serious minor injuries occur. Several factors are effective in improving sports injuries, one of the factors can be proper nutrition.

**Method:** The necessary information was collected by searching numerous articles through the internet and reading books.

**findings:** Nutrition plays an important role in the recovery of sports injuries. Proper nutrition helps to maintain muscle mass and increase muscle function, increasing the recovery process. Carbohydrates, proteins, fats are the components of a proper diet. These macronutrients have unique effects on wound healing. Carbohydrates are the main source of energy for replenishing glycogen reserves in muscles and reducing inflammation and strengthening the immune system, such as whole grains, fruits and vegetables. Proteins are essential for repairing damaged tissues and building new cells. They provide the necessary amino acids for muscle recovery and growth. Protein sources are lean meat, fish, eggs, dairy products, and soy. Inflammation occurs within one to two hours after injury. Although inflammation helps the healing process, it should not continue for a long time. Fats, especially omega-3 fatty acids, have anti-inflammatory properties, they reduce inflammation and provide essential nutrients for cell growth. Salmon and sardines, chia seeds, walnuts and their

supplements should be used to supply this substance.

**Conclusion:** Adequate intake of macronutrients can play an important role in accelerating the healing process and reducing inflammation caused by sports injuries.

### **A randomized controlled trial on the use of probiotic yogurt in reliving gastroesophageal reflux disease**

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**Introduction:** Gastroesophageal reflux disease (GERD) is a common disease with various clinical presentations. Lifestyle modification and acid suppression with proton pump inhibitors may relieve its



symptoms. We evaluated the possible effect of probiotic yogurt in patients with refractory GERD in comparison with omeprazole.

**Method:** Patients suffering from grade B GERD entered the study. This was a randomized and placebo-controlled clinical study. After randomization, one group received omeprazole 20 mg before breakfast for two months, and the other two groups received a placebo capsule and 120 ml yogurt or probiotic yogurt, for the same period. The severity of symptoms was evaluated using the FSSG (Frequency Scale for the Symptoms of GERD) score. Also, Quality of life (QoL) in three groups was measured using a standardized version of the Quality of Life in Reflux and Dyspepsia questionnaire (QOLRAD).

**Result:** A total of 120 patients were enrolled in this study. All the markers in all groups like the omeprazole group had significant improvement over time ( $P < 0.0001$ ), but there was not any significant difference between groups and omeprazole in the severity of symptoms and QoL. Furthermore, there was not any significant difference between the yogurt groups.

**Conclusion:** Yogurt, without paying attention to the ordinary or probiotic type, could be useful in alleviating symptoms and improving QoL in patients with GERD as effective as omeprazole.

**Keywords:** GERD, Omeprazole, probiotic, Quality of life, yogurt

## Knowledge, Attitude and Practice about Proper Nutrition among Patients with Kidney Stone Disease Referred to Ahvaz Imam Khomeini and Golestan Hospitals

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**Introduction:** Kidney Stone Disease (KSD) can be prevented special diets (low salt, spinach, fatty foods, animal protein and vegetables, water and fresh fruits). The aim of this study was to evaluate knowledge, attitude and practice (KAP) about the prevention of KSD among kidney stone patients in Ahvaz and to identify their relationship with demographic characteristics.

**Method:** The samples of this cross-sectional study included patients with KSD in Ahvaz in 1401. The study team developed the study instrument based on the KAP survey instruments on healthy eating and lifestyle.





Simple and multiple regression analyzes were performed to test associations between main variables while controlling for potential confounders and interactions.

**Result:** This was a cross-sectional study with a population included 96 patients. The average age of the participants was  $46 \pm 14.4$  years. The men to women ratio was almost 2 to 1. 82.3% had kidney stones at the time of the survey. Knowledge score wasn't related to the practice score ( $P > 0.05$ ) and disease duration was related to practice score ( $p < 0.05$ ). Also, the relationship between gender and practice was significant ( $p < 0.05$ ). A statistically significant relationship between performance score and gender, BMI, disease duration, genetic predisposition, working in hot condition and the interaction between knowledge and education level and knowledge and marital status was shown. Attitude score was  $3 \pm 1.0.1$ .

**Conclusion:** This study showed that despite respondents sufficient knowledge about KSD prevention, they did not practice protective behavior. Further research is needed to identify the reasons of this finding.

**Keywords:** Kidney Stone Diseases, Nutrition, Diet, KAP

## The effects of lycopene on fasting blood glucose, lipid profile, blood pressure and anthropometrics indices in subjects with metabolic syndrome: A randomised clinical trial

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**Introduction:** Lycopene is a natural compound, have been shown to positively affect human health by reducing oxidative stress, which is a mechanism behind metabolic syndrome (MetS).

We developed a method for encapsulating lycopene and designed a randomized clinical trial to assess the effect of lycopene on lipid profile and anthropometric indices of patients with MetS.

**Method:** In this project, 80 patients with metabolic syndrome were randomly divided into two groups. One group received



lycopene at a dose of 20 mg (1 tablet per day) for 8 weeks. The second group received a placebo with the same color, size and appearance as the lycopene tablets. Participants returned for follow-up visits after 4 and 8 weeks. After 12 hours of overnight fasting, 20 ml of blood was collected in simple blood collection tubes to check fasting blood sugar and lipid profile. These measurements were taken at baseline and after 8 of treatment using the Alpha Classic analyzer. Also, anthropometric factors were checked and measured on the participants in all follow-up stages

**Result:** The average age of the lycopene and placebo groups were  $44.25 \pm 11.25$  and  $41.75 \pm 10.05$  years, respectively. There were significant differences in Fasting Blood Glucose (FBG), Low-Density Lipoprotein (LDL), Total Cholesterol (TC), Triglycerides (TG), and Systolic Blood Pressure (SBP) in the lycopene group before and after treatment, but there was no significant effect of treatment in the placebo group. In addition, P value of BMI and Weight were significant in both groups. After adjusting for confounding factors such as age, sex, FBG, LDL, and TC as co-variant, the P value of difference between lycopene and placebo groups was shown

**Conclusion:** This is the first study to assess the effects of lycopene on Iranian individuals with MetS. These findings enhance our understanding of protective effects of lycopene on lipid profile, as an important risk factor for evaluating of cardiovascular

disease. Another results of this investigation show that lycopene improves the BMI status.

**Keywords:** Lycopene, Fasting blood glucose, Lipid profile, Blood pressure, Anthropometry, Metabolic syndrome

## Association between coffee and caffeine intake and functional dyspepsia

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**Introduction:** No previous study has examined the association between coffee and caffeine intake and odds of functional dyspepsia (FD). The aim of this study was to investigate the association between coffee and caffeine intake and odds of FD and its components in a large sample of Iranian adults.



**Method:** In this cross-sectional study that was carried on 3362 Iranian adults aged 18-55 years, a validated food frequency questionnaire (DS-FFQ) was used to assess dietary intakes. A validated modified Persian version of the Rome III questionnaire was used for assessment of FD. Logistic regression was applied to compute odds ratios for FD and its components considering a wide range of covariates.

**Result:** Mean age of study population was  $36.2 \pm 7.8$  of them 58.3% were females. The prevalence of FD among study participants was 14.5%. The prevalence of post-prandial fullness, early satiation, and epigastric pain was 7.6, 5.8, and 7.6%, respectively. After controlling for potential confounders, no significant association was observed between coffee (OR:1.27; 0.86-1.87), and caffeine (OR:1.00; 0.99-1.02) consumption and odds of FD. In addition, coffee and caffeine consumption was not significantly associated with odds of FD symptoms such as early satiation, post-prandial fullness, and epigastric pain. This was also the case when the analysis was done stratified by gender and BMI status

**Conclusion:** We found no significant association between coffee and caffeine consumption with odds of FD and its symptoms. Further research in other populations with high coffee consumption is needed. t

**Keywords:** Coffee, caffeine, functional dyspepsia, diet

## Effect of *Lactobacillus plantarum* TWK 10 probiotic supplementation on performance and indicators related to fatigue: A Systematic Review

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**Background:** Exercise can influence the amount and composition of the microbiome. Previous studies have mainly focused on the impact of exercise on gut diversity and microorganisms. This systematic review aims to investigate whether TWK 10 probiotic supplements can improve fatigue-related indices in untrained individuals.

**Methods:** A comprehensive systematic review covering the past 10 years was conducted using the reputable databases PubMed, Scopus, and Web of Science including human or animal trials.

**Result:** Six selected clinical intervention studies assessed the effect of TWK 10 supplementation on various performance tests and physiological factors in both humans and animals (178 amateur athletes



and 57 rats). The duration of the intervention ranged from 6 to 18 weeks. The results of the animal studies showed that TWK 10 supplementation increased grip strength and endurance swimming time. However, in human studies, TWK 10 had no significant effect on grip strength, glucose levels, muscle strength, body weight, or body composition. The effects of TWK 10 on serum levels of lactate, ammonia, glucose, creatine kinase (CK), and blood urea nitrogen (BUN) were inconsistent across studies. Some studies reported increased muscle mass and decreased fat mass with TWK 10 supplementation. The administration of TWK 10 also resulted in changes in gut microbiota and short-chain fatty acid concentrations.

**Conclusions:** Further well-designed research studies are needed to fully determine the impact of TWK 10 supplementation on performance tests and physiological factors. The variation in study results may be attributed to differences in fiber intake and gut microbiota composition.

**Key words:** Lactobacillus plantarum TWK 10, performance, LP10, exercise

## Relationship between the Type of oil consumption with Stress, Anxiety, Depression and Sleepiness

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**Introduction:** The high prevalence of depression symptoms is a problem that affects public health in all aspects. However, the link between the type of oil consumption and these symptoms remains unclear. The purpose of this study was to investigate the relationship between the type of oil consumed and symptoms of depression, anxiety, stress, and sleepiness in the Iranian adult population.

**Materials and Methods:** 604 Iranian adults aged 18 to 65 from different regions of the country participated in this cross-sectional study. The type of oil consumed was evaluated by a valid food frequency questionnaire (FFQ). To evaluate depression, anxiety and stress, the scale (DASS 21) was used. Epworth Sleepiness Scale (ESS) was used to measure sleepiness. The relationship between the type of oil consumed with depressive symptoms was tested using binary logistic regression.

**Results:** No significant difference was seen between the type of oil consumed and stress in the Crude model, but after adjusting variables such as age, BMI, and total Kcal between the type of oil consumed and stress, a significant difference was seen (OR=4.75, CI=95%:0.98-21.19, P=0.05)



There was no significant relationship between the type of oil consumed (olive, sesame, canola or rapeseed, sunflower or soybean, vegetable oil and animal oil) with anxiety, depression and sleepiness.

**Conclusions:** Consuming more animal oil than olive oil may increase the risk of stress and anxiety. However, no significant difference was observed between the type of oil consumed and depression or sleepiness. More studies are needed to confirm these findings.

**Keywords:** oil consumption, depression, anxiety, stress, sleepiness

## Exploring the relationship between family meals and Anxiety

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**Objective(s):** The World Health Organization (WHO) reported that in 2019, 970 million people worldwide had mental disorders such as anxiety disorders and depression, which are the most common mental conditions and the main causes of disability in mental health problems. Mental disorders are generally multifactorial, Genetic, and environmental factors. In this sense, social determinants (i.e. interactions

and relationships) may protect or increase the risk of mental disorders. So that, This study aimed to investigate the relationship between eating meals with family members and Anxiety.

**Materials and Methods:** This cross-sectional study was conducted on 604 Iranian adults aged 18 to 65 with an average age of 33.8. Participants reported their demographic data and completed self-report measures, including the DASS 21 questionnaire for anxiety symptoms and a validated questionnaire for eating family meals. To examine the relationship between eating meals with family members and depression, logistic regression analysis was used in crude and adjusted models.

**Results:** The crude model showed that there was no significant difference in the odds of anxiety between those who reported "always" eating with family members and those who claimed to "never" eat with family members (OR: 1.14; 95% (CI: 0.74, 1.75; P: 0.53). After adjusting for potential confounders, including age, BMI, sex, smoking, menstruation, and relative loss, no statistically significant association was found (OR: 1.25; 95% CI: 0.72 to 2.16; P: 0.41).

**Conclusion:** This study did not find significant evidence for the relationship between eating meals with family members and anxiety. Future studies must examine the relationship between eating meals with family members and its impact on mental health outcomes.



**Keywords:** eating, family, Anxiety, meals, Dietary habit

## Prevalence of obesity and overweight among pregnant women in Zahedan

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**Background:** Overweight and obesity are among the most critical issues and in pregnant women is more concerning due to its complications and the importance of mother and child health. This study aims to determine the prevalence of obesity, overweight and underweight in pregnant women in Zahedan city and to declare its association with age and other demographic parameters.

**Method:** This study included 702 pregnant women in Zahedan in urban and rural areas from 20 health care centers in 2022. The records of all the pregnant women in Electronic Health Records (EHRs), which is known as SIB, checked and those who had attended for the first trimester visit up to the 12th week of pregnancy were identified and their information collected. Data were analyzed using frequency, percent, and chi-square test. P-value < 0.05 was considered as significant.

**Result:** Our findings indicated that 80(11.4%) pregnant women were underweight, 371(52.8%) had normal weight, 157(22.4%) were overweight, and 94(13.4%) were obese. The mean BMI was 23.98±5.04 kg/m<sup>2</sup>. Pearson's correlation coefficient revealed that obesity and overweight status were found to be significantly associated with age, systolic blood pressure, resident status, level of education, and number of children (p<0.05).

**Conclusion:** In conclusion, this study showed that the prevalence of overweight and obesity in Zahedan city is a significant figure that has a significant relationship with parameters such as age, systolic blood pressure, resident status, level of education, and number of children.

**Keyword:** prevalence, obesity, pregnancy food security under climate change system thinking modelling in Iran. Applied for policy making.

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**Introduction:** Agriculture is the most vulnerable sector to climate change because farming is so weather dependent. Food demand is predicted to increase by around 300% by the year 2080 because of higher population, higher income, and demand for bio-fuel, so this rise is likely to create an imbalance between food supply and demand without the effects of GCC (Global Climate Change).

According to the latest report of global hunger index, in Iran GHI (Global Hunger Index) is about 8%. Iran has arid or semi-arid characterized by low rainfall and high potential evapotranspiration. Climate variation affects irrigation, soil quality and the natural communities that agriculture relies on.

**Objective:** we investigate the quantitative effects of climate change on food security in Iranian population and examine their relationship with “food price and food insecurity” through policy analysis.

**Methods:** 61 variables were distinguished, were estimated by AHP was applied to the prioritization of variables. itthink software

was performed to design System Dynamic Model.

**Results:** The most weighted variable was water resources. The considerable weather extreme event was intense drought, and only five percent increase in food security will happen in next 30 years in Iran.

**Conclusion:** To increase food security in context of Iran, policy makers should design new policies, according to projections of the most important derivers that estimated by system thinking modelling.

**Keywords:** food security, climate change, system thinking, modelling

## **Adherence to Lifelines Diet Score (LLDS) in relation to stress and anxiety levels in adults**

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**Introduction:** Stress and anxiety are prevalent conditions that can impact an individual's well-being and quality of life. This study will investigate the association between Lifelines Diet Score (LLDS), using the 2015 Dutch Dietary Guidelines and underlying international literature, with stress and anxiety levels in adults.



**Methods:** This cross-sectional study was conducted among 604 students and their families over 18 in Iran. The dietary intake was assessed with a valid and reliable food frequency questionnaire. We categorized food groups as having positive, negative, neutral, or unknown effects based on the LLDS guidelines. Only the positive and negative foods are included in the study. Stress and anxiety levels were assessed by Depression, Anxiety, and Stress Scale-21 (DASS-21). Logistic regression was utilized in crude and adjusted models to explore the association between LLDS and stress and anxiety levels.

**Results:** We found no significant correlation between high adherence to an LLDS (for individuals in the upper tertile) and odds of anxiety (odds ratio [OR]:0.61, 95% confidence interval [CI] (0.362-1.028),  $p=0.063$ ) and stress levels (odds ratio [OR]:0.712, 95% confidence interval [CI] (0.383-1.325),  $p=0.242$ ). These associations also remained insignificant after adjusting for known confounding factors such as age, energy intake, gender, Smoking Cigarettes, and BMI percentile.

**Conclusions:** Our results indicate an inverse correlation between higher score of LLDS with odds of anxiety and stress levels among Iranian adults. However, this association was insignificant in statistical analyses. Further longitudinal studies are required to clarify these findings.

**Keywords:** Lifeline diet score LLDS anxiety stress

## Examining the association between meal regularity and anxiety

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**Objectives:** Anxiety occurs when people feel unable to cope with specific demands. It is prevalent in all regions of the world. Dietary habits may be related to various aspects of mental health. However, there is not much research on the link between meal regularity and anxiety. This study aimed to examine this association among a sample of adults.

**Materials and Methods:** In this cross-sectional study, a total of 604 adults aged 18 to 65 years old participated from different regions of Iran. Meal regularity was assessed using a standard questionnaire and anxiety was by the DASS-21 scale. To explore the association between meal regularity with anxiety logistic regression is used in crude and adjusted models.

**Findings:** Individuals who "never" consume their meals regularly compared with those who "always" have their meals regularly had a higher chance of anxiety (OR: 2.21; 95%CI:





(1.06-4.24); P: 0.03). This association remained significant in model I after adjustment for age, BMI, and total kcal (OR: 2.33; 95% CI 1.09-4.98; P: 0.02). However, the association disappeared after further adjustment for gender, smoking, menstruation, and loss of relatives (OR: 2.11; 95% CI: (0.90-4.95); P: 0.08).

**Conclusion:** Given the limited findings of this study and the scarcity of research in this area, more studies are needed to explore the potential relationship between meal regularity and anxiety.

**Keywords:** meal regularity, anxiety, dietary habits, mental health, adults

## **Relationship between meal regularity and depression: role of an eating habit in mental health**

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**Objectives:** Depression is a prevalent mental health disorder that may be influenced by dietary habits. There is not much research on the link between eating regular meals and depression. This study

focused to examine the association between meal regularity and depression in adults.

**Materials and Methods:** This cross-sectional study included 604 adults aged 18 to 65 years old (mean age: 33.8 years) from different regions of Iran. Meal regularity was assessed using a standard questionnaire and depression was diagnosed by the DASS-21 questionnaire. Logistic regression was used to analyze the data in unadjusted and adjusted models.

**Results:** No significant association was observed between depression with adults who always consumed their meals regularly compared to those who never had a regular eating habit (OR 1.98; 95% CI 0.59-2.09; P: 0.76) in the crude model. This association remained not significant after adjustment for all potential confounders including age, BMI, total energy intake, gender, smoking, menstruation, and loss of relatives; (OR 0.71; 95% CI 0.34-1.46; P: 0.35)

**Conclusion:** As a result, there was no significant relationship between meal regularity and getting depressed. Hence, according to this study, we might not be able to consider meal regularity a reliable factor to prevent or decrease the rate of depression in adults. Therefore, more prospective studies are necessary to confirm these findings.

**Keywords:** meal regularity, eating habit, meal, depression, adults



## Isolation and identification of Escherichia coli O157H7 specific bacteriophages and study of their antimicrobial effect

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**Objectives:** Escherichia coli poses a danger to human health through annual outbreaks and individual cases by various contaminated food materials. This study was conducted to characterize and use a single broad-host bacterium as a biological control agent.

**Materials and Methods:** The phages were isolated, in addition, some of the important features of the phage that were important in determining its bactericidal properties, such as host range, the rate of absorption of the phage into the host cells, the one-step growth diagram and kill curve diagram bacteria were determined at low temperatures.

**Results:** In this study, a new bacteriophage belonging to the Podoviridae family was isolated and identified for the control of

Escherichia coli O157:H7 bacteria. Determining the bacteriophage host range showed the presence of two pathogenic bacteria of two different genera (Escherichia coli O157:H7 and Salmonella typhimurium) in this range. The isolated phage was still stable at high temperature (80°C) and, in addition, caused an acceptable reduction (6.18 log in 8 hours) in the amount of Escherichia coli O157:H7 bacteria. Bacteriophage genome sequencing also showed it to be completely safe and free of any virulent factor transferred from the host bacteria.

**Conclusion:** Due to its high lytic activity, even at low temperatures, stability in relevant conditions and broad host range, the phage has the potential to be an efficient food matrices biopreservative agent.

**Keywords:** Foodborne pathogen, Isolation, Characterization, Bacteriophage.

## Alterations of Gut Microbiota in Hypothyroidism

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**Introduction:** Hypothyroidism is a condition in which the thyroid doesn't



produce enough thyroid hormone. People with thyroid problems have dysbiosis in their intestinal microflora, so it may be positive link between gut microbiome and thyroid. In this review we aimed to discuss the relationship between the gut microbiome alteration and hypothyroidism.

**Method:** Related papers from 2015 to 2022 were searched and 7 related articles were used.

**Result:** Several possible mechanisms have been proposed for the effectiveness of gut microbiota on thyroid function; 1) Iodothyronine homeostasis depends on the availability of iodine and selenium. Considering that the intestinal microbiome can play an effective role in the absorption of micronutrients. 2) Intestinal flora shown high affinity binding and uptake iodothyronines which may play a relevant role in reabsorbing iodothyronines from the intestine and returning it to the blood. 3) Intestinal bacteria have deiodinase activity. Therefore, dysbiosis can cause a decrease in the body's ability to convert T4 into T3. 4) Glucuronides and sulphates are bound to iodothyronine in the liver and make them unavailable. The glucuronidase and sulphatase activities of intestinal microbiota may allow the reabsorption of T3 following the hydrolysis of conjugated forms of the hormone. 5) Intestinal microbiota seems to improve absorption of Levothyroxine as oral treatment of hypothyroidism via modulating intestinal permeability.

**Conclusion:** In conclusion, as research shows strong thyroid-gut axis exists and it has been proven that poor gut health may impair thyroid function. However, future human studies are necessary to evaluate the impact of gut microbiota alterations on thyroid function and diseases.

**Keywords:** Hypothyroidism, Gut microbiota, Thyroid hormones, Probiotics, Dysbiosis

### **The Antioxidant Potential of Probiotics: A comprehensive review on Lactobacilli and Bifidobacteria**

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**Introduction:** Oxidative stress (OS) is characterized by the excessive production of reactive oxygen species (ROS) in cells and tissues. When the body's antioxidant system fails to neutralize ROS effectively, it can activate pro-inflammatory pathways and contribute to the development of chronic diseases.

The human body contains various antioxidants that help eliminate free radical intermediates and inhibit oxidation



reactions by neutralizing these radicals. In recent years, research has highlighted the emerging role of probiotics, including their cellular components, as a potential source of effective antioxidants. Notably, lactobacilli and bifidobacteria—prominent members of the human gut microbiota—are gaining attention for their antioxidant properties. By understanding how probiotics affect gut flora, researchers aim to uncover insights into how these beneficial bacteria can promote a healthier balance between antioxidants in the body while preventing chronic diseases.

**Method:** We searched major databases such as Medline, Embase, PubMed, and SCOPUS to gather relevant information on this topic. The quality assessment of Randomized Clinical Trials (RCTs) was performed using the "Consolidated Standards of Reporting Trials" (CONSORT) checklist. Our search results identified sixty papers, with twenty-five meeting our inclusion criteria.

**Result:** This manuscript aims to provide a comprehensive overview summarizing current research on various antioxidant properties of lactobacilli and bifidobacteria. Additionally, we will explore the mechanisms through which probiotics exert their antioxidant effects.

**Keywords:** Probiotics, Antioxidant, Inflammation, Oxidative stress

## The effect of lifestyle intervention apps on weight management and body composition in healthy adults with overweight/obesity: A systematic review of randomized controlled trials

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**Background:** Weight management is a major public health focus for preventing obesity and associated non-communicable diseases. Lifestyle intervention apps as accessible and cost-effective strategies may promote obesity and related health conditions. So, this systematic review aimed to examine the related effect.

**Methods:** We conducted a systematic literature review of articles published from 1990 until August 2023 in Databases, including MEDLINE, ISI Web of Science, and Scopus. The review included the randomized controlled trial studies that we assess the effect of lifestyle intervention apps on weight loss and body composition in overweight/obese healthy adults. Finally, six trials were included to present the study.



**Results:** Individuals received behavior change techniques, muscle training, dietary recommendations and nutrition and exercise sessions via lifestyle intervention apps. These apps improved weight, BMI, body adiposity index and body mass in overweight or obese subjects. The intervention period varied from 12 weeks to 12 months. All studies showed Weight reduction after complied intervention apps orders. Also other outcomes diminished in two trails.

**Conclusion:** lifestyle intervention apps can reduce weight, BMI, body adiposity index and body mass in overweight or obese healthy adults.

**Keywords:** weight management, obesity, lifestyle apps

## The Association between different types of Meat Intake and breast cancer risk

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**Background:** The aim of the present study was to assess the relationship between red meat, processed meat, poultry, and fish intake with the risk of breast cancer (BC).

**Method:** In this hospital-based case-control study, we enrolled 464 women with pathologically confirmed BC and apparently 498 healthy control women. A 168-item validated FFQ was used to collect the participants' dietary intakes. The likelihood of BC was evaluated across tertile of red meat, poultry, fish, and processed meat.

**Results:** Higher red meat intake was related to lower odds of BC in the whole population (P=0.03). But, women with a higher intake of processed meat had highest odds of BC. In the whole population and premenopausal women, replacing 30 g of processed meat with 30 g of red meat, fish, and poultry was significantly associated with the reduced risk of BC and also replacing other types of meat with 30 grams of processed meat was positively related to the BC risk. In postmenopausal women, the replacement of one portion of red meat with one portion of poultry protein protectively related to the odds of BC (P=0.03) but, substituting 30 g of



poultry with 30 g of red meat protein increased the risk of BC (P=0.03).

**Conclusions:** Red meat intake may be related to a lower BC risk, but a higher intake of processed meat may lead to a higher risk of BC. Substitution of processed meat with other types of meat also may be inversely related to the odds of BC.

**Keywords:** breast cancer, red meat, processed meat, poultry, fish, case-control

### **Dietary intake of arsenic and mercury by the adult population of Shiraz: a total diet study**

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**Objectives:** Human exposure to toxic elements has been associated with adverse effects on health. Consequently, the aim of present study was to determine the concentration and daily intake of arsenic and mercury in the adult population of Shiraz by total diet study (TDS).

**Materials and Methods:** The consumption data was derived from a 160-item food frequency questionnaire (FFQ) in 438 healthy individuals in Shiraz. A total of 580 food samples were purchased from food retails and categorized into 20 food groups. After preparation of food samples, the metal concentration was measured using inductively coupled plasma-optical emission spectrometry (ICP-OES). Finally, the dietary exposure of arsenic and mercury was determined on basis of food consumption data and the metal concentration.

**Results:** The results showed that the highest concentration of arsenic and mercury was found in fish and snacks, respectively. "Drinking water" and "fruits" were the biggest contributor to the intake of arsenic, while the main contributors to dietary exposure to mercury were "raw vegetable" and "milk and dairy products". Based on arsenic and mercury concentrations in food groups, the average dietary exposure of mercury was in range of 0.2 to 8.65 µg.day<sup>-1</sup> and the average daily intake of arsenic was estimated at 6.5-8.81 µg.day<sup>-1</sup> which not exceed the provisional tolerable daily intake (PTWI) value.

**Conclusion:** The finding indicated the dietary exposure of arsenic and mercury in adult population of Shiraz was lower than the FAO/WHO limit. Therefore, the daily intake of mercury and arsenic and the risk was considered tolerable.



**Keywords:** Food analysis, Arsenic, Mercury, Total diet study.

## Eating art in new era

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Eating is common and continuous behavior in living beings. It is a vital activity. In humans, nutrition acts by eating and drinking. In humans, nutrition is done by eating and drinking. Humans, as animals with the highest intelligence and reasoning power, need appropriate nutritional behavior. Art, one of the dimensions of human life manifest in eating. The art of eating includes various fields that indicate a part of human identity. The study is to investigate the artistic aspects of eating in real and virtual space in humans. Narrative and review study conducted in Google Scholar and PubMed in the summer of 2023. Two main characteristics of eating experiences traced. First, in the area of motivation to eat, the characteristics of the physical environment and social factors play a role. In the field of the organism, there is a specific physical-psychological state and attitude towards hedonism, and in the field of response, preparation activities, specific characteristics of eating behavior, and positive feelings and emotions are observed.

Second, the pleasure of eating depends on various external and internal condition, in which the art of eating has a prominent appearance. The physical characteristics of food, the environment, and social factors reinforce the positive emotional responses caused by food and place them in a unique environment. Internal conditions include motivational, cognitive, and behavioral factors: people who enjoy eating have an explicit intention to enjoy, eat slowly, and focus on salient features of foods and environments, often before, during, and after eating. They are involved in social activities. The hedonic experiences of eating understood as 'gestalten appetites', i.e. specific configurations of stimuli, organismal variables, and responses. We can even refer to virtual activities related to eating. An example is Instagram, which has recognizable aesthetic conventions, the presence of everyday users and industry professionals, and a common focus on the food representation, eating, and food-related phenomena. Instagram users engage with the topic of food on various global sites to construct identities, seek influence, and negotiate aesthetic norms, institutional access, and cultural power as well as social and economic control. Conclusion: The progress and change of lifestyle and new technologies have changed or created different areas of food. The art of eating is also affected by external and internal factors and efforts to seek more pleasure and use various art tools in the context of time and



place, make the subjects more attractive, and create new ideas for nutrition and eating.

**keywords:** Food, Art, Eating

## **Correlation of Serum Ferritin, Vitamin D Levels, and Severity of Clinical Symptoms in Patients with COVID-19**

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**Objectives:** Nowadays, the world is experiencing the COVID-19 pandemic. Iron deficiency anemia and vitamin deficiency are two of the world's most prevalent health problems. Severe COVID-19 patients were found with elevated serum ferritin and decreased vitamin D levels.

There is a need to investigate the possible roles of micronutrients in the severity and mortality of COVID-19.

**Materials and Methods:** This descriptive analytical cross-sectional study was conducted on 437 COVID-19 patients who were hospitalized from April to August 2020. Demographic, clinical, and laboratory data of the patients were collected. The data were analyzed using SPSS statistical software Version 16.

**Results:** The mean age of the participants was 60.74±16.70 years old, and the most common comorbidities were diabetes type II (15.1%) and hypertension (12%). Shortness of breath (58.6%), anosmia (55.1%), and ageusia (45.1%) were the most common presenting symptoms. The mean serum vitamin D level was 28.86 ± 15.69 ng/mL, and vitamin D deficiency was found in 53% of patients. The mean serum ferritin level was 125.32 ± 97.99 for males and 302 ± 73.6 for females. Significant correlations were observed between serum vitamin levels, lower oxygen saturation rate, and COVID-19 severity.

**Conclusion:** A significant relationship was found between the serum ferritin levels and hospitalization duration ( $P < 0.05$ ). Our findings indicated that COVID-19 patients treated in the hospital had a high prevalence of hypovitaminosis D. The severity of the disease was increased in patients with vitamin D deficiency and elevated serum ferritin levels.

**Keywords:** Vitamin D, Ferritin, COVID-19, Clinical Symptoms, PCR Test

## **Examining Lifestyle Components in Hospitalized COVID-19 Patients, Iran 2021**

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**Objectives:** COVID-19 pandemic is a serious health threatening element throughout the world. One of the key elements to strengthening the body's immune system is to follow a healthy lifestyle to deal with health threatening. The aim of this study was to evaluate the lifestyle components in COVID-19 patients.

**Methods:** This descriptive-analytical study was carried out on hospitalized COVID-19 patients from October 22, 2020, to January 19, 2021. Demographic characteristics, physical activity, nutritional status, stress and anxiety, and substance abuse were assessed. A simple model and multiple logistic regression model were used.

**Results:** About 32% were hospitalized in the intensive care unit (ICU). A healthy lifestyle was observed only in 28%. About 82% had insufficient physical activity, and 67.3% were reported to be unfavorable in nutritional status. Severe stress and anxiety were observed in 30.4% of people. There were significant relationships between age (AOR = 2.11,  $p = 0.036$ ), education (AOR = 0.35,  $p = 0.002$ ), and a healthy lifestyle. A significant correlation was observed between ICU admission and unhealthy lifestyle (AOR = 0.40,  $p = 0.015$ ).

**Conclusion:** Unhealthy lifestyle behaviors were seen in most COVID-19 patients. Considering the significance of lifestyle changes could prove effective in reducing the risk of transmissible viral infections.

**Keywords:** Nutritional status, Physical activity, COVID-19, Lifestyle components

## Frequency and Causes of Consuming Sports Supplements and Understanding their Side Effects among Bodybuilders in Fitness Gyms of Kermanshah City

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**Objectives:** Nowadays, paying attention to sports nutrition, particularly focusing on using supplements among athletes is increasing rapidly. This study has been carried out in order to investigate the frequency and causes of consuming supplements and understand the side effects related to their consumption among bodybuilders in Kermanshah City.

**Methods:** The samples of this cross-sectional study include teenagers and young adults who are members of fitness gyms



around Kermanshah City. 244 individuals were selected as samples using simple random sampling. In order to gather the required data, a four-sectioned questionnaire designed by the research team was used. The data analysis was done using chi-square, independent t-test, and Pearson's and Spearman's correlation coefficients by SPSS-20.

**Results:** The majority of bodybuilders participating in the study (95.3%) have used supplements. The sources suggesting the consumption of supplements included other athletes, the coach, the media, nutrition specialists, and medical doctors, respectively. Generally, 37 types of sports supplements are used by bodybuilders. Based on their rank, the supplements include vitamin C, Creatine, vitamin E, multivitamins, and iron. The most frequent reasons for consuming sports supplements included muscle building, increasing energy, and improving athletic performance. There is a significant difference between male and female athletes with regard to knowing the psychological and sexual side effects of consuming sports supplements ( $P < 0.05$ ).

**Conclusion:** Since a significant percentage of athletes, particularly male athletes, have a history of consuming sports supplements, it is necessary that the people related to this issue including athletes, coaches, doctors, and nutrition specialists get sufficient information about the ingredients, side effects, benefits, and applications of various nutritional supplements. Dysfunctional

beliefs about the supplements consumption or non-consumption should be discussed

**Keywords:** Bodybuilder, nutrition, public health, sports supplement.

### **Comparing the efficacy of using the needle or micro injection in similar acupoints in low back pain**

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**Background:** Low back pain (LBP) is a common cause of disability. Several treatment modalities have been suggested, such as massage, acupuncture and exercise therapy. The aim of this study was to evaluate the effect of acupuncture on the improvement of low back pain compared with injection with vitamin B in an Iranian population.

**Methods:** 58 patients (17 male & 41 female) with LBP were selected that they were referred to the Dr. Sheikh acupuncture Clinic and participants were randomly divided into three groups. The first group (N =19) was injected with vitamin B and the second (N=21) was treated with acupuncture. A third group (N=18) was used a control



group. Treatments were repeated 12 sessions.

**Results:** The mean pain score after one week of treatment for the control, injection with vitamin B and acupuncture groups were  $6.17 \pm 1.200$ ,  $5.16 \pm 1.259$  and  $2.38 \pm 2.179$ , respectively ( $p < 0.001$ ). Participants in the acupuncture group also had a significantly lower pain score ( $2.24 \pm 1.998$ ), after 30 days, compared with control ( $5.67 \pm 1.237$ ) and injection groups ( $4.95 \pm 1.177$ ) ( $p < 0.001$ ). After one week, the injection reduced the pain level to  $-1.07$ , and acupuncture decreased to  $-4.17$  units. Reducing pain after one month in the acupuncture group was  $-3.82$  units.

**Conclusions:** Acupuncture can be effective in improving low back pain after treatment for a week and 30 days.

**Keyword:** Acupuncture, Injection with vitamin B, Low back pain

## **Functional Foods for a Healthy Gut Microbiota: The Role of Prebiotics, Probiotics, and Fermented Foods in Promoting Gut Health - A Review**

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**Introduction:** The purpose of this review is to evaluate the impact of functional foods—specifically prebiotics, probiotics, and fermented foods—on gut health. To ensure a comprehensive review, articles from

scientific databases such as PubMed, Scopus, and Google Scholar were considered. The search terms included "gut microbiota," "functional foods," "prebiotics," "probiotics," "fermented foods," and "gut health.". Prebiotics are non-digestible food components that beneficially affect the host by selectively stimulating the growth and/or activity of one or several types of bacteria in the colon. probiotics are alive microorganisms that can promote health and be beneficial to the host when administered in adequate amounts. Fermented foods are rich in live microorganisms produced during the fermentation process. These foods not only provide probiotics but also contain metabolic products of fermentation, such as short-chain fatty acids, which have health benefits. Fermented foods such as yogurt, sourdough, Cheese, Miso, sauerkraut, and kimchi have been shown to increase microbiota diversity and improve gut barrier function.

**Conclusion:** The gut microbiota plays a crucial role in maintaining human health, and research is exploring how diet can modulate its composition and function. The studies indicate that consuming functional foods can positively modulate gut microbiota and promote gut health. However, more research is needed to fully understand their complex interactions and establish specific dietary recommendations.



**Keywords:** Gut Microbiota, Prebiotics, Probiotics, Fermented Foods, functional foods

## **Association between dietary inflammatory index and Ischemic changes in ECG: results of a population-based study**

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**Introduction:** The dietary inflammatory index (DII) is a novel index to describe the association of diet with various health conditions, including cardiovascular disease (CVD). However, the association of DII with ischemic changes in ECG have not yet been investigated. We aimed to investigate the association between DII and ischemic changes in ECG among a representative population sample of Iranian adults.

**Methods:** This prospective cohort study was a subsample of 4,743 adults aged 35-65 years, and recruited as part of Mashhad stroke and heart atherosclerotic disorder cohort study population. The DII was computed at baseline according to a 65-item

validated food frequency questionnaire. Multivariable logistic regression was used to determine the association of DII with major and minor ischemic changes in ECG. Ischemic changes were defined according to the Minnesota coding system.

**Results:** Six hundred forty-seven participants had major and 508 had minor ischemic changes in ECGs. After adjusting for potential confounding factors, men with the highest quartile of DII compared to the lowest had 61% higher odds of having major ischemic changes ( OR: 1.62, 95%CI: 1.08-2.40). Higher DII was also associated with a non-significant higher odds of minor ischemia in men ( OR: 1.19, 95%CI: 0.80-1.77). Women with the highest quartile of DII compared to the lowest had also higher odds of minor and major ischemia, but it was not statistically significant.

**Conclusion:** There was a statistically significant association between the DII and major ischemic changes in ECG in men, but not in women.

**keywords:** dietary inflammatory index , ECG, electrocardiogram

## **Bariatric Surgeries: A Roll for Probiotics and Gut Microbiota?**

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**Introduction:** Bariatric Surgery (BS) involve making changes to the digestive system for losing weight. Microbiota includes a range of single cells that live in different parts of the body. Various studies have shown that BS changes the number and diversity of the intestinal microbiota, and the use of probiotic compounds is useful for modulating the microbiota. The aim of this study is discussing the relationship between the consumption of probiotics and the change in the content of microbiota after BS.

**Method:** This review was completed by searching "bariatric surgery", "probiotics", "microbiota" in 2015-2022.

**Result:** The composition of the microbiota is affected by diet and exercise, so in obese people, due to the consumption of diets rich in saturated fatty acids, the ratio of Firmicutes/Bacteroides, which are the two main groups of bacteria in the microbiota, is lower compared to people with normal weight. The mechanism of changes in microbiota after surgery includes changes in intestinal motility, the flow of bile acids, ghrelin and leptin hormones, eating habits, malabsorption of food, increase in the pH of the gastrointestinal tract. This pH change leads to the reversal of the ratio of Firmicutes/Bacteroidetes. Taking probiotics along with changing the composition of microbiota after surgery reduces digestive symptoms and ghrelin levels and increases

vitamin B12 synthesis, which lowers the risk of reducing the absorption of intrinsic factor, and also helps maintain the weight loss.

**Conclusion:** BS are performed with the aim of achieving and protecting weight loss. The altered microbiota after surgery also helps the weight loss process.

**Keywords:** bariatric surgery, probiotics, microbiota

## Body composition in patients with cystic fibrosis

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**Background and Aim:** Cystic fibrosis (CF) is characterized by changes in body fat mass (FM) and fat-free mass (FFM), which may have important prognostic value. In addition, patients' body composition may be affected owing to malabsorption of nutrients and inflammation. Therefore, this study intended to evaluate the changes in FM, FFM, and the Basal Metabolic Rate (BMR) using the Bioelectrical Impedance Analysis (BIA) method in children with CF.



**Methods:** The present study was conducted cross-sectionally on 48 people with cystic fibrosis aged 7 to 18 who were referred to Akbar Hospital in Mashhad. Height was measured with a non-elastic standard meter. Weight, body composition, and BMR were evaluated using a BIA device.

**Results:** The results of this study showed that there was no significant difference between the desired parameters including age (p-value: 0.201), height (p-value: 0.692), FM (p-value: 0.074), FFM (p-value: 0.635) and BMR (p-value: 0.837) based on gender. While the weight (p-value: 0.011) and BMI (p-value: 0.003) of the male group were considerably higher than the female group. There was a noticeable correlation between BMR (p-value: 0.000) and FFM (p-value: 0.000) with age. Further, BMI was significantly correlated with BMR (p-value: 0.000).

**Conclusions:** The correlation between FM and age was considerable, whereas FFM had a significant association with age. In addition, BMR was noticeably correlated to age and BMI.

**Keywords:** Cystic fibrosis, Fat Mass, Fat-Free Mass, Basal Metabolic Rate, Bioelectrical Impedance Analysis

## **The effect of fat-soluble vitamins in liver involvement caused by hepatitis C**

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**Introduction:** Hepatitis C virus is classified as a member of the Flaviviridae family. Hepatitis C causes chronic liver diseases, hepatitis, cirrhosis, and hepatocellular carcinoma. Vitamins are considered one of the primary organic nutritional substances for individuals in society. Given the crucial role vitamins play in the body, such as fortifying the immune system and the inability of the body to synthesize vitamins, it is imperative to ensure sufficient vitamin intake. The immune system can be fortified by taking vitamins, leading to virus eradication and improved liver health.

**Method:** In this narrative review, in order to investigate the effect of vitamin on the immune system and its effect on virus clearance, articles from 2010 to 2022 were used from Scholar, Pubmed and Elsevier databases.

**Result:** Since vitamin A helps in removing free radicals, it reduces the chance of hepatocellular carcinoma in patients with HCV. Vitamin D prevents the damage caused by HCV in the liver by inhibiting B and T lymphocytes and reducing the production of inflammatory cytokines. Vitamin E with antioxidant properties can reduce liver damage. As a result of damage to the liver by HCV, the liver loses the ability to complete



the metabolic cycle of the vitamin, so the body faces vitamin E deficiency.

**Conclusion:** Unlike vitamin E, the effect of vitamins A, D and K on the immune system has been reported. Contrary to expectations, the main effect of vitamins is not strengthening, but in vitamins D and K, damage to the liver has been prevented by inhibiting cellular and humoral immunity and the production of inflammatory cytokines. According to our research, vitamins may not have a direct role in cleaning the virus, but they help to clean and reduce damage by affecting the immune system.

**Keywords:** Vitamin A, Vitamin D, Vitamin E, Vitamin K, HCV

### **Dietary soluble, insoluble, and total fiber intake and their dietary sources in association with breast cancer**

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**Introduction:** The present study aimed to investigate the association between different types of dietary fiber as well as their sources and the risk of breast cancer (BC) in a large-scale case-control study among Iranian women.

**Methods:** A total of 464 women with pathologically confirmed BC within the past year and 498 age-matched healthy controls were included. The association between dietary soluble, insoluble, total dietary fiber, fiber from fruits, vegetables, legumes, cereals, and nuts intake with odds of BC was assessed using multivariate logistic regression analysis.

**Results:** Dietary total fiber (OR=0.65, 95%CI:0.47-0.90, Ptrend = 0.01), insoluble fiber (OR=0.68, 95%CI: 0.49-0.93, Ptrend = 0.01), fruits' fiber (OR = 0.68, 95%CI: 0.49-0.94, Ptrend = 0.02), and vegetables' fiber (OR = 0.66, 95%CI: 0.48-0.91, Ptrend = 0.01) were significantly associated with reduced odds of breast cancer in all participants. Dietary total and insoluble fiber, as well as, fiber from fruits were significantly



associated with lower odds of BC in premenopausal women. In contrast, cereals' fiber significantly increased the risk of BC by 84% in premenopausal women. In postmenopausal women, cereals' fiber had a significant inverse association with odds of BC. Also, fiber from vegetables was significantly associated with a lower risk of BC in postmenopausal women.

**Conclusion:** Dietary fiber intake and more specifically insoluble, fruits', and vegetables' fiber intake might be associated with a reduced BC risk, particularly in premenopausal women.

**Keywords:** Dietary fiber, Insoluble fiber, Soluble fiber, Breast neoplasms

### **Breastfeeding is a protective factor against childhood overweight/ obesity: a meta-analysis**

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**Introduction:** It seems that the use of breast milk is related to the risk of obesity in children. Related studies have shown various findings in this field. This meta-analysis study was designed to investigate the relationship between breastfeeding and the risk of obesity in children.

**Method:** A search for relevant studies published before April 2023 was conducted

in several online databases (PubMed, EMBASE, the Web of Science). Cohort studies that assessed breast milk as exposure and childhood overweight/obesity as outcome and reported risk as OR, HR, or RR were included. Sample: 33 studies including 435,265 participants were eligible to enter. Statistical analyzes were performed using Stata 15.1.

**Result:** The odds of obesity in ever breastfed children was 0.78 (95% CI [0.77, 0.89]) compared to their never-breastfed counterparts. When we set the reference to never breastfeeding, OR of exclusive breastfeeding was 0.45 (95%CI [0.33,0.53]). According to subgroup analyses Boys responded better to breast milk than girls, and the reduction in obesity risk was greater in boys. Also, the duration of breastfeeding was directly related to the reduction of the risk of obesity, so that increasing the duration of breastfeeding from two months to 4 months reduced the risk of obesity in children.

**Conclusion:** Breastfeeding reduces the risk of premature obesity in four- to six-year-old children.

**Keywords:** breastfeeding, overweight, obesity, child, meta-analysis

### **Camel Milk's Beneficial Effect on Diabetes Mellitus: A Review**

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**Introduction:** Diabetes mellitus is the most common metabolic disease with many complications including cardiovascular diseases, kidney failure, blindness and lower extremity amputation. Controlling diabetes through effective alternative treatments is currently a topic of great interest. Some researchers have found that camel milk can aid in insulin therapy. It seems to be a safe and effective long-term glycemic control improving agent. Therefore, in recent years, much effort has been made to develop effective alternative treatments, including substitute alternatives for insulin administration. Camel milk is thought to be a suitable hypoglycemic agent in experimental animals and in diabetic patients. Since camel milk's anti-diabetic effects have not been fully elucidated, this study aimed to evaluate the effects of camel milk on diabetes.

**Method:** The current article includes relevant articles on the effect and mechanism of bioactive components of camel milk on diabetes mellitus. Searching for articles was done through PubMed, Web of science, and Embase databases from 2008 to 2022. Articles that fulfilled the inclusion/exclusion criteria of our review were 17 and 10 of them were included.

**Result:** Radioimmunoassay detected high insulin levels in camel milk as well as high concentrations of immunoglobulins, lactoferrin and lactoperoxidase, which play biological and pharmacological roles. Recent studies have shown a beneficial effect of camel milk on diabetes by improving glycemic control and reducing insulin resistance. Studies show the existence of insulin and insulin-like proteins in camel milk. In many studies, the anti-diabetic properties of camel milk have shown potential effects on the pancreas and on insulin secretion by the pancreatic  $\beta$ -cells.

**Conclusion:** In conclusion, most of the studies included in this review demonstrated beneficial effects of camel milk on diabetes mellitus by lowering blood sugar and reducing insulin resistance.

**Keywords:** Camel Milk, Diabetes, Insulin Resistance, Glycemic Control, Insulin

## **The effect of various types of dietary carbohydrates on obesity with the mechanism of affecting leptin levels and food intake: A Review**

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Obesity is an inflammatory disease that increases the risk of type 2 diabetes,



cardiovascular diseases, cancer and premature death. Obesity prevalence has increased worldwide and the role of diet in the prevention and treatment of obesity is critical. There are potential differences in the risk of obesity associated with different types of dietary carbohydrates. The hormone leptin regulates food intake, body mass and lipolysis via a negative feedback mechanism between adipose tissue and the hypothalamus. However, the regulation of leptin in response to carbohydrates is impaired in obese subjects. We reviewed the effect of various types of dietary carbohydrates on obesity, with mechanisms affecting leptin levels as long-term signals regulating food intake. Leptin and insulin are important long-term regulators that inhibit food intake and increase energy expenditure. Insulin can act by stimulating leptin production from adipose tissue through increased glucose metabolism. Although leptin acts through central and peripheral mechanisms to modulate glucose metabolism, leptin receptors are present in the  $\beta$ -cell of the pancreas and their activation directly inhibits insulin secretion. About other carbohydrates, studies show that the pattern of sucrose consumption causes leptin resistance associated with site-specific differences in hypothalamic leptin signaling however some polysaccharides could remove leptin resistance and resistant starch can improve glucose homeostasis and lower leptin concentrations. But fructose does not stimulate leptin production or alter

leptin levels. The effect of other carbohydrates on leptin levels and food intake is not completely recognized. More studies in the future can help design an appropriate diet to control obesity.

**Keywords:** Types of carbohydrates, Obesity, Leptin, Food intake, Review

## **Effects of Chocolate Consumption on Brain: A Review**

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**Introduction:** Cocoa and chocolate products have recently been recognized as a rich source of flavonoids, mainly flavanols, powerful antioxidants and anti-inflammatory agents that enter and accumulate in the brain regions involved in learning and memory, especially the hippocampus. The neurobiological activities of flavanols are thought to occur in two main ways: (i) through direct interaction with cellular cascades inducing the expression of neuroprotective and neuroregulatory proteins that promote neurogenesis, neuronal function, and brain connectivity,



and (ii) through enhancement of blood flow and angiogenesis in the brain and sensory systems. Therefore, the aim of this study was to summarize the results on the impact of cocoa consumption on cognitive function and brain health.

**Method:** The present article provides relevant articles available on the mechanism of action of cocoa and its bioactive ingredients on the brain. These studies were discovered via searching PubMed, Web of science, and Embase databases from 2010 to 2023. After removing duplicate articles, fifteen articles met the inclusion/exclusion criteria of our review and 6 of them were included.

**Result:** The epicatechin content in cocoa is primarily responsible for its favorable effects on vascular endothelium by influencing the regulation of nitric oxide production, which increases cerebral blood flow to improve cognitive function and attention. In addition, improved cognitive function has been reported to be associated with increased levels of blood brain-derived neurotrophic factor (BDNF), a protein associated with neuronal growth levels. In the brain, BDNF stimulates synaptic plasticity and neurogenesis, and plays an important role in brain regions involved in learning and memory, such as the hippocampus and the sub ventricular zone.

**Conclusion:** These results support the idea that daily servings of dark chocolate (35 g) may provide benefits to the brain in healthy consumers. There is clear evidence that

cocoa flavonoids can significantly improve cognitive function in humans, possibly through mechanisms such as improving cerebral blood flow.

**Keywords:** Cocoa, Flavonoids, Polyphenols, Cognitive function, Memory

## **Effects of cinnamon consumption on adipokines levels: A review study**

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**Introduction:** Cinnamon is extracted from the inner bark of *Cinnamomum* trees. Recent studies have indicated that cinnamon is a safe and cost-effective treatment for improving body weight, lipid profiles, insulin resistance, and blood pressure. This review aimed to summarize the effect of cinnamon supplementation on adipokines hormones.

**Materials and Methods:** This comprehensive literature search was conducted using databases such as PubMed, Scopus, ISI Web of Science, and Google Scholar up to March 2022 without any limitation. The quality of eligible studies was evaluated through the Cochrane Collaboration's tool for assessing the risk of bias.

**Results:** This systematic review included six clinical trial studies, among which, only one study was performed on children, and two investigations were conducted on obese



participants. A decreasing effect was found in the level of leptin and visfatin after cinnamon supplementation. Two out of three studies examined adiponectin levels and revealed non-significant effects of cinnamon consumption on this parameter. The result of cinnamon supplementation on other biomarkers such as resistin was inconsistent.

**Conclusion:** The result of this review indicated the decreasing effect of cinnamon supplementation on leptin and visfatin levels. However, more clinical data are required to clarify the beneficial effects of cinnamon on adipokines levels due to the controversial findings of the studies.

**Key words:** Cinnamon, Adipokine, Review

## **Climate change effects on food security**

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**Introduction:** The world is currently facing a multitude of crises, including the pandemics of obesity, undernutrition, and climate change which represent severe threats to health. Nutrition, health, and the natural environment are closely linked across the life course. Frequent disasters resulting from climate change and pandemics weaken food systems and exacerbate food insecurity worldwide.

**Method:** Studies registered between 2005 and 2023 that investigated the impact of climate change on food security were reviewed by searching Google Scholar, PubMed, and Web of Science. From 3,000 screened articles, relevant articles were reviewed.

**Result:** The consequences of climate change disrupt the balance of ecosystems and reduce the quantity and quality of food, leading to food insecurity. Food insecurity, in turn, increases the risk of diseases and mortality. To adapt to climate change, improved food production, distribution, and economic access systems are necessary. However, it is crucial to ensure that these changes contribute to sustainability. The effects of climate change on food production and availability, as well as extreme weather events, affect both the physical and economic accessibility of food. These changes in production systems can also lead to changes in dietary patterns and food utilization.

**Conclusion:** While climate change presents a challenge to achieving sustainable development goals and food security, proactive management and investment in agriculture and production, as well as dietary changes can significantly mitigate its effects. Empowerment of the different actors in the food chain to implement food safety management programs in the production systems is a key point.

**Keywords:** food security, climate change, sustainable diet, food system, nutrition



## Is coffee consumption related to obesity? A meta-analysis

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**Introduction:** Findings from cross-sectional studies on the association of coffee consumption and odds of obesity are inconsistent. We aimed to perform a meta-analysis on earlier cross-sectional studies on the association between coffee consumption and odds of obesity.

**Method:** The online databases of PubMed, ISI Web of Science, Scopus, Science Direct, and EMBASE were systematically searched to identify relevant publications up to July 2022. Cross-sectional studies that considered coffee as the exposure and general and abdominal obesity as the outcome were included. Studies that had reported odds ratios (ORs) as effect size were included in the meta-analysis. To pool data, a random-effects model was used.

**Result:** In total, 19 studies were included in our systematic review. 10 publications on general obesity and 14 studies on abdominal obesity were examined in the meta-analysis. Overall, 107151 individuals aged  $\geq 19$  years were included. With regards to general obesity, pooling 11 effect sizes from 10

cross-sectional studies showed that coffee intake was not associated with odds of general obesity (Overall OR: 1.07; 95% CI: 0.82, 1.40). In subgroup analysis by gender, we found a significant positive association between coffee consumption and odds of general obesity in women (OR: 1.84; 95% CI: 1.51, 2.24). Concerning abdominal obesity, combining 16 effect sizes from 14 studies, we failed to find a significant association between coffee consumption and odds of abdominal obesity (OR: 1.03; 95% CI: 0.91, 1.16).

**Conclusion:** no significant association was found between coffee intake and odds of obesity. However, gender-stratified analyses revealed significant relationships.

**Keywords:** Abdominal obesity, coffee, general obesity, meta-analysis

## The trend of nutritional adequacy in children hospitalized in pediatric intensive care units (PICU)

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**Introduction:** Malnutrition is prevalent in PICUs. An essential therapeutic approach, nutritional support results in better clinical outcomes, shorter hospital stays, reduced mechanical ventilation duration, and decreased mortality rates. A nutrition service and a native algorithm for nutritional support have been implemented within the PICU in recent years. This study evaluated whether nutritional adequacy had improved in the PICU over five years.

**Method:** This study included cross-sectional studies from 2018 to 2022 assessing nutritional adequacy at Akbar Children's Hospital in Mashhad, Iran. To identify the trends of nutritional adequacy changes from 2018 to 2022, the results of the studies were gathered and compared.

**Results:** From 2018 to 2022, six studies were included. A total of 192 participants aged 6 days to 5 years participated in these studies. Energy and protein adequacy in 2018 were 42.6% and 80.9%, respectively. According to the 2019 results, energy adequacy was 81.8% and protein adequacy was 90%. Additionally, 80.3% of the population possessed adequate energy and 77.5% had adequate protein in 2022.

**Conclusion:** Based on the study findings, PICU energy adequacy has improved in recent years. This may be due to the implementation of native algorithms, the presence of nutritionists, the availability of nutritional products, and insurance coverage. Further, fluctuations in protein sufficiency indicate that nutritional

sufficiency is a dynamic process requiring constant monitoring and review.

**Keywords:** Critical illness, Pediatric Intensive care unit, Nutrition assessment, Nutrition support, nutritional adequacy

## **Association between plant and animal protein intake with depression, anxiety, and stress**

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**Objectives:** The present study was conducted to investigate the relationship between animal and plant protein with depression, anxiety and stress among Iranian population.

**Method:** In this cross-sectional study, dietary intake of 7169 subjects was assessed using a validated food frequency questionnaire. The depression, anxiety, and stress Scale -21 (DASS-21) questionnaire were used to measure these disorders.



Logistic regression was used to obtain odds ratios for depression, anxiety, and stress across quintiles of animal and plant protein.

**Results:** The age range of study participants was 20-69 y and mean BMI was 27.0 kg/m<sup>2</sup>. Higher quintiles of animal protein were associated with a lower risk for depression compared to lowest quintiles (OR=0.73, 95%CI: 0.59-0.90; Ptrend<0.01). Results also have shown a significant inverse association between animal protein and anxiety, such that subjects in higher quintiles of animal protein had a 0.24 decrease in anxiety risk compared to the lowest quintile. Also, among male participants, a higher quintile of animal protein was associated with a lower risk of depression after adjusting for confounder variables (OR=0.66, 95% CI: 0.46-0.95; Ptrend<0.01). we found females in the highest quintiles of animal protein intake had 40% lower odds of stress than those with the lowest quintiles (OR=0.60, 95% CI: 0.40-0.92; Ptrend=0.05).

**Conclusion:** Our study found that higher animal protein intake was associated with lower risk of depression and anxiety. However, the association between higher intakes of plant protein and depressive symptoms was not significant.

**Keywords:** protein, dietary, psychological disorders, cross-sectional, depression

## Neoliberalism and the Dilemma of Food Justice

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**Introduction:** This narrative review critically examines the intricate relationship between neoliberalism and the challenge of achieving food justice. Neoliberal policies, which prioritize market forces and individualism, have significantly shaped food systems worldwide. This review delves into the historical roots, methodologies, observed outcomes, and the complex dilemma of reconciling neoliberalism with the principles of food justice.

**Method:** A comprehensive search of academic databases, including PubMed, Web of Science, and Google Scholar, was conducted to identify pertinent literature. Keywords such as "neoliberalism," "food justice," "food systems," and "inequality" were employed to collect articles, books, and studies for analysis.

**Result:** Neoliberalism has had a profound impact on food systems by promoting deregulation, privatization, and globalization, often at the expense of food justice principles. Market-driven agricultural policies, corporate consolidation, and the commodification of food have led to increased food inequalities, limited access to nutritious options, and environmental degradation. The results of neoliberal policies on food justice are mixed and often contentious. While proponents argue that market-oriented reforms promote efficiency and innovation, critics contend that these approaches exacerbate



disparities and undermine the rights of marginalized communities. Scholars and activists have proposed alternative models, such as food sovereignty and local food systems, to counteract the negative consequences of neoliberalism on food justice.

**Conclusion:** The interplay between neoliberalism and food justice presents a complex dilemma. Neoliberal policies have reshaped food systems and contributed to inequalities, but they have also spurred innovation and economic growth. Balancing the benefits of market-driven approaches with the imperatives of food justice is an ongoing challenge.

In conclusion, this narrative review underscores the urgency of addressing the dilemma posed by neoliberalism in the pursuit of food justice. As the global community grapples with issues of food security, sustainability, and equity, it is essential to critically evaluate the role of neoliberalism in shaping food systems and consider alternative approaches that prioritize social, economic, and environmental justice.

**Keywords:** Neoliberalism, food justice, food system, social, inequality

## **The effect of cornus mas l fruit on cardiometabolic outcomes in patients with non-alcoholic fatty liver disease: a double-blind randomized controlled trial**

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**Objectives:** Obesity is linked to the pathogenesis of non-alcoholic fatty liver disease (NAFLD). NAFLD increases the risk of hypertension. It is hypothesized that both obesity and hypertension could be improved by Cornus mas L fruit. This study is going to investigate the effects of Cornus mas L fruit extract on blood pressure, anthropometric and body composition indices in patients with NAFLD.

**Materials and Methods:** Fifty patients with NAFLD were chosen to take part in this 12-week double-blind randomized controlled trial. Patients received 20 cc/d C. mas L fruit extract or placebo. Systolic blood pressure (SBP), diastolic blood pressure (DBP), weight, waist circumference (WC), hip circumference (HC), waist to hip ratio





(WHR), body fat mass (BFM), body fat percent (BFP) and fat free mass (FFM) were measured before and after intervention.

**Results:** Treatment group compared to control group showed a significant reduction in SBP ( $P=0.02$ ) and DBP ( $P=0.003$ ). No difference was found between groups in weight, WC, HC, WHR, BFM, BFP and FFM ( $P>0.05$ ). After confounding factors were adjusted, a significant reduction was observed in treatment group compared to control group in BFM ( $P=0.01$ ) and BFP ( $P=0.02$ ).

**Conclusion:** Although Cornus mas L fruit extract reduced blood pressure and body fat, it has no considerable effects on other anthropometric and body composition indices. More studies with adequate sample sizes and higher dosages of extract are needed.

**Keywords:** Non-alcoholic fatty liver disease, Cornus mas L, Blood pressure, Obesity

## Cruciferous Vegetables and Risk of Cancers: A Review of Systematic Reviews

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**Introduction:** It has been suggested that cruciferous (CV) vegetables (e.g., broccoli, cauliflower and cabbage) may protect against some cancers, but this question is still under discussion. We conducted this study to summarize evidence for this association based on systematic review studies. Eating more fruits and vegetables is thought to have a protective anticancer effect, and CV are of particular interest due to their bioactive components. CV contain many bioactive components such as folate, vitamin C, tocopherols and carotenoids. However, the cancer-fighting components attributed to CV are glucosinolates (GLS), isothiocyanate precursors (ITCs), and indole-3-carbinol (I3C), both of which may help reduce lung cancer risk by affecting phase I enzymes (e.g., cytochrome P450s) and phase II enzymes (e.g., glutathione S-transferases, GST). CV, as a good source of dietary fiber, could prevent colorectal cancer by increasing fecal mass and diluting carcinogens, reducing transit time, and promoting bacterial fermentation of fiber to short-chain fatty acids.

**Method:** Relevant systematic reviews and meta-analyses of observational studies were found by searching PubMed, Web of science, and Embase databases from 2009 to 2023. Forty articles fulfilled the inclusion/exclusion criteria of our review and the included articles were 4 systematic reviews and 11 meta-analyses.

**Result:** There is evidence of a significant association between CV consumption and



gastric cancer, lung cancer, endometrial cancer, and all-cause mortality. Also, weak associations were also found, including breast cancer, lung cancer, renal cell carcinoma, bladder cancer, prostate cancer, ovarian cancer, endometrial cancer, colon cancer, colorectal adenoma, colorectal neoplasm, non-Hodgkin lymphoma, and total cancer.

**Conclusion:** This study suggests that CV intake might be associated with a reduced risk of health outcomes (gastric cancer, lung cancer, endometrial cancer, and all-cause mortality). Further studies are needed to assess the association of CV consumption and health outcomes in the future.

**Keywords:** Cruciferous Vegetables, Cancer, Isothiocyanate, Sulforaphane, Glucosinolate

## Evaluation of Persian-language Nutritional Mobile Applications for Diabetics

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**Background:** Diabetes-related nutritional mobile applications provide an easy and cost-effective method for diabetic patients to receive dietary modification

recommendations. The aim of this study was to evaluate Persian-language diabetes-related nutritional mobile applications.

**Materials and Methods:** In this descriptive study, online application stores such as Google Play, Bazar, and Myket were searched for Persian-language diabetes-related nutritional apps scoring higher than 4. Applications were reviewed for their interface and user-friendliness, as well as clinical-related items including nutritional advices, calculating Body Mass Index (BMI), personal diet recommendations, referring to a dietitian, registering laboratory tests, blood sugar levels, physical activity levels, and recommended calories.

**Results:** Of the four eligible applications, 3 apps had nutritional recommendations, 2 reported BMI, 1 calculated the personal need for macronutrients, 1 linked the user to a dietitian, and 1 had a part for registering laboratory test results and blood glucose levels. Only 1 app asked about physical activity and 1 had some information about each physical activity you could do. However, 1 recorded food intake, while 2 had a food exchange list. On the other hand, 1 app monitored insulin use, drug intake, and weight change. None of the applications could recommend a complete personalized diet.

**Conclusion:** According to this study, it seems that despite the increasing number of diabetic patients and the critical need to monitor them, there is no comprehensive and practical Persian-language application.



There is a need to produce Persian-language applications to adjust personal food plans under the supervision of dietetics experts.

**Keywords:** mHealth, Mobile applications, Diet therapy, Diabetes, Persian

## **The Role of Dietary Antioxidant Consumption in Managing Diabetes Complications**

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**Introduction:** Diabetes mellitus is a chronic metabolic disorder characterized by high insulin resistance and blood glucose levels. Antioxidants have been proposed as potential therapeutic agents to reduce oxidative stress and improve diabetes outcomes. However, the specific impact of antioxidants on diabetes management is not yet clear. This study aims to investigate the relationship between antioxidants and diabetes outcomes.

**Methods:** We searched all original papers and reviews about the potential mechanisms of dietary antioxidants on diabetes outcomes using PubMed to April 2023. Relevant studies that examined the effects of dietary antioxidants on glycemic control, insulin resistance, and diabetic complications were reviewed.

**Result:** This review discusses evidence supporting the effects of antioxidants on

diabetes management. Incorporating antioxidant-rich foods into the diet may improve glycemic control, and insulin sensitivity in individuals with diabetes. Moreover, antioxidants such as vitamins C and E and glutathione interrupt free radical chain reactions and reduce the damaging effects of free radicals on the structural and functional components of cells and vessel walls. Additionally, antioxidants have been found to have an acute antihypertensive effect in hypertensive and diabetic patients.

**Conclusion:** Our findings showed that antioxidants were significantly associated with improved glycemic control in individuals with diabetes. Consumption of antioxidant-rich foods was linked to reduced HbA1c levels and improved insulin sensitivity. Limited evidence suggested that dietary antioxidants could potentially prevent or delay the onset of diabetic complications. Further research is required to detect optimal antioxidant doses and types and the underlying mechanisms involved in diabetes management.

**Keywords:** Diabetes mellitus, insulin resistance, antioxidant, blood glucose

## **Which of the advanced anthropometric indicators predict the risk of type 2 diabetes better?**

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**Background:** Type 2 diabetes is known as a chronic disease that can lead to many disabilities. Nowadays, following the increase in the prevalence of obesity and overweight as a global health problem, the incidence of type 2 diabetes has also increased. In this study we aimed to assess the relationship between novel anthropometric indices and the incident diabetes in northeastern of the country.

**Methods:** The subjects who were diagnosed with diabetes as well as those who were remained healthy in the second phase of the Mashhad Stroke and Heart Atherosclerotic Disorder (MASHAD) study recruited in this study. The baseline survey was in 2010, and the follow-up of the participants was carried out in 2020. Anthropometric indices were evaluated including Body Mass Index (BMI), Abdominal Volume Index (AVI), Visceral Adiposity Index (VAI) and Lipid Accumulation Product (LAP). The logistic regression was used to compute the odds

ratios (OR) with their 95% confidence interval based on model.

**Results:** A total of 6,493 subjects completed the study. The results of regression showed that every units increase in AVI and VAI were related to an increased odd of Type 2 diabetes by 2% and 6% respectively (OR = 1.02 (0.99, 1.04) and OR = 1.06 (1.02, 1.11)). LAP categorized to quartiles with the cutoff, less than 24, 24– 40, 40 – 64 and more than 64. Regarding the LAP, the OR increased significantly from 1.73 to 2.75 (P<0.001). The cutoff for BMI was taken from literature review and as we found the second category consider to be the reference. The OR for BMI less than 18 (kg/m<sup>2</sup>) was less than 1 (OR = 0.99). However, for BMI 25-30 (OR = 1.52) and above 30 (kg/m<sup>2</sup>) (OR = 2.27), the chance of diabetes rapidly increased.

**Conclusions:** Based on the results of this study, VAI, followed by LAP and BMI respectively, have the greatest potential to predict the occurrence of type 2 diabetes in healthy individuals.

**Keywords:** Type 2 diabetes, Diabetes mellitus, Anthropometry, Visceral Adipose Index, Lipid Accumulation Product.

### **Investigation of contamination of raw vegetables with eggs, cysts, and some parasites in vegetable shops in Mashhad**

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**Introduction:** Consuming fresh raw vegetables have a significant role on transmission of cysts and oocysts of protozoa as well as the larvae of various worms. The study aimed to investigate the prevalence of parasitic contamination in raw vegetables distributed of Mashhad city.

**Method:** In a cross-sectional survey contamination 10 raw vegetables from vegetable stores of Mashhad city, in fall and winter in year 2022 investigated. 960 samples were examined from 30 randomized selected stores which were investigated in a cluster and two-stage sampling method. All samples examined using Flotation and Ethyl-Acetate Formalin methods and then microscope examination performed

**Result:** Out of 960 examined samples, parasitic contamination was observed in 131 samples (13.64%), of which 74 samples (56.4%) were infected with metazoa and 60 samples (43.6%) were infected with protozoa. The highest contamination in leek with 24 positive samples (18.35%) and the lowest were observed in radish with 4 positive samples (3.06%). The highest parasitic contamination is related to *Blastocystis hominis* with 21 positive

samples (16.03%), followed by *Entamoeba coli* cyst with 18 positive samples (13.73%) and the lowest among was related to *Enterobius vermicularis* egg with 5 positive samples (3.81%). The highest parasite infestation was 17.55% in region 1 and lowest 3.05% in region 9.

**Conclusion:** Considering the significant prevalence of parasitic infections among the examined samples, it is obvious now that increasing public awareness and improving health conditions in this field can help reduce the spread of parasitic diseases.

**Keywords:** Parasitic infection, vegetable, Mashhad

## **Production of ACE-I inhibitory peptides resistant to gastrointestinal digestion from enzymatic hydrolysis of orange seed protein**

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**Introduction:** Generally, food proteins and peptides are known as the most active bioactive molecules that exert an important biological role, including antioxidant,



antimicrobial, anticancer, antidiabetic, and antihypertensive activities. They also influence the cardiovascular, immune, nervous, and gastrointestinal systems. Orange seed is an important by-product obtained from the industry of juice production. Its defatted flour can be used as a rich and cost-effective source for production of plant peptides.

**Method:** The aim of the present study was to hydrolyse orange seed proteins by Alcalase enzyme (from *Bacillus licheniformis*) to obtain bioactive peptides showing Antihypertensive capacity as well as to study the stability of such activity after simulated conditions of gastrointestinal digestion. Thus, the method was optimised using different enzyme concentrations (1-3%), hydrolysis times (2-5h) in optimal temperature of 55°C.

**Result:** According to the results, a significant increase of 84.28% and 90.52% in the ACE-inhibitory activity ( $p < 0.05$ ) was observed using an enzyme concentration of 2% and a hydrolysis time of 5h. This demonstrated that, during digestion, new peptides showing important ACE-inhibitory activity were generated as well. The results obtained after simulated gastrointestinal digestion indicated that peptide fractions significantly maintain their activity.

**Conclusion:** Thus, orange seed proteins could be used as a new protein source for the production of peptides showing Antihypertensive activity and resistance to gastrointestinal digestion. My research

achievements were three national patents and one international patents, as well as, Using my unique and advanced expertise, I was able to obtain a license to produce these products with health effects from the Iran Food and Drug Administration with the aim of commercial production of these functional products.

**Keyword:** peptides, Orange seed, ACE-I inhibitory, gastrointestinal digestion.

### **Alpha-amylase and alpha-glucosidase inhibitory activities of Orange Seed proteins hydrolyzed with Pepsin enzyme.**

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**Introduction:** Proteins and peptides are the most important bioactive compounds among natural sources, during hydrolysis, they can exert an important biological role via Antioxidant, Antihypertensive, Antidiabetic or Anticancer activities. Orange seed is an important by-product obtained from the industry of juice production. Its defatted flour can be used as a rich and cost-



effective source for production of plant peptides.

**Method:** The aim of present study was to hydrolyze orange seed proteins by Pepsin enzyme (A protease from porcine gastric mucosa) to obtain bioactive peptides showing antidiabetic capacity. Thus, the method was optimised using different enzyme concentrations (1-3%), hydrolysis times (2-5h) and the optimal temperature of 33°C. The measurement of  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitory activities was done for each treatment.

**Result:** According to the results, a significant increase of alpha-amylase and alpha-glucosidase enzymes was observed by using 3% enzyme concentration and 3.5 hours hydrolysis time, 42.35 and 45.39%, respectively ( $p < 0.05$ ).

**Conclusion:** Thus, pepsin hydrolyzed orange seed proteins could be used as a health-promoting ingredient to help in the reduction of diabetic and use as a food-drug combination can be proposed as a suitable strategy for the prevention and treatment of diabetes and since diabetic diseases are one of the most important causes of human mortality in the world; Therefore, these compounds can have a high potential to improve the health of consumers as a natural product of food origin. My research achievements in PhD were three national patents and one international patent. As well as, using my unique and advanced expertise, I was able to obtain a license to produce these products with health effects from IFDA

with the aim of commercial production of these functional products.

**Keyword:** peptides, Orange seed, Antidiabetic, Pepsin Enzyme.

## **Registry of Sarcopenia: From the reports of the feasibility study to the design and protocol of its registry**

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**Introduction:** Sarcopenia, characterized by weakened skeletal muscles, is a growing concern. This study aimed to assess the feasibility of creating a sarcopenia registry and investigate its relationship with dietary intake, socioeconomic status, depression, lifestyle, and physical activity. The findings will inform the development of a national registry for this physical condition.

**Method:** A feasibility study was conducted among a well-nourished population aged 55 and above. Various sarcopenia guidelines were employed, including measurements of muscle mass using bioelectrical impedance analysis. Muscle strength and performance were evaluated through handgrip and gait



speed tests, respectively. Valid tools were used to examine dietary intake, socioeconomic status, psychological health, lifestyle, clinical factors, and physical activity. The best tools and guidelines were selected for the main registry.

**Results:** The European Working Group on Sarcopenia in Older People (EWGSOP2) was the best diagnosis option. Among the well-nourished healthy elderly population (n=766), the overall prevalence of sarcopenia was 27%. Age was found to be significantly associated with sarcopenia (OR=1.096 [95% CI: 1.069-1.124], p<0.001). Females had a higher risk of pre-sarcopenia (OR=2.189 [95% CI: 1.48-3.239], p=0.002), while males were more likely to have confirmed and severe sarcopenia (OR=15.102 [95% CI: 4.461-51.131], p<0.001). Various components of physical activity, mental health, and lifestyle were also associated with sarcopenia. Furthermore, total dietary intake of main nutrients, including protein and energy, showed a relationship with sarcopenia, whereas dietary patterns and percentage of macronutrients did not. The association between physical activity and sarcopenia differed between males and females. The study identified the necessary tools and key factors to be investigated in the main registry.

**Conclusion:** Sarcopenia is strongly related to individuals' lifestyle choices and daily activities. Considering the nature of this condition, establishing a long-term protocol

to study and monitor sarcopenia would be valuable. A registry can also provide an early diagnosis system which can have a vital impact in preventing this disease in the future.

**Keywords:** sarcopenia, muscle, registry, nutrition, lifestyle

## Foods Glycemic Index (GI) Affects the Inflammatory Biomarkers: A Critical Systematic Review

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**Introduction:** The glycemic index (GI) and inflammations both were introduced as essential factors affecting the diseases, but the relation between GI and inflammation is still unclear. In this systematic review, the authors hypothesized GI has effects on





inflammatory biomarkers but can be highly disturbed by static unrecognized confounders.

**Method:** A comprehensive search was made in Science Direct, PubMed, Cochrane, UpToDate, and Google Scholar from 2010 to March 2021 using MESH and un-MESH keywords. Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) was used for the review of articles.

**Result:** From one thousand, four hundred and twenty-one articles, a total of 13 studies including one master thesis enrolled in this review, six studies were conducted on people with a disease while six studies were on healthy or obese people without any other illnesses and one study was on pregnant women. IL-6 was in 8 studies, TNF- $\alpha$  was in 5 studies, TNF was in 2 studies, CRP was in 6 studies, and hs-CRP was in 2 studies. Seven studies including all well-designed studies confirmed GI can affect inflammation while 5 rejected the association. Several unconsidered confounders and limitations had been found in previous studies. The diet patterns, metabolic factors and food processing were the main factors that impact the result of the studies.

**Conclusion:** There is some strong evidence that supports a slight effect of GI on inflammatory biomarkers. Bias risk in different studies is high. In this review, the authors provide some essential considerations to lower the risks for further studies.

**Keywords:** Glycemic Index, Inflammation, Inflammatory biomarkers, CRP, IL-6

## A systematic review of the effects of statins consumption on body composition

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**Introduction:** Obesity is one of the major problems in the world, which causes many health problems in connection with other diseases such as type 2 diabetes, cardiovascular diseases and hyperlipidemia. Statins by inhibiting the key step in the synthesis of sterols; are considered to be one of the most important drugs to reduce cholesterol. According to our search, there is not sufficient information about the effect of statins on anthropometric indices, therefore this study was designed to investigate the effect of statins on anthropometric indices.

**Methods:** Systematic search was conducted in the online databases including PubMed, Web of science, Scopus and google scholar up to June 2023 without publication date or language restrictions. The following search terms were used for the systematic search: "Statins" OR "HMG-COA reductase inhibitors" AND "Obesity" OR "Body composition". In this systematic review, randomized clinical trials (RCTs) that



evaluated the effects of statins consumption on body composition parameters in adults were included.

**Results:** Among the reviewed articles, 45 RCTs met the inclusion criteria. After reviewing the articles, 40 studies evaluated body mass index (BMI), 18 studies evaluated body weight and 15 studies evaluated waist circumference (WC). Most of the articles on BMI showed a decreasing effect; while some of the RCTs on WC showed a decreasing effect and some others showed no significant change after statins consumption.

**Conclusion:** According to this systematic review, Statins as lipid-lowering drugs; may be helpful for improving anthropometric indicators.

**Keywords:** Statins, Body composition, Obesity, Randomized clinical trials

## **Effect of N-acetyl cysteine supplementation on sperm quality parameters and biochemical markers on the infertile people: A systematic review on clinical trials**

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**Introduction:** Infertility is defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse. One of the most important factors in the development of infertility is oxidative damage which is mentioned by free radicals. N-acetylcysteine (NAC) is an antioxidant compound that is able to recover free radicals preventing tissue damage as well as protecting the sperm. This study aimed to summarize the data from the clinical trials, considering the effects of NAC on oxidative stress and sperm quality parameters in the infertile men.

**Methods:** Systematic search was conducted in the scientific databases of PubMed, Google Scholar, Science Direct, Scopus, and Web of Science using the N-Acetyl-L-cysteine, NAC and Infertility keywords. Only randomized clinical trials released between in 1990-2018 were extracted.

**Result:** Out of 17 included clinical trials, there was 3 human and 14 animal studies. Human studies showed that, NAC supplementation can improve sperm quality parameters and oxidant-antioxidant status. Also, the review of 14 animal studies showed that NAC supplementation can significantly reduce the toxic effects of arsenic, anticancer drugs, insecticides, lead and cadmium. Additionally, it can improve sperm quality parameters and oxidant-antioxidant status. Only one study showed that the administration of NAC had no effect on the



improvement after varicocele surgery in rats.

**Conclusion:** In most RCTs, the positive effects of NAC supplementation on sperm parameters and antioxidant capacity have been proven, but due to the shortage of studies, more trials are needed.

**Keywords:** Infertility, Fertility, Sperm quality parameters, N-acetylcysteine, NAC

## **The effect of fitness and exercise applications on the sports performance of healthy adults: A Systematic Review**

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**Background:** With the fast development of smartphone utilization and the accessibility of various wellness and sports apps, it is vital to get it their potential benefits or confinements in improving athletic execution. These applications provide a variety of features including exercise planning, exercise monitoring, exercise and nutrition training, and exercise data sharing. These applications provide a variety of

features including exercise planning, exercise monitoring, exercise and nutrition training. But the question that arises is whether the use of these applications and similar technologies has a significant effect on people's sports performance or not? This systematic review aimed to investigate the effects of mobile applications on exercise performance.

**Methods:** A comprehensive search of articles published between 1997 and August 2023 was conducted across multiple databases, including PubMed, Scopus, and Web of Science. Studies meeting the inclusion criteria were selected and their quality was assessed using the Cochrane Risk of Bias tool. Endurance, strength, speed, agility, exercise compliance and overall athletic performance are included as measurable outcomes. A add up to of 7 studies were included in this survey.

**Result:** Results show that mobile applications can have a positive impact on physical performance, including increasing motivation and adherence to exercise programs. However, the quality of the studies varied widely and there was a lack of consistency in the types of mobile apps used.

**Conclusions:** It is recommended that mobile applications can be an effective tool to improve exercise performance. Nevertheless, it is necessary to conduct more robust studies in order to identify which types of apps are effective and how



they affect exercise adherence and overall health over time.

**Keywords:** mobile application, performance, smart phone, exercise

## **Double blind control trial of vitamin D fortified milk on the expression of lncRNAs and adiponectin for patients with metabolic syndrome**

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**Background:** Metabolic syndrome (Mets) is a common metabolic disorder in which hypoadiponectinemia is one of the

consequences for the body caused by inflammation, and vitamin D may help improve inflammatory symptoms. LncRNAs (long non-coding RNA) play several different regulatory roles in the body. The goal of this study was to see how adding vitamin D to milk affected the levels of adiponectin and inflammatory lncRNAs in the serum of people with Mets.

**Methods:** This clinical trial was conducted on staff and students between the ages of 30 and 50 at Mashhad University of Medical Sciences and met the International Diabetes Federation's criteria for Mets. Eighty-two Mets were assigned randomly to one of two groups for ten weeks: fortified milk (FM) with 1500 IU vitamin D or non-fortified milk (NFM). Total RNA was extracted from both frozen clinical samples using Trizol reagent. APQ AS and MALAT1 lncRNA gene expression were measured by Real-Time PCR.

**Results:** Serum adiponectin levels in the FM group increased significantly compared to the NFM group ( $p = 0.01$ ). Also, the expression of APQ AS and MALAT1 genes decreased after ten weeks, which showed a significant decrease in APQ AS ( $p = 0.036$ ).

**Conclusion:** As in FM, vitamin D may have anti-inflammatory effects and increase adiponectin levels in people with Mets via decreasing APQ AS gene expression.

**Keywords:** Adiponectin, Adiponectin Antisense, LncRNA, MALAT1, Metabolic Syndrome



## **Dose-dependent effect of tart cherry on selected cardiometabolic risk factors: A GRADE-assessed systematic review and dose-response meta-analysis of randomized controlled trials**

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**Objective:** This research aimed to determine tart cherries' efficiency in mitigating cardiometabolic risk factors. Additionally, we intended to establish the proper dosage for this effect and provide recommendations for future investigations.

**Method:** In May 2022, we searched PubMed, Scopus, and Web of Science. We identified twelve randomized controlled studies that met the criteria and explored the effects of tart cherries on anthropometric, lipid, and glycemic indicators. We assessed the risk of publication bias and the risk of bias using the Cochrane risk tool and the certainty of the evidence using the GRADE tool.

**Results:** Tart cherry did not demonstrate significant effects on cardiometabolic risk factors overall. However, subgroup analysis revealed that tart cherry significantly decreased total cholesterol, triglyceride, and low-density lipoprotein (WMD: -0.33, -0.19,

and -0.36 mmol/l respectively), particularly among unhealthy individuals. Dose-response analysis indicated that a 20 ml concentrate had the most effectiveness in reducing total cholesterol (WMD: -0.40 mmol/l; P = 0.005), and triglyceride (WMD: -0.23 mmol/l; P < 0.001), and increasing high-density lipoprotein (WMD: 0.20 mmol/l; P < 0.001) among the other dosage.

**Conclusion:** Eliminating the limitations of prior research and selecting the proper target group,

dosage and supplementation conditions may result in promising results for tart cherries effectiveness in reducing cardiometabolic risk factors.

**Keywords:** Tart cherry, Cardiometabolic risk factors, Metabolic syndrome, Natural product,

Meta-analysis, Dose-response

## **Effects of gut microbial therapy on lipid profile in individuals with non-alcoholic fatty liver disease: an umbrella meta-analysis study**

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**Background:** Despite the high prevalence of NAFLD, there is currently no confirmed intervention approved for its treatment. This study aimed to summarize the results of meta-analysis studies of randomized control trials assessing the impact of gut microbial therapy (probiotics, synbiotics, and prebiotics) on the lipid profile of individuals with NAFLD.

**Methods:** A systematic search was conducted on PubMed, Scopus, Web of Science, and Cochrane Library up to November 1, 2022. Meta-analyses surveying the impact of microbial therapy on lipid profile parameters triglyceride (TG), high-density lipoprotein (HDL), low-density lipoprotein (LDL), and total cholesterol (TC) in the NAFLD population were included in our umbrella review. The final effect size (ES) was estimated, and sensitivity and subgroup analyses were performed to explore heterogeneity.

**Results:** Fifteen studies were included in this umbrella review. Microbial therapy significantly reduced TG (ES - 0.31, 95% CI - 0.51, - 0.11,  $P < 0.01$ ), TC (ES - 1.04, 95% CI - 1.46, - 0.61,  $P < 0.01$ ), and LDL (ES - 0.77, 95% CI - 1.15, - 0.39,  $P < 0.01$ ) in

individuals with NAFLD. However, the effect on HDL was not statistically significant (ES - 0.06; 95% CI - 0.19, 0.07,  $P = 0.39$ ).

**Conclusion:** Considering the absence of approved treatments for NAFLD and the promising role of microbial therapies in improving the three lipid profiles components in individuals with NAFLD, the use of these agents as alternative treatment options could be recommended. The findings underscore the potential of gut microbial therapy, including probiotics, synbiotics, and prebiotics, in managing NAFLD and its associated metabolic complications.

**Keywords:** Non-alcoholic fatty liver disease, Probiotics, Microbial therapy, Lipid profile, Umbrella meta-analysis

## A systematic review of various methods of metal-organic framework synthesis for identification of foodborne bacteria from 2010 to 2023

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**Introduction:** Food-borne diseases are considered a very serious threat to human health and occupy the first place among safety problems all over the world. Metal-organic frameworks (MOFs) have attracted



much attention due to their adjustable structures, their large surface areas, high affinity toward diverse probes, and good performances.

**Method:** In this systematic review, all studies were identified using keywords such as metal-organic frameworks, bacteria, food pathogens, and food in databases such as PubMed, Web of Science, and Scopus until 2023.

**Result:** For the synthesis of MOFs, various methods such as hydrothermal, microwave, microemulsion, and ultrasonic methods are known. In most cases, the hydrothermal method is used to make MOFs to identify food pathogens.

**Conclusion:** hydrothermal and microwave methods have been reported to make these MOFs. When MOFs are used in food safety control, they have shown excellent performance. The most common method for making MOFs has been reported as thermal solution synthesis. Although MOFs have great potential, they still need more work before they can be widely used in practical applications. In other words, sensors with higher detection intensity can be designed by developing and modifying synthesis techniques.

**Keywords:** detection, foods, Metal-organic frameworks (MOFs)

## A Haplotype of the ANGPTL3 gene is associated with CVD risk, hypertension, obesity

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**Introduction:** Previous Genome-wide association (GWAS) studies have found that angiotensin-like 3 (ANGPTL3) single nucleotide polymorphisms (SNPs) are associated with hypertension (HTN), cardiovascular disease (CVD), and obesity. However, further research in this field would be of great help in treating the diseases more precisely. So, this study set out to determine the association between 3 SNPs including rs1748195, rs10789117, and rs11207997 with HTN, CVD, and obesity.

**Method:** For this study, 1002 individuals were selected from the Mashhad stroke and Heart-Atherosclerotic-Disorders group (MASHAD) cohort. DNA was extracted from all samples and Tetra-ARMS PCR was carried out. P-value < 0.05 was considered statistically significant.

**Results:** Individuals with the TT genotype for rs10789117 had a higher risk of obesity



and HTN compared with the AC genotype. Also, this study has demonstrated that healthy people with CC genotype for rs1748195 compared to CG genotype are more exposed to obesity. These results were not statistically significant between rs1748195 with HTN and rs11207997 C> with CVD. Moreover, the current study found that increased risk of CVD and HTN were significantly associated with GTC haplotype and CTC haplotype, respectively. A more surprising result of this study was the low level of body mass index (BMI) in the control group.

**Conclusion:** Taken together, individuals with rs10789117 were less likely to develop obesity and HTN, while those with rs1748195 have a only reduced risk of obesity. Overall, the evidence from this study suggests that ANGPTL3 variants are related to CVD.

**Keywords:** angiotensin-like 3, single nucleotide polymorphisms, hypertension, cardiovascular disease, obesity

## **A review of the nanosensors application in food pathogens identifying and food safety improvement**

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**Introduction:** Contaminated food with pathogens is one of the main causes of human diseases worldwide. In general, most of the viruses in food are caused by bacteria, fungi, and bacteria, which have a great impact on the global health economy and especially on health and social health indicators. Therefore, it is important to identify and diagnose the occurrence of microbial diseases with food origin, and as a result, increasing and upgrading diagnostic systems with high speed and accuracy is very important in improving food health

**Method:** In this study, the term nanosensor, food pathogen, biosensor and food safety were used to find related articles from reliable scientific databases including ScienceDirect, Scopus and PubMed.

**Result:** The methods of identifying and evaluating the number of pathogenic microorganisms in different food samples have been investigated. However, the traditional methods of food sample preparation are laborious, time-consuming, and require equipment for identification in a suitable location. Therefore, sensitive, selective and rapid detection methods are very important in the identification of pathogens. The biosensing using nanoparticles or bio-molecules have been investigated as new and advanced subjects in replacing traditional methods.

**Conclusion:** Advances in nanotechnology by using nanoscale materials and structures to increase the performance and accuracy of





biosensors and nanosensors have opened the frontiers in expanding new methods of identifying pathogens. This article reviews the successive developments of nanosensors based on electrochemical, optical, molecular methods and other types of nanosensors by investigating the detection of food pathogenic microbes.

**Keywords:** nanosensors, pathogens, food safety, detection

## **Effect of an Educational Intervention on the salt consumption intention and behavior in Pregnant Women**

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**Background and Objective:** According to the WHO, salt intake reduction in the community is considered to be one of the

best cost-effective healthcare interventions to prevent non-communicable diseases such as hypertension. Therefore, the present study was conducted to determine the effect of an educational intervention on the salt consumption intention and behavior by pregnant women.

**Materials and Methods:** This study is a quasi-experimental study that was conducted in 2022 on 61 pregnant women in Birjand (Iran). Convenience sampling was applied for selection of pregnant women. A valid and reliable questionnaire was used to measure salt consumption intention and behavior. The intervention program included three training sessions that was held on a virtual platform (WhatsApp software). The data was analyzed using SPSS 19 software. The significance level was considered 0.05.

**Results:** The average age was  $26.39 \pm 6.39$  and  $28.57 \pm 5.74$  in the intervention and control groups, respectively. The two groups had no statistically significant difference ( $P > 0.05$ ) with each other in terms of demographic variables, except for income assessment ( $P = 0.03$ ). After intervention, the mean score of intention ( $p = 0.004$ ), and salt consumption behavior ( $p = 0.03$ ) increased significantly in the intervention group. However, but this difference in the control group was not significant ( $P < 0.05$ ).

**Conclusion:** The findings of the present study showed that our educational intervention had a significant effect on the score of intention and behavior by pregnant



women. Therefore, it is recommended that to improve health indicators in pregnant women, interventions with more population in other places to reduce the amount of salt consumed.

**Keywords:** Educational Intervention, Pregnant Women, Salt Consumption, Behavior, intention

### **Relationship between muscle mass and elevated blood pressure in healthy adults**

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**Introduction:** Body composition was considered one of the main factors in the formation of cardiometabolic risk factors. The aim of this study was to investigate the relationship between muscle mass in healthy adults.

**Method:** This cross-sectional study was conducted on healthy adults participating in the registry. The blood pressure of the participants was measured using the Sphygmomanometer tool during the appointment with a time interval of 15 minutes, and their average was considered as the patient's blood pressure. The patient's body composition was evaluated using the body impedance analysis tool.

Also, the patient's mid arm circumference was measured using a meter.

**Result:** In this cross-sectional study, there was a significant relationship between skeletal muscle mass (SMM), unlike mid-arm circumference, with increased systolic blood pressure (P=0.15 and P=0.78, respectively). While there was no significant relationship between skeletal muscle mass and mid-arm circumference with diastolic blood pressure (P=0.001 and P=0.6, respectively).

**Conclusion:** Although this study showed that muscle mass could be related to increased blood pressure even in healthy people, it is recommended to measure this relationship in studies with a larger sample size and with greater sensitivity to clarify this association.

**Keywords:** Body composition, Muscle mass, Hypertension

### **Camel milk improved systemic oxidative stress and inflammation induced by ovalbumin sensitization in rats**

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**Introduction:** The effect of camel milk (CM) on systemic oxidative stress and inflammation in ovalbumin (OVA)-sensitized rats was examined.

**Method:** Rats were allocated to control, untreated OVA-sensitized, and OVA-sensitized groups treated with 4 and 8 ml/kg CM and 1 mg/kg dexamethasone during the sensitization period.

**Result:** In the sensitized group, superoxide dismutase (SOD), catalase (CAT) and thiol levels in the serum and tissues of heart, liver and kidney were significantly reduced while, malondialdehyde (MDA) level, as well as total and differential white blood cell (WBC) counts in the blood, were significantly increased compared to the control group ( $P < 0.05$  to  $P < 0.001$ ). Serum level of interleukin (IL)-4 was also significantly increased but interferon gamma (IFN- $\gamma$ ) level and IFN- $\gamma$ /IL-4 ratio were reduced in the sensitized group ( $P < 0.001$  for all cases). In the treated groups with both doses of CM and dexamethasone, all measured variables were significantly improved compared to sensitized group except IL-4 level in the dexamethasone treated group ( $P < 0.05$  to  $P < 0.001$ ).

**Conclusion:** Therefore, treatment with CM ameliorated systemic oxidative stress and inflammation induced by sensitization with OVA in rats, suggesting the possible

therapeutic effect of CM on systemic changes in asthma.

**Keywords:** Camel milk, Asthma, Ovalbumin sensitization, Oxidative stress, Cytokine

## Effect of lycopene supplementation on blood pressure in cardiovascular disease (CVD) patients: A systematic review and meta-analysis of randomized controlled trials (RCTs)

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**Introduction:** Hypertension (HTN) is regarded as a serious public health issue throughout the world. High blood pressure (BP) may be improved by lycopene in form of supplement; Nevertheless, randomized controlled trials (RCTs) provide conflicting evidence. The aim of this study was to evaluate the effects of lycopene



supplementation on BP in cardiovascular disease (CVD) patients.

**Methods:** A comprehensive literature search was performed in Scopus, PubMed, and Web of Science until March 2023 with no limitation on the date or language. WMDs and 95% confidence intervals (CIs) were calculated based on a random-effects model. Sensitivity analysis, meta-regression, publication bias, and heterogeneity were assessed using standard methods.

**Results:** A total of 7 RCTs involving 382 participants were included. lycopene supplementation significantly reduced the diastolic blood pressure (DBP) (WMD: -1.9, CI: -3.45, -0.35, P=0.016) while the reduction in systolic blood pressure (SBP) wasn't significant (WMD: -3.12, CI: -6.77, 0.52, P=0.09). Greater effects were observed in participants with a baseline DBP $\geq$  80 mmHg and BMI $>$ 25, at the dosages of  $>$ 10 mg.

**Conclusions:** Lycopene supplementation had a beneficial effect on DBP especially in patients with overweight and high baseline levels of DBP.

**KeyWords:** Lycopene, Systolic blood pressure, Diastolic blood pressure, Heart rate, Meta-analysis

## Growth indicators of children under 5 years of age and body mass index of parents in Golestan province, 2019

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**Introduction:** This study examined the physical development of children under 5 years old and its association with their parents' profiles. The researchers assessed the body mass of parents in Golestan province and analyzed data from 2042 children, including height, weight, gender, age, and the body mass index (BMI) of the mother and father. A significance level of 0.05 was used.

**Method:** We assessed the body mass of parents in Golestan province and analyzed data from 2042 children, including height, weight, gender, age, and the body mass index (BMI) of the mother and father. A significance level of 0.05 was used.

**Result:** The findings revealed that 54.2% of the participants were boys, and 72.1% lived in rural areas. Girls were born with lower birth weights than boys. Urban mothers had a higher prevalence of overweight compared to rural mothers. The study found rates of



acute malnutrition (WHZ), chronic malnutrition (HAZ), and underweight to be 5.8%, 8.4%, and 5% respectively, but no significant difference was observed in parents' BMI. Additionally, the BMI-for-age z-score (BAZ) was below the normal limit in 4.6% of cases. The WHZ and BAZ indices were significantly higher in male children compared to females ( $P < 0.05$ ). Furthermore, the study found positive and significant correlations between mothers' BMI and WHZ, WAZ, and BAZ indices of their children. Similar correlations were observed between fathers' BMI and these indices.

**Conclusion:** This study highlighted a positive and significant relationship between children's WHZ, WAZ, and BAZ indices and their parents' BMI, with a greater impact observed in mothers compared to fathers. The weight status of parents was found to influence the physical development of their children. The study emphasizes the importance of educating parents, particularly on nutrition during pregnancy, and improving prenatal care.

**Keywords:** Body Mass Index, Growth, Child, Golestan.

## Association of the frequency of cinnamon and Matricaria chamomilla consumption with anthropometric indices among patients undergoing coronary angiography: A cross-sectional study

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**Background:** Coronary heart disease (CHD) is the leading cause of death among adults aged > 35 years in Iran. Recent studies have shown that improving anthropometric indices can play an important role in preventing cardiovascular diseases.



**Objectives:** This cross-sectional study aimed to investigate the association between the frequency of cinnamon and Matricaria chamomilla consumption and anthropometric indices in patients undergoing coronary angiography.

**Methods:** The present study was conducted in people aged 35–75 years who were referred for coronary angiography to Afshar Hospital, Yazd, Iran. In the present study, 662 participants who met the eligibility criteria were included in the final analysis. Data on age, sex, economic status, education level, and disease history were collected using a demographic questionnaire. Also, in this cross-sectional study, anthropometric indices were evaluated using standard tools, and frequency of medicinal herbs consumption using a validated questionnaire.

**Results:** In the present study, higher consumption of cinnamon was associated with a lower visceral fat percentage and higher consumption of Matricaria chamomilla with a higher skeletal muscle percentage and body fat percentage.

**Conclusion:** According to the results of this study, the consumption of some medicinal herbs may be associated with an improvement in anthropometric indices. More prospective studies with a better design and a higher number of participants should be conducted to investigate the causalities between the modifiable risk factors of coronary artery disease, such as

herbal consumption and anthropometric indices.

**Keywords:** Herbal medicine, anthropometric indices, coronary artery disease, waist circumference, body mass index

## **aflatoxins in edible oil using metal-organic frameworks: a review**

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**Introduction:** Vegetable oils can be contaminated with aflatoxins during processing, storage, and harvesting. This pollution is considered a serious threat to human health, food safety, and business. In recent years, metal-organic frameworks (MOFs) have been used to remove food contaminants. MOFs are a group of crystalline porous materials created from metal ions and clusters with linkers and organic bridging ligands. Among the characteristics of this group are adjustable pore size, large specific surface area, and high porosity and stability, enabling their use as potential adsorbents for removing contaminants from food.

**Methods:** This study used metal-organic frameworks, aflatoxin, and food safety to



find relevant articles from ScienceDirect, Scopus, and PubMed databases.

**Result:** Researchers in 2023 reported that MOF-235 could remove 96.1% of aflatoxin in vegetable oil. In another similar study, the researchers reported that MOF could absorb more than 90% of aflatoxin. In addition, adsorbents had little effect on the quality of vegetable oils.

**Conclusion:** Studies show that the metal-organic framework has removed more than 90 aflatoxins. Researchers showed that the adsorption efficiency of MOF-235 may be due to its large specific surface area and rich active sites, which achieves a faster mass transfer rate and improves the removal efficiency of aflatoxins. Meanwhile, the adsorption capacity of MOF-235 is more than 25 times higher than magnetic graphene composites and more than 233 times higher than magnetic mesoporous silica. It can be concluded that the metal-organic framework can be used as an excellent adsorbent for aflatoxins in the vegetable oil industry.

**Keywords:** Metal-organic framework adsorbents, Aflatoxin, Food safety

## Ways to maintain food safety and hygiene

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**Introduction:** Food safety remains a critical issue, with outbreaks of foodborne illness resulting in substantial costs to individuals, the food industry, and the economy. Food can become contaminated during slaughtering, harvesting, processing, storage, distribution, transportation, and preparation. Heavy metals, antibiotics, and persistent organic pollutant contamination can cause adverse human health effects and thus need regulation through adequate legislative interventions and monitoring standards supported by sound scientific data. The existing interventions, such as the bioremediation of pollutants, are effective. This review revealed many studies that could be undertaken further to narrow the toxicological effects of chemicals on food sources.

**Methods:** This study used HACCP, food contaminants, and food safety to find relevant articles from ScienceDirect, Scopus, and PubMed databases.

**Result:** Production standards and GAP, GMP, HACCP, Threat analysis critical control point (TACCP), FDA Food Safety Modernization Act, vulnerability analysis critical control points (VACCP) and protocols guarantee food products to customers and maintain food safety.

**Conclusion:** All over the world, people are seriously affected every day by diseases that are caused by consuming unhygienic and unsafe food. Implementing management systems, quality, and food safety standards in food products ensures food safety and



quality control. Because food safety systems are focused on quality, safety, reliability, efficiency, interchangeability, environmental friendliness, and economic factors.

**Keywords:** HACCP, Food contaminants, Food safety

## **The Impact of Vitamin C and Zinc Supplementation on Immune System Function and Clinical Outcomes in COVID-19 Patients**

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**Introduction:** COVID-19, the most severe form of coronavirus infection, can trigger an excessive immune response in individuals with severe illness. Certain micronutrients play a vital role in supporting optimal immune system function.

**Method:** The ongoing COVID-19 pandemic highlights the critical importance of ensuring an adequate intake of essential nutrients, particularly those with immune-modulating properties such as Vitamin C and Zinc. During viral infections, the demand for these micronutrients significantly increases.

Thus, this comprehensive review aims to shed light on the immunomodulatory effects of Zinc and Vitamin C in combating viral infections.

**Result:** The findings of this review unequivocally demonstrate that deficiencies in these micronutrients lead to compromised immune responses and heightened susceptibility to viral infections. Consequently, during the COVID-19 outbreak, it is imperative to ensure sufficient intake of immune-boosting nutrients while complementing them with appropriate pharmacological treatments.

**Conclusion:** However, to establish the definitive role of supplemental Zinc and Vitamin C in the management of coronavirus, we eagerly await the publication of results from ongoing randomized controlled trials (RCTs). Furthermore, caution must be exercised to prevent potential toxicities associated with excessive supplementation. Specifically, Vitamin C supplementation should account for potential oxalate toxicity, while Zinc supplementation should consider the impact on immune system modulation.

**Keywords:** COVID-19, vitamin C, zinc, dietary supplement, immune system

## **Chamomile and glyceemic control: A systematic review and meta-analysis**

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**Introduction:** The use of natural and herbal products as complementary therapies alongside prescribed blood glucose-lowering medications in individuals with type 2 diabetes is increasingly common. This systematic review and comprehensive meta-analysis aimed to assess the impact of chamomile consumption on glycemic control, utilizing both human and animal studies.

**Methods:** A systematic search was conducted across various databases including PubMed/Medline, Scopus, ISI Web of Science, and Google Scholar to identify relevant publications from January 1990 to January 8th, 2022. Inclusion criteria encompassed human and animal studies that evaluated the effect of chamomile on serum glycemic markers. The random-effects model was utilized to determine the pooled effect size, and the relationship between dose and effect was also examined.

**Results:** A total of 4 human clinical trials and 8 animal studies met the inclusion criteria. The findings from the clinical trials indicated

a favorable impact of chamomile consumption on fasting blood glucose levels (Standardized Mean Differences (SMD): -0.65, 95% CI: -1.00, -0.29,  $P < 0.001$ ;  $I^2 = 0\%$ ) and HbA1C levels (SMD: -0.90, 95% CI: -1.39, -0.40,  $P < 0.001$ ;  $I^2 = 45.4\%$ ). The animal studies demonstrated that chamomile extract significantly reduced blood glucose levels (SMD: -4.37, 95% CI: -5.76, -2.98,  $P < 0.001$ ;  $I^2 = 61.2\%$ ). Furthermore, each 100 mg/d increase in chamomile extract intervention resulted in a significant decrease in blood glucose concentrations (MD: -54.35; 95% CI: -79.77, -28.93,  $P < 0.001$ ;  $I^2 = 94.8\%$ ).

**Conclusion:** This meta-analysis provides evidence that chamomile consumption can have a positive impact on serum blood glucose and HbA1C levels. However, further randomized controlled trials are needed to strengthen these findings and provide more robust evidence.

**Keywords:** Chamomile, Matricaria chamomilla L, Diabetes mellitus, Glycemic control, meta-analysis

## Relationship between plasma amino acid levels and clinical outcomes in critically ill children: a systematic review

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**Introduction:** Nowadays, plasma amino acid levels are known as an important factor with clinical consequences in sick patients due to their biochemical and physiological properties. In this systematic review, we aim to review studies investigating the relationship between plasma amino acid levels and clinical outcomes in critically ill children.

**Method:** Medline, Scopus and Web of Science databases were searched until April 2022 to find observational studies investigating the association of plasma amino acid levels with clinical outcomes in critically ill children. The quality of the included studies was determined using the Newcastle-Ottawa tool.

**Result:** This systematic review included 4 observational studies (2 cross-sectional and 2 cohort). The quality of 3 studies was determined as good and the quality of 1 study was fair. Studies have shown that reduced levels of glutamine lead to an increase in multi-organ failure, but had no relationship with mortality. Decreased levels of arginine are associated with increased hs-CRP levels and length of stay in PICU. Also, these studies have associated the increased levels of citrulline with a decrease in the length of ventilator dependence and a decrease in the length of stay in the PICU.

**Conclusion:** The result of this study shows a significant relationship between low levels of glutamine, arginine, and citrulline with worsening clinical outcomes. It is recommended that more observational

studies be conducted to investigate the association of other plasma amino acid levels with clinical outcomes in critically ill children.

**Keywords:** Plasma amino acids, critically ill patients, children, systematic review

## A Review of Preventive Measures of Formation of T2 Toxin in Foods

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T2 toxin and Preventive Measures in Foods  
Mycotoxins are natural products that are formed as secondary metabolites by filamentous fungi. Infection by these types of toxins has a large economic impact, negative influence on safety of food, adverse effect on health of human, increasing the health care cost, and reducing livestock production. Therefore, monitoring programs are designed to eliminate mycotoxins in final products worldwide. Trichothecenes are a group of mycotoxins with different degrees of cytotoxic potency. Fungi capable of producing trichothecenes include certain species of fusarium, myrothecium, and stachybotrys. T2 toxin is one of the most common trichothecene in food and feed. Consumption of products such as meat, milk, and eggs from livestock and poultry that are fed with T2 toxin-contaminated feed have been identified as the main cause of human



poisoning. Due to the adverse effects of T2 toxin on human health, various preventive measures have been followed to reduce the amount of this toxin in order to minimize its amount in food. Controlling some criteria in pre-harvest (such as proper planting, appropriate fertilization, management of pest infestation and selection of resistant species), harvest (suitability of harvest time, reduction of mechanical damage and effective cleaning) and post-harvest (drying) stages can be effective in order to reduce the formation of T2 toxin. However, it is not possible to completely prevent the formation of T2 toxin in agricultural products. Therefore, decontamination strategies including physical, chemical, and biological techniques are introduced as synergistic operation in order to decrease the amount of T2 toxin.

**Keywords:** T2 toxin, preventive measures, food

## **The effect of oral zinc supplementation on factors related to growth in children with failure to thrive: A systematic review and meta-analysis of randomized controlled trials**

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**Introduction:** Failure to thrive (FTT) is a state of malnutrition that refers to children whose rate of weight and height gain is much lower than others of the same age. and the energy received by the child. In this systematic review and meta-analysis, we intend to investigate the effect of zinc supplementation on factors related to growth in children with FTT.

**Method:** PubMed, Scopus, and Web of Science databases were searched for interventional studies investigating the effect of zinc supplementation on growth-related factors in a population of children with FTT until December 2022.

**Result:** Among the studies obtained from the initial search, finally 4 studies (with 5 arms) were included in this review. Meta-analysis showed that zinc supplementation in children with FTT led to a significant increase in weight (WMD: 0.25, 95% CI: 0.02, 0.49, P=0.03) and height for age Z-score (WMD: 0.15, 95% CI: 0.001, 0.30, P=0.04), weight for age Z-score (WMD: 0.16, 95% CI: 0.03, 0.28, P=0.01) compared to the control group. Although changes in height (WMD: 0.85, 95% CI: -0.42, 2.13, P=0.18) and IGF-1 serum levels (WMD: -7.01, 95% CI: -38.36, 24.33, P=0.66) no significant difference was observed between the zinc supplement receiving group and the control group.



**Conclusion:** The findings of this systematic review show the usefulness of zinc supplementation on improving growth-related factors in children with FTT. However, more RCTs with a larger sample size are needed for definitive conclusions.

**Keywords:** Failure to thrive, child, growth, zinc, systematic review, meta-analysis

## The relationship between dietary phytochemical index and depression in Iranian nurses in 2021

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**Introduction:** The prevalence of depression among healthcare professionals, including nurses, has been a growing concern during the covid-19 crisis, due to the increase in work pressure and its effect on the mental health of nurses. Studies have shown that dietary factors may play a role in the development and management of depression. The Dietary Phytochemical Index (DPI) is a tool that measures the intake of plant-based foods and their phytochemical content, which has been

linked to various health benefits, including mental health. However, little is known about the relationship between DPI and depression among nurses. Therefore, this study aims to investigate the association between depression and DPI among Iranian nurses.

**Method:** This cross-sectional study was performed on 347 participants (260 women and 87 men). After obtaining personal consent and filling out a written personal consent form, the information of the subjects was collected by self-reported 21DASS, FFQ and MET-Time questionnaires and statistically analyzed with SPSS software.

**Results:** In the current study, average age was 31.77 ( $\pm 0.494$ ) and the median (IQR) of BMI was 24.42 [21.64-26.56]. Also, a significant inverse correlation was observed between depression and DPI index ( $r=0.118$ ,  $p=0.028$ ).

**Conclusion:** We found that higher scores of DPI (high intakes of phytochemicals) are inversely related to major depression in females. However, further longitudinal studies and trials are required to support our findings in the future.

**Keywords:** Dietary phytochemical index (DPI), Diet, nurse, Depression, Mental health



## Effects of curcuminoid–piperine combination on oxidative stress and antioxidant capacity in women with premenstrual syndrome and dysmenorrhea: A posthoc analysis of a randomized clinical study

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**Introduction:** There is evidence supporting the role of oxidative stress in the pathobiology of menstrual-associated complications. Curcuminoids are polyphenolic natural compounds that have potentially important functional activities, including antioxidant properties. This randomized, triple-blind, placebo-controlled trial was performed to investigate the effects of curcumin on oxidative stress and antioxidant capacity in women with premenstrual syndrome (PMS) and dysmenorrhea.

**Methods:** Eighty women with both PMS and dysmenorrhea were randomized to receive either curcuminoid (500mg + 5mg piperine) or placebo daily for a period from 7 days before until three days after initiation of menstrual bleeding for three successive menstrual cycles. Anthropometrical and

biochemical characteristics, as well as the dietary intake of participants, were assessed at baseline and post-intervention. The total antioxidant capacity and free radical scavenging activity of serum and urine were quantified using the ferric reducing/antioxidant power (FRAP) and  $\alpha$ ,  $\alpha$ -diphenyl- $\beta$ -picrylhydrazyl (DPPH) methods, respectively. Malondialdehyde (MDA), as a marker of oxidative stress, was also measured using a method based on the formation of thiobarbituric acid reactive substances.

**Results:** At baseline, no significant differences were found between the placebo and curcumin groups with respect to age, dietary intake, and biochemical/anthropometric indices ( $p>0.05$ ). Curcumin significantly promoted the free radical scavenging activity of serum compared to the placebo ( $P=0.031$ ). However, no significant changes were detected in serum and urinary levels of FRAP, DPPH, and MDA between the groups ( $p>0.5$ ).

**Conclusion:** Curcumin improves radical scavenging activity and antioxidant potential in women with PMS and dysmenorrhea. Studies with higher doses and duration of curcumin are needed to verify our findings.

**Keywords:** MDA, FRAP, DPPH, Menstruation, Pain



## Family meals: a time of dealing with your family's feelings and evaluating the Association between family meals and stress

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**Introduction:** Stress is a normal response of the body to changes that occur, causing physical, emotional, and intellectual reactions. However, 64.3% of people in the world suffer from inappropriate stress responses at family meals, the time that brings family members together and accumulates their positive and negative emotions in one place. This study aimed to explore some associations between stress and family meals.

**Methods:** This cross-sectional study was conducted among 604 respondents aged 18 to 65 years and a mean age of 33.8 from different cities in Iran. A standard questionnaire was used to assess meals that individuals ate with their families. Stress was evaluated by the DASS-21 scale. Individuals are categorized into two groups, including group A (individuals who join in family meals regularly) and group B

(individuals who do not join in family meals). To examine the relationship between eating meals with family and stress, logistic regression analysis was applied in crude and adjusted models.

**Results:** There was no significant association between eating meals with family and stress in the crude model (OR: 0.89; 95%CI: (0.53-1.49); P: 0.66) when both groups were compared together. Moreover, no significant association was observed in the adjustment model for variables including total Kcal, BMI, age, gender, smoking, loss of relatives, and menstruation with stress. (OR: 0.85; 95%CI: (0.48-1.51); P: 0.59).

**Conclusion:** Our research findings showed there was no evidence confirming an association between eating meals with family and stress. Therefore, more studies need to be performed in the future.

**Keywords:** stress, meals, adults, family, eating

## Investigating the relationship between time spent watching television during mealtime and anxiety

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**Introduction:** Anxiety is a common mental health condition worldwide that can greatly affect a person's daily life. A lifestyle factor that may lead to anxiety is the amount of time spent watching. Few studies have explored this subject so far. This study aimed to investigate the Association between watching TV during mealtime and anxiety.

**Methods:** A total of 604 adults aged 18-65 with a mean age of 34 years from various cities in Iran were included in this study. The participants completed the DASS-21 questionnaire to measure their levels of anxiety, and a valid questionnaire was employed to assess how much time individuals devote to watching television during meals. To examine Association, logistic regression analysis was used in both crude and adjusted models.

**Results:** In the crude model, there was no difference in the odds of having anxiety between individuals who "always watch TV while they are eating meals" and those who "never watch TV during their mealtimes. (OR: 0.67; 95%CI: (0.31-1.42); P: 0.30) This Association remained non-significant in the adjusted model for gender, smoking, menstruation, and loss of relatives (OR: 0.93; 95% CI: (0.34-2.54); P: 0.89).

**Conclusion:** It is found that there is no significant relationship between watching TV during eating meals and anxiety. Future studies should confirm these results.

**Keywords:** watching TV, television, anxiety, meals, eating

## Navigating health through a mobile application: Integrating artificial intelligence and traditional Chinese medicine for personalized nutrition

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**Introduction:** The basic principle of TCM (traditional Chinese medicine) is the concept of balance and harmony, which forms the basis for diagnosis and treatment. Diet, a fundamental aspect of preventive and therapeutic measures, is guided by the understanding that specific foods can either restore or disrupt the body's equilibrium.

Today, the advent of AI (artificial intelligence) has revolutionized various sectors, including healthcare. This study seeks to bridge these two domains by proposing the integration of TCM principles into a mobile application equipped with AI capabilities.

**Method:** The diagnostic process in TCM begins with gathering a medical history and examinations, which include observing the tongue, assessing the pulse, etc. In this study, the PatientPatient inputs health data via a comprehensive questionnaire in a mobile application and uploads photos of his tongue. The AI algorithm analyzes the



questionnaire responses and tongue images, mapping against Chinese medicine principles. It identifies imbalances and disharmonies and generates personalized nutrition plans offering food choices, cooking methods, meal timings, and even herbal remedies in the context of TCM.

**Discussion:** This application's integration of TCM principles with AI-driven nutrition stands out through personalized tongue assessment. Going beyond previous methods, it addresses meridian imbalances and enhances holistic wellness. Acknowledging all methods' limitations, the TCM-AI synergy offers a complementary approach. Additionally, its financial advantage widens accessibility, democratizing personalized healthcare. This innovation represents a leap in merging ancient wisdom with modern technology for comprehensive health management.

**Keywords:** nutritional app, traditional Chinese medicine, smartphone application, diet app, artificial intelligence

## **The effect of flaxseed oil on metabolic profile in patients with metabolic syndrome: a comprehensive review**

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**Introduction:** Metabolic syndrome is a condition characterized by a combination of risk factors, including abdominal obesity, dyslipidemia, hypertension, and type 2 diabetes mellitus. It raises the risk of several chronic diseases, including cancer and cardiovascular disease. An estimated 20 - 25 % of adults and 19 % of children are thought to have metabolic syndrome. Flaxseed oil contains alpha-linolenic acid (ALA), an omega-3 fatty acid that is beneficial for heart health. It also contains lignans, which are compounds that have potential anti-cancer, anti-inflammatory, and anti-hypertensive effects. The objective of this review paper is to evaluate the impact of Flaxseed oil on metabolic biomarkers among patients with metabolic syndrome.

**Methods:** We conducted a comprehensive search in databases such as PubMed, Scopus, and Google Scholar to identify relevant studies published between 2000 and 2023. We reviewed the titles and abstracts of randomized controlled trials (RCTs) that were deemed most relevant and then thoroughly read the full-text articles that met our inclusion criteria.

**Results:** Flaxseed oil may ameliorate metabolic syndrome by reducing interleukin-6-mediated inflammation and oxidative stress, lowering blood pressure mediated by soluble epoxide hydrolase inhibition and lowering plasma oxylipin, improving composition lipids by reducing total cholesterol, LDL cholesterol,





triglycerides, and increasing HDL cholesterol and modulating gut microbiota.

**Conclusion:** Given the rising prevalence of metabolic disorders worldwide, it is important to explore therapeutic options such as flaxseed oil that could potentially improve the metabolic profile of patients with these conditions. Therefore, well-designed dose-dependent and long-term RCT studies are recommended in future research.

**Keywords:** Flaxseed oil, metabolic syndrome, metabolic biomarkers, RCT

## **The effect of flaxseed oil supplementation on lipid profile in adults: A systematic review and meta-analysis of randomized controlled trials**

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**Introduction:** The results of human clinical trials investigating the impact of flaxseed oil on lipid profile were conflicting. The present study aimed to assess the effects of flaxseed oil consumption on lipid profiles in adults through a systematic review of the literature

and meta-analysis of available randomized controlled trials (RCTs).

**Method:** The databases PubMed, Medline via Ovid, SCOPUS, EMBASE, and ISI Web of Sciences were extensively searched up to March 2023. Clinical trials that administered flaxseed oil as an intervention were included. The outcomes were Total cholesterol, LDL, HDL, and Triglycerides.

**Results:** Twenty-two randomized clinical trials, including 686 individuals in the intervention group and 648 in the control group, met the inclusion criteria for the meta-analysis. The findings from the meta-analysis revealed a significant association between flaxseed oil supplementation and a reduction in Triglycerides (weighted mean difference [WMD], 9.39 mg/dL; 95%CI, -17.39 to -1.39; P = 0.02) as well as an increase in low-density lipoprotein (WMD, 2.9 mg/dL; 95%CI, 0.12 to 5.69; P = 0.04). The mean difference (95% CI) between the intervention and control groups for TC was 0.125 (-4.5, 4.7), HDL 0.42 (-0.88, 1.73), and LDL 2.90 (0.12, 5.69). Subgroup analysis indicated a significant decrease in triglyceride levels among females under the age of 60 years in trials with a duration of less than 12 weeks.

**Conclusion:** Flaxseed oil has significant effects on improving triglyceride levels. However, further studies are required to confirm the potential benefits of flaxseed oil on lipid profiles. The protocol for this systematic review has been registered in the



International Prospective Register of Systematic Reviews (PROSPERO) database

**Keywords:** Flaxseed oil, lipid profile, HDL, LDL, TC, TG

## **Does folic acid supplementation improve metabolic biomarkers in patients with non-alcoholic fatty liver disease? (a randomized controlled trial)**

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**Introduction:** Previous evidence revealed a relationship between folate deficiency and non-alcoholic fatty liver disease (NAFLD). This study is the first one investigating the folic acid effects on liver enzymes, hepatic steatosis grade, insulin resistance, and lipid profile in patients with NAFLD.

**Method:** Sixty-six patients with NAFLD were randomly allocated to take either one placebo or an oral tablet of folic acid (1 mg) per day for eight weeks and homocysteine, aminotransferases, serum glucose, serum folate, insulin, homeostasis model

assessment of insulin resistance (HOMA-IR) and lipids were measured. Ultrasonography was used to assess the liver steatosis grade.

**Results:** The grade of hepatic steatosis, serum alanine transaminase (ALT), and aspartate transaminase significantly were reduced in both groups; however, the between-group comparison was not statistically significant. Notable, the decrease in ALT was more pronounced in the intervention group compared with the placebo group (-5.45±7.45 vs. -2.19±8.6 IU/L). The serum homocysteine was decreased after the intervention compared to the placebo group (-0.58±3.41 vs. +0.4±3.56 μmol/L; adjusted P=0.054). Other outcomes did not significantly change.

**Conclusion:** Supplementation with folic acid (1mg/d) for eight weeks among patients with NAFLD did not significantly change the hepatic steatosis grade, HOMA-IR, the serum levels of liver enzymes and lipid profile, but it prevents the increase in homocysteine in comparison with the placebo. Conducting further studies is advised with longer duration and different doses of folic acid, adjusted to the genotypes of methylenetetrahydrofolate reductase (MTHFR) polymorphism, among these patients.

**Keywords:** Folic acid, Homocysteine, Transaminases, Non-alcoholic fatty liver disease, Insulin resistance

**Trial Registration:** The present research was registered prospectively at [www.irct.ir](http://www.irct.ir) as



IRCT20190901044662N1 on November 7, 2019

## **Dietary fast food and sugar-sweetened beverages in Association with gastroesophageal reflux disease in adolescents**

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**Introduction:** Gastroesophageal reflux disease (GERD), a common gastrointestinal disease, is caused by retrograde flow of the stomach content into the esophagus. According to the high prevalence of fast food and sweetened beverages consumption among adolescents, they are prone to have an unhealthy lifestyle, which has been reported to be probably related to GERD. This study aims to clarify the relationship between GERD and the consumption of fast

foods, sugar-sweetened beverages, and junk foods.

**Methods:** This cross-sectional study was conducted on 13-14-year-old adolescents in the city of Yazd, Iran, using the Persian-translated form of the Gastroesophageal Reflux Disease assessment questionnaire and a dietary intake assessment questionnaire. The gathered data from 5141 enrolled subjects were analyzed using the SPSS software.

**Results:** The overall GERD odds represented that individuals with medium consumption of fast foods, sweet beverages and junk foods were about 2, 1.5, and 1.2 times (OR: 2.02, 1.508, 1.263; 95% CI: 1.413-2.889, 1.033-2.199, 1.015-1.889 respectively) and those with the highest intake of fast foods, sweet beverages, and junk foods were about 3.4, 3.1 and 2.3 times more likely to have GERD (OR: 3.413, 3.144, 2.312; 95% CI: 1.843-6.319, 2.013-4.911, 1.402-3.812 respectively), respectively. There were also significant associations between the consumption of fast foods and nausea, reflux, heartburn, and poor sleep quality symptoms. Also, intake of sweetened beverages was significantly associated with nausea, pain, reflux, heartburn, medication intake, and poor sleep quality, and junk food consumption was related to pain and poor sleep quality.

**Conclusions:** The consumption of fast foods, sweetened beverages, and junk foods is found to be remarkably associated with GERD and its symptoms in adolescents.



**Keywords:** Gastroesophageal Reflux, Heartburn, Fast Foods, Sugar-Sweetened Beverages

## **The Effects of Animal Protein Compared with Soy Protein on Glycemia: A Randomized Clinical Trial**

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**Introduction:** Various protein sources have been shown to have different effects on metabolic responses. This study aims to compare the glycemic effects of animal protein Vs. Soy protein is part of a high-protein breakfast meal.

**Methods:** This study used a randomized, crossover clinical trial design with a one-week washout period between testing days. Forty-six healthy overweight and obese men aged 18–60 years participated in the study. Participants arrived, fasted, and consumed an iso-caloric, high-protein breakfast meal with either an animal or soy protein source. Blood samples were collected at baseline and over six h postprandial. Glucose and

insulin levels were measured based on the standard protocols. Statistical analyses involving generalized linear mixed models were done using PROC GLIMMIX in SAS version 9.4 (SAS et al.).

**Results:** Animal and soy protein had different effects on insulin levels ( $p < 0.05$ ) in such a way that animal-based protein increased insulin levels more than soy protein. In regard to blood glucose, there was no effect of protein source on blood glucose.

**Conclusions:** The results of this study indicate that a high-protein test meal containing animal or soy protein exerts different glycemic effects.

Trial registration: Iranian Registry of Clinical Trials code: IRCT20211230053570N1; registered on February 10, 2022.

**Keywords:** Animal protein, Soy protein, Glycemia, Insulin

## **Relationship between malnutrition and nutritional sufficiency during a hospital stay: a PICU study**

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**Introduction:** Malnutrition is caused by an imbalance between nutrients and energy available to the body and the body's requirements for growth, maintenance, and



specific functions. A child's malnutrition can contribute to disease vulnerability and death. The prognosis for critically ill children is adversely affected by malnutrition before admission. In addition, malnourished patients admitted to the PICU have a higher risk of infection and mortality. This study examines the nutritional status of children prior to hospitalization and its relationship to the amount of energy and protein intake in the hospital.

**Methods:** A cross-sectional observational study was conducted at Akbar Hospital in Mashhad, Iran, in 2022. According to the PICU admission sheets, the energy and protein intake of malnourished patients and the length of hospitalization greater than 48 hours have been assessed.

**Results:** Among 142 patients (74 men, 68 women) hospitalized in PICU with an average age of 35 months, 39% had moderate and severe malnutrition. Based on the data collected one week after hospitalization, 80% of patients achieved protein sufficiency, and 77% achieved energy sufficiency. In evaluating the correlation between malnutrition before hospitalization and the adequacy of energy and protein intake, an inverse significant relationship was observed.

**Conclusions:** The level of energy and protein sufficiency during hospitalization was inversely related to nutritional status prior to hospitalization. Hospitalized children with malnutrition had less success obtaining energy and protein.

**Keywords:** Nutritional adequacy, malnutrition, Protein, Energy, PICU, Pediatric Intensive Care Unit

## **A Systematic Review and Meta-analysis for Ascorbic Acid, Corticosteroids, and Thiamine Effects on the mortality outcomes of Patients with Septic Shock**

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**Introduction:** The current study aimed to conduct a systematic review and meta-analysis of the effects of Ascorbic acid, corticosteroids, and thiamine (ACT) on the overall mortality rate and length of stay in hospital and intensive care unit (ICU) in septic shock patients.

**Methods:** Databases, including PubMed, EMBASE, Scopus, Google Scholar, ISI Web of Science, and Cochrane Library, were



searched up to August 1, 2021, for terms related to ACT and septic shock patients. The randomized clinical trial (RCT) and cohort studies that examined the effects of ACT on adult septic shock were selected. The data were pooled to compute the risk ratio (RR) and the overall weighted mean difference (WMD) with 95% CI. Finally, 12 trials (1150 subjects) and 13 cohort studies (340944 subjects) were included.

**Results:** The average patients' age was between 45.4 to 76.5 years. Overall, our result did not show any significant difference in-hospital mortality (RR= 1.03; 95% CI: 0.79, 1.35; p=0.83; I2=0%), ICU mortality (RR=0.88; 95% CI: 0.62, 1.24; p=0.46; I2=0%) and 28-day mortality rate (RR=1.05; 95% CI: 0.84, 1.31; p=0.67; I2=0%), in ACT group compared routine care.

**Conclusions:** The ACT administration could not affect overall mortality, but it may reduce the vasopressor requirement duration and sequential organ failure assessment (SOFA) score in septic shock patients.

**Keywords:** Septic Shock, Ascorbic Acid, Thiamine, Corticosteroid, Mortality

## Randomized Controlled Trial of the Effects of Calorie Restricted Vs. Standard Calorie Feeding on Gastrointestinal Tolerance in Patients with Multiple Trauma

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**Introduction:** The most common complication related to EN is gastrointestinal complications and Enteral tube feeding intolerance (ETFI), which can diminish the enteral nutrient being delivered. The aim of this study was to investigate the effects of calorie restriction Vs. Standard calorie feeding on gastrointestinal tolerance in patients with multiple trauma.

**Method:** This study was a single-blind randomized clinical trial performed on 78 patients with severe traumatic brain injury (61 men and 17 women). Patients were randomly assigned to hypocaloric and full-caloric groups. Intestinal feeding of patients in the calorie-restricted group started at 30% of their daily caloric requirement and



gradually increased to 75% during the first week. Patients were studied for 14 days. The diagnostic criteria for ENI were defined as the presence of any or a combination of the following symptoms: large gastric residual volume (GRVs), high nasogastric tube aspirates, abdominal distension, bloating, nausea, vomiting, diarrhea, or subjective discomfort.

**Results:** The incidence of gastrointestinal intolerance was significantly higher in the standard calorie group than in the calorie-restricted group ( $P = 0.03$ ). There was no significant difference in the blood glucose, serum lactate, urine urea nitrogen, lipid profile, NUTRIC score, and mid-arm circumference between the two groups (all  $p > 0.05$ ).

**Conclusions:** Calorie-restricted enteral feeding may improve gastrointestinal tolerance in multiple trauma patients and has no negative effects on nutritional status and protein catabolism.

**Keywords:** Multiple Trauma, Enteral feeding, Nitrogen balance, Intensive Care Units

## Application of artificial intelligence in predicting the serum level of 25-hydroxyvitamin D

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**Introduction:** Since vitamin D has important functions in the body and its deficiency is related to many diseases, it seems necessary to determine the predictors of serum 25-hydroxyvitamin D (25(OH)D) level. Therefore, the aim of this study was to predict serum 25(OH)D level using artificial intelligence.

**Methods:** This cross-sectional study was conducted on 101 healthy adults who were not taking vitamin D supplements in Shiraz, Iran. Data on demographic characteristics and sun exposure habits were collected. Anthropometric requirement and serum 25(OH)D concentration were also measured. Data were analyzed with R software and using different machine learning methods such as conditional tree, conditional forest, and random forest. Machine learning methods are considered a subset of artificial intelligence that finds generalizable predictive patterns even in small sample sizes.

**Results:** According to the conditional tree, sex ( $p < 0.001$ ) was the main factor in the



classification of individuals in terms of serum 25(OH)D levels. Based on the conditional forest results, sex, percentage of body surface area exposed to the sun, and midday sun exposure were more important 25(OH)D predictors, respectively. Besides, random forest results showed that the most important variables were sex, percentage of body surface area exposed to the sun, and waist circumference, respectively.

**Conclusions:** According to artificial intelligence prediction, sex, percentage of body surface area exposed to the sun, midday sun exposure, and waist circumference were the most important predictors of serum 25(OH)D level in individuals who do not take vitamin D supplements.

**Keywords:** artificial intelligence, machine learning, 25-hydroxyvitamin D

## The Effect of Kefir Consumption on the Lipid Profile: A Review

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**Introduction:** Kefir is a probiotic beverage known in several countries, which has been drawing the attention of scientists because of its advantageous properties. It consists of a collection of bacteria (lactic acid and acetic acid bacteria) and yeast enclosed in a polysaccharide matrix called kefiran. Kefir also includes some bioactive peptides with anti-hypertensive, antimicrobial, immunomodulatory, opioid, and anti-oxidative functions. Fermented milk products have been shown to affect serum cholesterol levels in humans. Kefir has potential health benefits, but its cholesterol-lowering properties have not been studied. The consumption of prebiotics and probiotics from functional foods may constitute an alternative strategy to prevent and reduce the impact of cardiovascular and metabolic diseases.

**Method:** This review provides articles related to the impact of kefir and its active components on lipid profile. Studies were found by searching PubMed, Web of Science, and Embase databases from 2015 to 2023. Nineteen articles fulfilled the





inclusion/exclusion criteria of this review, and ten of them were used in this research.

**Result:** Kefir's health benefits are due to the diversity of the probiotic bacteria inside of it. Kefir is known to make additional contributions to the treatment of many diseases, from the immune system to inflammatory bowel diseases, from reducing serum levels of LDL cholesterol (LDL-C) and triglycerides (TG) to controlling blood flow. It was concluded that regular consumption of kefir is effective in women and men with dyslipidemia in reducing total cholesterol and LDL cholesterol in the blood lipid profile, whereas this was not observed in normal people.

**Conclusions:** The results concluded that consuming kefir improved fasting blood pressure, blood sugar, and lipid levels, thereby reducing LDL and the risk of developing cardiovascular events over the next ten years. These results suggest that regular kefir consumption may have a positive impact on metabolic syndrome treatment.

**Keywords:** Kefir, Lipid profile, LDL-cholesterol, Functional food

## **Evaluation of dietary and lifestyle inflammatory scores and their Association with the odds of depression, stress, and anxiety in adults living in Yazd, Iran**

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**Introduction:** Mental disorders such as depression, anxiety, and stress are becoming more prevalent worldwide. There is a relationship between neuropsychiatric symptoms and inflammation. We focused on examining the Association of dietary inflammation scores (DIS) and lifestyle inflammation scores (LIS) with the odds of mentioned disorders.

**Method:** This study was conducted on 5579 participants in Yazd Health Study (YaHS) aged 20-70 years. Multivariable logistic regression models were used to calculate the odds ratio (ORs) of mentioned disorders across quartiles of DIS and LIS.

**Results:** After adjusting for confounding variables, higher adherence to LIS was



associated with increased odds of depression (OR:1.39, P trend:0.03, CI:1.14-1.69) and anxiety (OR:1.23, CI:1.01-1.49), but there was not a significant relationship with stress. In the multivariable model, the odds of anxiety, depression, and stress were not significantly associated with quartiles of DIS.

**Conclusions:** Our findings indicated that higher adherence to LIS was associated with increased odds of depression and anxiety.

**Keywords:** Diet, Lifestyle, Inflammation, depression, anxiety, stress

## **Ketogenic diet in pediatric super-refractory status epilepticus: A case series**

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**Introduction:** Super-refractory status epilepticus (SRSE) is a life-threatening neurological condition with long-term dysfunction and high mortality (16-23%). SRSE is defined as failure of response of status epilepticus to adequately use antiepileptic drugs. There are no specific guidelines for the treatment of SRSE, and the therapeutic strategies are limited. The ketogenic diet (KD) is an alternative treatment option in patients with SRSE whose status epilepticus persists for 24

hours or more after administration of anesthesia.

**Methods:** In Zahra Mardani Azari Pediatric Hospital, a university level III teaching hospital in Tabriz, Iran, we applied KD for two children with SRSE from October 2021 to August 2023.

**Results:** One 2.5-year-old girl with a history of infantile spasms followed by severe pneumonia experienced seizures that did not respond to first and second-line antiepileptic drugs, and she was placed in a medically induced coma with continuous infusion of midazolam. Seizures were not controlled for three days. On the third day, a KD with a 3:1 ratio was started for a patient using the nasogastric tube as enteral feeding with one-third of the calorie requirement. After 24 h, ketone bodies appeared in the urine, and after 48 h, seizures were stopped. Her KD continued, and epileptic seizures disappeared. The second child was a 5.5-year-old girl with no history of disease. She experienced seizures that were resistant to antiepileptic drugs, and continuous seizures persisted for 30 days. On day 30, they were admitted to our hospital, and KD, with a 4:1 ratio, was initiated. After 24 hours, seizures were ceased. The child continued KD for two months, and then the diet was gradually weaned.

**Conclusions:** We concluded that KD is effective in controlling pediatric SRES. Further large sample size randomized clinical trials are suggested to verify the therapeutic effects of KD in pediatric SRES.



**Keywords:** super-refractory status epilepticus, ketogenic diet, infantile spasm, antiepileptic drugs

## **Estimating the Risk of non-alcoholic fatty liver Diseases and Identifying Related Factors among the Staff of Mashhad University of Medical Sciences**

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**Introduction:** Non-alcoholic fatty liver disease (NAFLD) is a clinical syndrome characterized by macrovesicular steatosis in more than 5% of hepatocytes. Red meat and its products negatively affect fatty liver disease due to their saturated fatty acids and high cholesterol. On the other hand, the Mediterranean diet, which is based on high consumption of whole grains, fruits, legumes, vegetables, and nuts, moderate consumption of dairy products, and low consumption of red meat and chicken, has played a role in the treatment and prevention of non-alcoholic fatty liver disease.

**Method:** The present study was conducted in the Persian cohort of Mashhad. The study was conducted in 2 phases. In the first phase, the effect of each variable on the risk factors of non-alcoholic fatty liver disease was investigated. Then, in the second phase of

the study, the effect of replacing red meat intake with other protein sources (including chicken, fish, eggs, dairy, beans, and nuts) was determined on the desired outcomes, i.e., non-alcoholic fatty liver risk factors.

**Results:** The prevalence of liver diseases in the studied population is 16%. By reducing red meat and replacing it with fish and nuts, the risk of liver disease increases by up to 5%, according to the amount of replacement. While reducing red meat and replacing it with chicken, egg, beans, and, to some extent, dairy products, the risk of liver disease is reduced by 5% according to the amount of replacement.

**Conclusions:** Replacing red meat with chicken, eggs, and legumes can be beneficial to reduce the possibility of liver diseases.

**Keywords:** NAFLD, Diet, Red meat

## **Relationship between the built environment, socio-economic status, diet, and physical activity with obesity among the staff of Mashhad University of Medical Sciences**

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**Introduction:** Obesity is a major global health concern, which adversely affects the quality of life. Diet and physical activity (PA) are the most important factors affecting



body weight. Environmental factors such as the built environment could be associated with obesity through the effects of inadequate physical activity and insufficient food intake. Also, individual factors such as socio-economic status (SES) are related to obesity by influencing food access, environment, and built environment.

**Method:** The present study was conducted in the Persian cohort of Mashhad. A GIS map of the built environment of the participants was drawn. Diet was measured using the diet quality index (DQI). The weight status, P. A and SES of the participants were measured according to Persian Cohort questionnaires. Using partial least square structural equation modeling (PLS-SEM), structural model relationships were investigated.

**Results:** In this study, 7431 people were included. Obesity was positively related to age ( $P<0.001$ ), female gender ( $P<0.001$ ), and married people ( $P<0.001$ ). Obesity was negatively related to physical activity ( $P<0.05$ ), DQI ( $P<0.001$ ), and SES ( $P<0.001$ ). There was no significant relationship between the built environment and physical activity and DQI.

**Conclusions:** Obesity among employees of Mashhad University of Medical Sciences is directly influenced by food intake, physical activity, and SES status. SES has the most and most important effect. It seems that to reduce the prevalence of obesity, it is necessary to emphasize increasing economic access, reducing the class gap, and

increasing literacy and awareness, and in the next step, emphasizing the built environment.

**Keywords:** Built environment, Socio-economic characteristics, Diet, Physical Activity, Obesity

## **Zinc, psychological disorders and quality of life in irritable bowel syndrome**

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**Introduction:** Zinc is a Trace element with an important role in regulating the central nervous system and intestinal functions. Many mental disorders are associated with zinc deficiency. The present study aimed to investigate the relationship between zinc intake and serum concentration of psychological disorders and quality of life (QoL) in patients with irritable bowel syndrome.



**Method:** 61 IBS patients referred to the two clinics of the Hospital of Isfahan University of Medical Sciences were included in the present case-control study. Sixty-one matched healthy people were also selected as a control group. Zinc intake was evaluated using a 3-day food record, and serum zinc concentration was evaluated using a valid laboratory method. DASS-21 depression, anxiety, and stress questionnaire was used to investigate psychological disorders, and two specific IBS quality of life questionnaires and the World Health Organization (WHO) 26-question questionnaire were used for quality of life. Pearson's correlation coefficient was used to check the correlation between variables.

**Results:** In addition to a significant decrease in serum levels in the patient group compared to the control group, overall quality of life, physical health, and mental health were significantly lower in the IBS group compared to the control group, and depression, anxiety, and stress scores were higher ( $P < 0.05$ ). A positive correlation was observed between the zinc intake in the group of healthy people with mental health ( $P < 0.05$ ) and in the group of IBS patients with the mentality of people about their body image ( $P < 0.05$ ).

**Conclusions:** Our findings show that zinc deficiency may be related to psychological disorders and some components of quality of life in patients with IBS. Future clinical studies are needed to explore more.

**Keywords:** zinc, psychological disorders, quality of life, irritable bowel syndrome

## **Effect of jujube consumption on lipid profile: a systematic review**

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**Introduction:** The evidence shows that dyslipidemia is the leading risk factor in the development of cardiovascular diseases. Dietary factors play an essential role in the development of dyslipidemia. Studies have shown that taking jujube can effectively improve some components of the lipid profile. Therefore, the aim of the present study is to review the research conducted in the field of the effect of jujube consumption on lipid profile.

**Methods:** The present study is a systematic review. First, in PubMed, Scopus, Web of Science, and Google Scholar databases using the keywords "zizyphus," "jujube," "zizyphi spinosi semen," "bear fruit," "lipid profile," "triglycerides," cholesterol," "low-density lipoprotein cholesterol," "high-density lipoprotein cholesterol" and "very low-density lipoprotein cholesterol" were searched. In this article, clinical trial studies published between 2013 and 2022 that were conducted on humans were investigated.



**Results:** In total, 145 articles were found, of which six clinical trial studies were analyzed. Studies conducted on adults (obese, alcoholic, fatty liver, or type 2 diabetes) showed that daily consumption of 30 grams of jujube for three months can significantly reduce the levels of total cholesterol, LDL, and triglycerides in the blood. An increase in HDL levels and a decrease in VLDL levels were observed after consuming this amount of jujube in a study. Only one study was done on adolescents with dyslipidemia. In this study, after consuming 15 grams of jujube per day for one month, a significant decrease in total cholesterol and LDL levels was found.

**Conclusions:** Jujube consumption at a dose of 30 grams per day for a long time probably reduces the level of total cholesterol, LDL, and triglycerides in adults. Due to few studies in this field, more studies are suggested.

**Keywords:** jujube, lipid profile, review

## The Association of soft drinks with the risk of Premature Coronary Artery Disease (PCAD) in Iranian adults

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**Introduction:** Although several studies have examined the Association between sugar-sweetened beverages (SSBs) and coronary artery disease (CAD), the Association of SSBs with premature CAD (PCAD) in low-income countries remained unknown. Therefore, we aim to explore this Association in Iranian adults.

**Methods:** The Iran premature coronary artery disease (IPAD) study is a multi-centric, case-control study on 3137 adults ( $\geq 18$  y) from different ethnicities. According to the results of angiography, the occlusion of at least a single coronary artery  $\geq 75\%$  or left main coronary of  $\geq 50\%$  in women younger than 70 and in men younger than 60 years was considered to be PCAD. Information regarding SSB consumption was gathered using a validated food frequency questionnaire (FFQ). SSBs are composed of soft drinks and artificial juice. The odds of PCAD across the quartiles of SSBs were assessed by binary logistic regression.

**Results:** The mean (SD) age of participants and SSB consumption was 51.5 years and



46.9 g/d, respectively. After adjustment for potential confounders, individuals in the top quartile of SSBs had a 66% higher risk for PCAD in comparison with those in the bottom quartile (95% CI: 1.27, 2.18;  $P$  trend<0.001). In addition, a direct link was observed between the severity of disease and SSB consumption, while those with the highest consumption had a higher risk for more severe disease in comparison with those with the lowest consumption (OR= 1.91, 95% CI: 1.55, 2.36).

**Conclusions:** This study found a positive association between SSBs and PCAD. Prospective cohort studies are warranted to reveal the causal relationships.

**Keywords:** Sugar-Sweetened Beverages, Soft drink, Cardiovascular, Coronary Artery Disease

### **Investigating the relationship between nutritional status, biochemical factors, and the length of stay in the intensive care unit (ICU) with the survival rate**

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**Introduction:** The aim of the present study was to investigate the relationship between

nutritional status, biochemical factors, and the length of stay in the intensive care unit (ICU) with survival rate in a prospective cohort.

**Methods:** 125 patients were followed up from admission to discharge at 8 ICUs in Shiraz, Iran. The Patient's nutritional status was assessed using subjective global assessment (SGA), anthropometric measurements, biochemical indices, and body composition indicators. Diet prescription and intake were also evaluated. Patients' survival rate was evaluated using Kaplan-Meier and life-table tests. The Cox regression test was used to find risk factors on survival time.

**Results:** The survival rate of malnourished patients at ICU admission was lower than that of non-malnourished patients, but not significantly ( $P=0.754$ ). The survival rate decreased with the increase in the length of stay in the ward, so after 77 days of stay, the cumulative survival ratio decreased to 0.3 and then remained constant. The highest death rate occurs in the first 14 days of stay in the ward. Anthropometric measurements and body composition at admission had no effect on the mortality rate. However, interleukin-6 serum levels (HR=1.008; 95%CI=1.004-1.013), sequential organ failure assessment (SOFA) score (HR=1.149; 95%CI=1.035-1.276), and average protein intake (HR=0.924; 95%CI=0.896-0.952) were significant risk factors.

**Conclusions:** Malnutrition at ICU admission wasn't significantly related to the survival



rate, While Interleukin-6 serum levels, SOFA-score, and average protein intake were significant risk factors. The survival rate of patients decreased with increasing length of stay in the ICU.

**Keywords:** Malnutrition, Critical illness, Intensive care unit, Survival rate, Nutrition assessment

### **The Association of a common variant near MC4R with BMI and WHR**

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**Introduction:** Variations of Individuals in susceptibility to obtain body fat are exclusively determined by genetic factors. A common variant near the MC4R gene (rs17782313) is known as an important contributor to monogenic and polygenic obesity. Although body fat distribution is a major determinant of metabolic abnormalities in obesity, the Association of this variant with obesity-related traits has been revealed to be contradictory. This study aimed to examine the Association of rs17782313 with Body Mass Index (BMI)

and Waist-to-hip ratio (WHR) in the Iranian population.

**Methods:** A total of 400 subjects were selected randomly from a database related to the Iranian Multicenter Osteoporosis Study (IMOS). Genotyping for rs17782313 was carried out by PCR-RFLP. Anthropometric measurement, dietary, and physical activity data were collected. Multivariate linear regression models were used to examine the Association of rs17782313 with obesity traits while adjusting for covariates.

**Results:** Although no significant association was found between the rs17782313 variant and BMI, women who were C allele carriers have significantly shown higher WHR than those with TT both in crude and adjusted models genotype ( $P < 0.05$ ).

**Conclusions:** Only in women a significant association has been found between a common variant near MC4R and WHR. It has also been suggested that lifestyle variables have no crucial effect on this Association.

**Keywords:** Melanocortin receptor 4 (MC4R), Polymorphism, BMI, WHR

### **The Association between meal regularity and stress**

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**Introduction:** Stress has a pervasive effect on health-related behaviors. One of these important behaviors is meal regularity, which includes the time, frequency, and quality of meals. This cross-sectional study aims to evaluate the Association between meal regularity and stress in adults.

**Methods:** A total of 604 adults between the ages of 18 and 65 were recruited from various parts of Iran. Meal regularity was pre-defined and assessed using a pre-tested questionnaire. The participants' stress levels were assessed by the DASS -21 questionnaire. Logistic regression was used in crude and adjusted models to explore the relation between meal regularity and stress.

**Results:** No significant association was found between the highest adherence to meal regularity and odds of stress (OR: 0.875; 95% CI: 0.423-1.808, P = 0.718) in the crude model and after adjusting for potential confounders including Age, BMI, Total Kcal, Gender, Smoking, Menstruation, Loss of relatives (OR: 0.707; 95% CI: 0.301-1.665, P =0.428).

**Conclusions:** No significant correlation was observed between meal regularity and stress. Further studies are needed to clarify these.

**Keywords:** meal regularity, stress, adults, dietary habit, diet

## The impact of adherence to the Mediterranean Diet on Dietary Inflammatory Index: A Systematic review of randomized control trial articles

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**Introduction:** In recent years, there has been growing interest in the potential anti-inflammatory effects of the Mediterranean diet. The Dietary Inflammatory Index (DII) is a tool used to assess the inflammatory potential of an individual's diet. This systematic review aims to examine the existing evidence on the effect of the Mediterranean diet on the DII, providing insights into its potential anti-inflammatory properties.

**Methods:** A comprehensive search was conducted in major scientific databases, including PubMed, Scopus, and ISI Web of Science. Studies that assessed the effect of the Mediterranean diet on the DII in human populations were included, and relevant data were extracted.

**Results:** A total of 6 studies met the inclusion criteria, involving a combined



population of 396 participants. The majority of studies reported a significant inverse association between adherence to the Mediterranean diet and DII, suggesting that higher adherence to this dietary pattern is associated with a lower inflammatory potential of the diet.

**Conclusions:** The findings of this systematic review provide evidence supporting the potential anti-inflammatory effects of the Mediterranean diet as assessed by the DII. Further prospective studies are warranted to explore the underlying mechanisms and evaluate the long-term impact of the Mediterranean diet on inflammation-related health outcomes. The present review highlights the importance of adopting a dietary pattern rich in Mediterranean foods to reduce inflammation and potentially mitigate the risk of chronic diseases associated with systemic inflammation.

### **Platelet count, homocysteine, and cardiovascular disease: Is there a link?**

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**Introduction:** Elevated serum homocysteine levels have emerged as a newly recognized risk factor for vascular diseases. Recent findings suggest that, in

individuals with hyperhomocysteinemia, the additional risk could be influenced by platelet counts. This study aims to assess the connection between platelet count and serum homocysteine levels in the development of cardiovascular diseases.

**Method:** This case-control study was conducted at Ghaem Hospital in Mashhad, Iran, in the year 2020. Patients scheduled for coronary angiography were included in the case group, while healthy individuals formed the control group. We collected demographic data, smoking history, and conducted laboratory tests for all participants. Within the case group, we further divided participants into four subgroups based on angiography results, and then compared homocysteine levels and platelet counts among all study participants.

**Results:** The study comprised 248 participants, including 76 females, with 98 (39.5%) of them in the control group. Among the five subgroups, there was no significant difference in platelet levels ( $p > 0.05$ ), but patients with three vessel disease (3VD) exhibited higher homocysteine levels ( $p < 0.001$ ). In a multi-nominal logistic regression analysis, having platelet levels  $\geq 128,000$  and homocysteine levels  $\geq 12.83$  increased the risk of 3VD significantly (OR=7.858;  $p = 0.001$ ), as did having platelet levels  $< 128,000$  and homocysteine levels  $\geq 12.83$  (OR=6.970;  $p = 0.021$ ).

**Conclusion:** Elevated plasma homocysteine levels are linked to the existence and seriousness of cardiovascular diseases



(CVD). There was no identified correlation between platelet levels and CVD.

**Keywords:** Cardiovascular illness, homocysteine, elevated homocysteine levels, platelets

### **Comparison of the prevalence of vitamin D deficiency in infants with regular and irregular use of A-D drops**

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**Introduction:** Vitamin D plays a vital role in bone growth, and deficiency causes rickets in children. Numerous studies have reported the prevalence of vitamin D deficiency in Iranian infants. We aimed to investigate the prevalence of vitamin D deficiency in infants and toddlers with regular or irregular use of vitamin A-D supplement drops in Mashhad.

**Methods:** In this cross-sectional study, 229 girls and 220 boys aged 0 to 2 years who were breastfeeding were included. Community sampling was done by random cluster sampling. Infants were categorized into three groups: infants with regular or irregular intake and those who did not take vitamin A-D supplement drops. Analysis of variance (ANOVA) and Chi-square test were used for statistical analysis. In all statistical analyses, a p-value less than 0.05 was considered significant.

**Results:** Overall, the mean serum level of vitamin D in infants and infants taking vitamin A-D supplements (26.70 ng/ml) was significantly higher than infants and infants who did not take vitamin A-D supplements (16.70 ng/ml) or consumed irregularly (19.94 ng/ml). The probability of vitamin D deficiency (less than 20 ng/ml) in infants who regularly consumed vitamin D was 0.23 times that of infants who did not consume vitamin D. Overall, 31.7%, 50%, and 65.5% of infants and toddlers who took regular, irregular, and non-regular doses of vitamin D supplementation had vitamin D levels of less than 20 ng/ml ( $P < 0.001$ ).

**Conclusions:** Our study showed that infants who were breastfed and took vitamin A-D supplements regularly had higher vitamin D levels (more than 30 ng/ml).

**Keywords:** Vitamin D deficiency, A-D drops, infants and toddlers, supplementation

### **Relationship between the frequency of consumption of spicy food and anxiety**

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**Introduction:** Anxiety is a common mental health condition that involves persistent feelings of fear and worry, affecting millions of people worldwide and impairing their daily functioning. Many contributing factors have been identified in anxiety disorders; however, research on the relationship between spicy food consumption and anxiety is limited. This study aimed to investigate this relationship.

**Methods:** In this cross-sectional study, 604 adults aged 18-65 years with a mean age of 34 years from various cities in Iran were evaluated. The Iranian-validated version of the DASS-21 questionnaire was used to assess anxiety and sleep disturbances evaluated by a standard sleep quality questionnaire... DASH score was determined based on other kinds of literature. A Persian translation version of the Epworth Sleepiness Scale (ESS-IR) was used to assess daytime sleepiness. To explore association logistic regression analysis used in crude and adjusted models.

**Results:** In the crude model, there was no significant association between adults who consumed spicy food daily and those who consumed it once a week (OR 0.74; 95% CI 0.44-1.25; P: 0.27). After adjustment for variables such as gender, smoking, menstruation, and loss of relatives, there was no significant relationship in the adjusted model as well. (OR 0.97; 95% CI 0.52-1.82; P:0.94).

**Conclusions:** No association was observed between spicy food consumption frequency

and anxiety. However, due to limited existing research, further studies are needed to clarify the relationship between the frequency of spicy food consumption and anxiety.

**Keywords:** spicy foods, anxiety, mental health, adults,

### **Daily dietary intake of strontium from a total diet study in an adult Shiraz population**

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**Introduction:** Pollution is considered a major problem worldwide. Estimating the intake of essential and toxic elements is important for assessing the risk of deficiency or toxicity. Some trace elements are essential for the body to function properly. However, these products can be harmful to health if consumed in excess. This study evaluates dietary strontium intake in the



Shiraz population using the total diet study (TDS) method.

**Methods:** A total of 121 samples were selected and collected to estimate strontium uptake by the TDS method using a food frequency questionnaire (FFQ) answer sheet and divided into 20 groups. The samples were purchased from 5 districts of Shiraz and were homogenized and digested, and the strontium concentration was measured by inductively coupled plasma optical emission spectrometry (ICP-OES). Dietary intake is estimated based on metal concentration and food consumption data. The daily intake is then calculated.

**Results:** The discovery shows that potatoes have the highest concentration of strontium, but fruit contributes the most to dietary strontium intake. In addition, the results show that the average daily strontium intake in the Shiraz population is 0.267 mg/day. Therefore, the amount of strontium in the diet based on the tolerable daily intake (TDI) is 2.844%, below the standard TDI.

**Conclusions:** The strontium intake in the Shiraz population does not exceed the established limit, and strontium concentration was not above the recommended limit in any food group. Therefore, receiving strontium through food does not pose any risk to the Health of the population of Shiraz.

**Keywords:** Heavy metals, Strontium, Total Diet Study, FFQ.

## The Role of Vitamin D in Reducing Colorectal Cancer

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**Introduction:** In recent years, numerous studies have highlighted the role of vitamin D in the prevention, incidence, treatment, and survival of various cancers, particularly gastrointestinal cancers. Colorectal cancer (CRC) is the third leading cause of cancer death in the United States and the second leading cause of death worldwide. According to 2020 research, over 5.25 million people worldwide live with CRC. Vitamin D is a steroid hormone primarily involved in regulating bone metabolism, but it has many other physiological functions, such as anti-inflammatory, immune-modulatory, and anti-angiogenic effects, potentially acting as an anti-cancer agent.

**Methods:** The manuscript is prepared mainly using the information collected from PubMed and MEDLINE articles published years between 2019-2023.

**Results:** The anti-cancer activity of vitamin D occurs by binding to its receptor (Vitamin D Receptor: VDR) and combining it with chemotherapeutic drugs, resulting in apoptosis of cancer cells and reduction of inflammatory cytokines. Low levels of vitamin D play a significant role in the



development of cancer by altering the structure of the VDR receptor. Additionally, point polymorphisms in the VDR gene can create anti-proliferative effects associated with the risk of developing cancer. The aim of this article is to review the methods of vitamin D's impact on the etiology, prevention, and treatment of colorectal cancer.

**Conclusions:** It seems that low levels of vitamin D relate to gastrointestinal cancers with different molecular mechanisms, especially by affecting VDR.

**Keywords:** Vitamin D, Colorectal Cancer, Gastrointestinal System, VDR, Cancer

## Is a Higher Dietary Phytochemical Index a Protective Factor for Multiple Sclerosis?

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**Introduction:** It is widely accepted that nutrition plays a role in developing multiple sclerosis (MS) as one of the possible environmental factors. Previous studies have demonstrated that unhealthy dietary patterns are significant risk factors for mental health disorders. Currently, there is no specific diet associated with MS therapy. However, due to limited information in this

field, further investigation is warranted. This study investigated the association between the dietary phytochemical index (DPI) and multiple sclerosis (MS).

**Methods:** The present longitudinal study utilized data from participants in a study conducted in Mashhad, Iran, in 2015, which determined food patterns among MS patients. Information was collected using a 160-item semi-quantitative food frequency questionnaire from 174 patients with MS and 171 healthy individuals. The association between DPI and MS was evaluated while considering clinical variables such as vitamin D supplementation, anthropometric measures, and stress levels. DPI was calculated using the formula: (daily energy derived from phytochemical-rich foods [kcal] / total daily energy intake [kcal]) ×100.

**Results:** The DPI level was lower in the group of MS patients compared to the control group; however, no statistically significant difference was observed between the DPI scores of these two groups ( $p > 0.05$ ).

**Conclusions:** Our findings suggest that there may not be an association between dietary phytochemical index and increased odds of developing MS.

**Keywords:** Multiple Sclerosis, Phytochemicals, index, Diet, Adults, Iran



## Myo-Inositol supplementation in pregnant women to prevent Gestational Diabetes Mellitus: A systematic review

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**Introduction:** The prevalence of gestational diabetes mellitus [GDM] has increased dramatically in recent decades. GDM is associated with short- and long-term health problems for both mother and child, such as Intrauterine growth interference, fetal death, increasing the risk of obesity and Diabetes mellitus in fetal adulthood, and the risk of metabolic syndrome and cardiovascular disease in the mother (1,2). Therefore, Preventing these complications is extremely important. Myo-inositol (MI), an isomer of Inositol, is known to be an insulin-sensitive supplement to prevent GDM (3,4). The purpose of this review study is to evaluate the effect of MI oral supplementation on preventing GDM.

**Methods:** We performed a systematic literature search of electronic databases (PubMed et al.) to identify all randomized controlled trials (RCTs) published before 5 August 2023.

In parallel designed studies, participants were divided into the intervention group

[receiving 2g MI, once or twice a day] and the control group (5,6,7). Moreover, the participants in the Celentano et al. study were divided into four groups: one receiving 2g MI, one receiving 500mg D-chiro (DI), one receiving 1.1 g MI plus 27.6 mg DC, and the control group] (8). All studies evaluated the incidence of GDM and OGTT plasma glucose levels.

**Results:** Among the 78 identified records, we removed articles published before 2020, and several papers were excluded due to screening titles and abstracts. Ultimately, four articles were included in this study. The four eligible studies involved a total of 494 participants (239 who received MI and 255 who were in the control group) (5,6,7,8). The result showed that Compared with the control group, 4 g MI supplementation per day significantly decreased the incidence of GDM ( $P < 0.001$ ).

**Conclusions:** According to the articles we reviewed, it can be concluded that MI can decrease blood sugar more than D-Chiro or the combination of D-chiro and Myo-Inositol. So, MI is the most effective isomer of Inositol for preventing GDM. Also, due to the meta-analysis that was reviewed, 2 grams twice a day is effective.



## Does cherry consumption have an impact on patients with Non-Alcoholic Fatty Liver Disease (NAFLD)?: A review of randomized controlled trial articles

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**Introduction:** Non-alcoholic fatty liver disease (NAFLD) is characterized by excessive accumulation of fat in the liver. Potential strategies for the management of NAFLD have been identified as dietary interventions such as the consumption of specific foods. Due to its potential benefits for the treatment of various health conditions, Cherry consumption has attracted attention. This systematic review aims to evaluate the impact of cherry consumption on NAFLD based on available evidence from randomized controlled trials (RCTs).

**Methods:** A comprehensive literature search was conducted across major scientific databases, including PubMed, Scopus, and ISI Web of Science, until April

2023. The search strategy involved variations of keywords related to cherries, NAFLD, randomized controlled trials, and liver, and only studies published in the English language were considered for inclusion.

**Results:** The initial search produced a total of 821 articles, of which 4 RCTs were included in the review. Findings revealed that cherry consumption had a positive impact on NAFLD, as evidenced by improvements in liver enzymes, such as alanine aminotransferase (ALT) and aspartate aminotransferase (AST), and systolic blood pressure.

**Conclusions:** The findings indicate that cherry consumption is associated with improvements in liver enzymes and other metabolic parameters. Therefore, cherries could be considered as a dietary component for the management and prevention of NAFLD. However, due to the limited number of RCTs and variations in study design, further well-designed, large-scale RCTs are warranted to establish more conclusive evidence regarding the therapeutic effects of cherries on NAFLD.

**Keywords:** Cherry, prunus, non-alcoholic fatty liver disease, NAFLD, liver enzymes, fatty liver, systematic review, randomized controlled trials





## Assessment of food consumption in patients with non-alcoholic fatty liver disease

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**Introduction:** Non-alcoholic fatty liver disease (NAFLD) is a liver manifestation of metabolic syndrome. Evidence shows that the dietary patterns of people play a role in the pathogenesis and progression of this disease. The aim of this study is to assess food consumption in patients with NAFLD and to determine the relationship between different food groups and the severity of the disease.

**Methods:** 100 patients with NAFLD, non-diabetic and without thyroid disorders, in the age range of 20 to 50 years, and of both sexes, were included in the study. The weight, height, and blood pressure of patients were measured based on standard methods, and their body mass index (BMI) was calculated. In order to estimate the dietary patterns of patients, the food frequency questionnaire (FFQ) of 133 food items was completed.

**Results:** In the present study, 65% of patients were diagnosed with grade 1 fatty liver disease, and the rest were grade 2 and 3. The majority were overweight or obese ( $P=0.014$ ). Significant correlations were observed between the consumption of hamburgers and sausages ( $P=0.002$ ), cream

( $P=0.027$ ), solidified vegetable oil ( $P=0.044$ ), animal butter (tallow) ( $P=0.035$ ), soft drinks ( $P=0.015$ ) and the severity of the disease. On the contrary, consumption of olive oil ( $P=0.028$ ) and soybean oil ( $P<0.001$ ) had an opposite relationship with the severity of the disease.

**Conclusions:** There is a significant relationship between obesity, consumption of high-calorie foods, saturated fats, and simple sugars with NAFLD.

**Keywords:** Non-Alcoholic Fatty Liver Disease, Dietary patterns, Food, Obesity, food frequency questionnaire

## The effect of economic challenges on providing food security and malnutrition prevalence

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**Introduction:** Despite economic and social developments, Malnutrition is still considered one of the world's major challenges to public Health. With a strong relationship between the economic situation and human capability, besides the ineffectiveness of past approaches in providing food security, it is important to investigate the solutions that help to improve this situation.

**Methods:** A precise search was conducted on Google Scholar, PubMed, Scopus, and Web of Science between January 2018 and



January 2023 to find related articles. After studying and evaluating, 14 articles were included in this study.

**Results:** The effects of undesirable economic situations and poverty on people, including poor nutritional status, food insecurity, and lack of access to essential needs such as nutritious food, lead to the exacerbation of Malnutrition. By affecting the physiological and mental capacity of people, Malnutrition disrupts productivity levels and makes societies more prone to poverty. On the other hand, it can endanger people's immunity and, in this way, reinforce the undesirable cycle of poverty and Malnutrition. Nutritional interventions such as supplementation with iron, folate, and calcium during pregnancy, supplementation with vitamin A and zinc in childhood, promotion of breastfeeding, and complementary nutrition education are effective ways to improve food security. Interventions in agricultural sectors and bio-fortification, along with empowering women and strengthening the position of women in society, lead to reducing food insecurity and improving sustainability.

**Conclusions:** Considering the health problems caused by food abuse, there is a need to provide food security for the people of the world by changing the current diet of the world towards a sustainable diet.

**Keywords:** Food Insecurity, Malnutrition, Poverty, Nutritional Interventions, Supplementation, Sustainable Nutrition

## Relationship between stress levels and the duration of sleep following a meal

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**Introduction:** Sleep and stress are complex phenomena that are influenced by a variety of factors. A piece of growing evidence suggests that sleep duration after meals may have an impact on stress levels. This study investigated the linkage between sleep duration and stress levels.

**Methods:** In this research, 604 adults aged 18 to 65 were chosen from various parts of Iran. Stress levels were measured using the DASS-21 questionnaire, and Daytime sleepiness was assessed by a Persian version of the Epworth Sleepiness Scale (ESS-IR). To examine the connection between stress levels and the duration of sleep after meals, logistic regression analysis of both crude and adjusted models.

**Results:** In the crude model, individuals who never slept after meals regularly had slightly higher odds of experiencing stress compared to those who always slept for 1-2 hours after meals (OR: 1.67; 95%CI: (0.68-4.10); P:



0.04). However, after controlling for all potential confounding factors in the adjusted model, for gender, smoking, menstruation, and loss of relatives, the relationship between stress levels and sleeping after meals was not significant (OR: 2.48, 95 % CI:(0.65-9.41); P: 0.37).

**Conclusions:** Our analysis revealed that there was no significant link between stress levels and the duration of sleep after meals, which contradicts the common belief that sleep after eating can reduce stress. Further studies are necessary to validate these results.

**Keywords:** sleep, meal, stress, daytime sleepiness, adults

## **Exposure and risk assessment of inorganic nanostructures in food applications**

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Nanotechnology brings about a lot of changes to the food industry to enhance the quality and safety of food. However, many people are worried about the presence of nanostructures (NSs) in food products. In

this review, we will come up with the application of inorganic NSs in the food industry and their possible health risks. Also, different exposures to them are highlighted. The NSs may enter into the food directly from delivery systems and food additives or indirectly from the food packaging. Many NSs have positive effects on human health and are unlikely to have a negative effect. However, some NSs, especially inorganic ones, may have adverse health effects. The potential health risks related to NSs such as disruption of normal gastrointestinal tract (GIT) function, changing the gut microbiota, increasing the unfavorable bioavailability of some compounds in the body, and accumulation of NSs within specific organs such as liver and cellular malfunction, are discussed in this paper. It is of great concern to perform a risk assessment on specific NSs before their application in a food product and commercialization.

**Keywords:** Nanostructure, Safety, Food, Risk assessment

## **An exploration of some predictors of adherence to physical activity and screen-time recommendations for children in the 2017-2018 NHANES: An analytical cross-sectional study**

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**Introduction:** To examine the percentage of children in the 2017-2018 NHANES (National et al. Survey) who adhered to the recommendations for physical activity and screen time, including at least 60 minutes of physical activity every day and <2 hours of screen-time viewing per day. Moreover, some predictors of this adherence were explored.

**Methods:** In this cross-sectional study, data from the 2017-2018 NHANES as a cohort survey to assess the nutritional status of US adults and children were used. For this purpose, 1697 children (6-17 years of age) were analyzed using logistic regression.

**Results:** Overall, 36% of children met physical activity, and 21% met screen-time viewing recommendations. The adherence rate for physical activity, screen-time viewing, and both recommendations was higher among males (38, 21.5 and 11.3% respectively), age range 6-9 years (53.7, 27.5 and 17.7% respectively), and the education level of college graduates of household head (37.9, 25.1 and 14.6% respectively). Regression analysis showed that the age (14-17 years vs. 6-9 years: odds ratio (OR), 0.16 [95% CI, 0.09-0.27]) and percentile of BMI for age (obese vs. normal: OR, 0.53 [95% CI, 0.35-0.8]) were inversely associated with recommendations. Moreover, race (non-Hispanic white vs.

Hispanic: OR, 1.78 [95% CI, 1.19-2.67] and literacy level of head-of-household (college graduate vs. <high school: OR, 1.8 [95% CI, 1.1-2.95] were associated with adherence for both recommendations.

**Conclusions:** The findings of the current study suggest that many children who experience socioeconomic disadvantage are resilient to physical inactivity and high screen time.

**Keywords:** Physical activity, Screen Time, Child, Nutrition Surveys, Cross-Sectional Studie

## Recognition of genomic and epigenomic patterns related to food allergy: A narrative review

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**Introduction:** Food allergy (FA) is an immune system overreaction to certain foods affecting 8% of pediatric populations, with potentially severe consequences like anaphylaxis. In the United States, food allergies contribute to around 150 annual deaths. Understanding the genetic and epigenetic factors influencing FA is crucial, given the complex interplay between genes and environmental factors.



**Methods:** The review article compiles information from articles published on Pubmed and Google Scholar up to August 2023. Keywords are "Food Allergy," "Genome," and "Epigenome," 11 relevant articles in English that met their inclusion criteria were selected.

**Results:** Studies underscored the correlation between epigenomics and genetics in allergy contexts. DNA methylation, histone modifications, and genetic associations assume central roles. Epigenetic regulation of genes such as FOXP3 linked to peanut and cow's milk allergies was evident. Additionally, differential DNA methylation indicated the influence of the MAPK signaling pathway on allergic responses. Genetic factors, including HLA genes and environmental interactions, substantially influenced allergy development. Stable differentially methylated probes associated with the MAPK pathway in CD4+ T cells underscored genetic impacts. Advanced technologies enabling the understanding of transcriptomic and epigenomic complexities remain pivotal to grasping intricate diseases like allergies.

**Conclusions:** This research provides a comprehensive grasp of food allergy mechanisms through diverse approaches like genome studies, gut microbiome analysis, transcriptomic and epigenomic inquiries, and machine learning. These mechanisms encompass genetics, immune responses, gut microbiome shifts, epigenetic

changes, and pathways like MAP kinase signaling. While personalized treatments show promise, further research is imperative to completely unravel this intricate topic.

**Keywords:** Food Allergy, Genome, Epigenome

## **Can date seed (*Phoenix dactylifera*) supplementation improve oxidative stress, inflammation, muscle damage, and BDNF following high-intensity interval training? A randomized, double-blind, placebo-controlled trial**

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**Introduction:** High-intensity interval training (HIIT) is one of the most effective protocols in exercise. However, probably inflammation, oxidative stress, and muscle damage are undesirable and devastating effects of HIIT. The present study was conducted to investigate the effects of date seed powder (DSP) during HIIT sessions on oxidative stress, inflammation markers, exercise-induced muscle damage, and brain-derived neurotrophic factor (BDNF).



**Methods:** In a randomized study, 36 recreational runners (men and women, 18-35 years old) were randomly assigned to consume 26 g/day of DSP or wheat bran powder during HIIT workouts for 14 days. Blood samples for oxidative stress, inflammation, muscle damage, and BDNF markers were gathered at baseline, at the end of the intervention, and 24 hours post-intervention.

**Results:** DSP supplement resulted in a significant downward trend in oxidative stress index (OSI), total oxidant status (TOS), malondialdehyde (MDA), high-sensitivity C-reactive protein (hs-CRP), tumor necrosis factor-alpha (TNF- $\alpha$ ), interleukin-6 (IL-6), creatine kinase (CK), and lactate dehydrogenase (LDH) and also a significant upward trend for total antioxidant capacity (TAC) and glutathione peroxidase (GPx) after the intervention. However, superoxide dismutase (SOD), interleukin-10 (IL-10), IL-6/IL-10, myoglobin (MYO), and BDNF levels did not change significantly in comparison to the placebo group.

**Conclusions:** Our results showed that DSP supplementation in active participants performing HIIT bouts may ameliorate oxidative stress, inflammation, and muscle damage.

**Keywords:** Date seed, HIIT, Oxidative stress, Inflammation, Muscle damage

## Social media addiction is associated with deteriorated eating behaviors.

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**Introduction:** Daily social media (SM) engagement among teenagers has turned into addictive behavior, which subsequently leads to changes in their lifestyle and eating behaviors (EB). The present study aimed to evaluate the association between SM addiction and EB.

**Methods:** In this cross-sectional study, 12–22-year-old adolescents and young adults who were free of mental disorders or had no history of psychiatric medication usage were studied through an online questionnaire shared via WhatsApp and Instagram platforms. SM addiction and EB were assessed through the Social Media Addiction Scale-Student Form and Dutch Eating Behavior Questionnaire, respectively. The



total score for SM addiction and subscales of EB, including emotional eating (EE), external stimuli (ES), and restrained eating (RE), were calculated. Linear regression was applied to assess the association between SM addiction and EB subscale scores.

**Results:** Overall, 970 subjects (55.8% boys) aged  $17.99 \pm 2.53$  years participated in the study. SM addiction was significantly related to EE ( $B=0.008$ ), ES ( $B=0.008$ ), and RE ( $B=0.007$ ) ( $P < 0.001$ , for all). Results remained similar for EE and RE based on gender, but the association was stronger in boys ( $B=0.011$ ,  $P < 0.001$ ) and weaker in girls ( $B=0.006$ ,  $P < 0.001$ ) in ES. After adjustment for education, socioeconomic status, age, physical activity, following a special diet, and running/managing an online job, analyses in the gender subgroup revealed similar results for ES and RE, but it was stronger in boys ( $B=0.011$ ,  $P < 0.001$ ) and weaker in girls ( $B=0.006$ ,  $P < 0.001$ ) in ES.

**Conclusions:** Social media addiction is associated with deteriorated eating behavior among teenagers and young adults.

**Keywords:** Social Media, Eating Behavior, Internet addiction disorder, Teenagers, Nutrition

## **Metabolic engineering of microorganisms and microbial protein production for the future of food security**

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The common definition of food security from FAO is as follows: "Food security exists when all people, at all times, have access to sufficient, safe, and nutritious food sources to meet their nutritional needs for an active and healthy life." Due to the rapid growth of the world's population and the increase in global demand for food supply, as well as the reduction of natural resources, challenges arise that require the discovery of new, innovative, and unconventional protein sources to strengthen the human diet. One of the most promising ways to achieve cheap and sustainable approaches to improve productivity is microbial resources. For hundreds of years, microorganisms, as cellular factories, have been widely used in the formulation and production of a variety of nutritious and spoilage-resistant foods. Among the dietary protein supplements is the production of SCP (Single et al.), which is a healthy source of vitamins, carotenes, and carbohydrates. Today, metabolic engineering is defined as the purposeful and determined change of the metabolic pathways of microorganisms. This method can improve the performance of microorganisms in the direction of protein production, host selection, metabolic pathway reconstruction, increasing tolerance, metabolic flux and optimization of processes, and increasing biomass scale.



Studies have shown that the metabolic engineering of microorganisms by promoting the biotechnological production of microbial proteins will be a sustainable source for meeting the nutritional needs of humans in the future. It is a strategic method for ensuring food security through production and improved storage of food products and protein supplements.

**Keywords:** Food Security, Metabolic Engineering, Microorganism, Food Supplement

### **Effect of Mediterranean diet on diabetic retinopathy and age-related macular degeneration: a systematic review**

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The Mediterranean diet has been associated with numerous health benefits, including a reduced risk of several diseases, such as certain types of cancer and neurological diseases, and has been researched to reduce the risk of chronic age-related diseases, including eye disease. In this study, the effect of the Mediterranean diet on two age-related eye disorders including diabetic retinopathy (DR) and age-related macular degeneration (AMD) is investigated. The present

systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. Electronic databases such as PubMed and Embase were completely searched without a time limit. Studies were included if they met the following criteria: (1) randomized controlled trials (RCTs), prospective and retrospective observational studies; (2) reported associations between MD adherence or MD intervention; (3) published in English. Most studies reported a reduction in the incidence and progression of DR and AMD. Antioxidants in the Mediterranean diet have a protective role against the onset of AMD. In addition, due to the preventive role of the Mediterranean diet on obesity-related pathologies, it can affect the function of pigment epithelial cells through adipocytokines. Plenty of vegetables, seeds, and fruits in the diet can combat stress, treatment, and insulin resistance, which are pathogenic factors in disease and its complications. Omega-3 fatty acids, which are abundant in the Mediterranean diet, have neuroprotective and anti-adjuvant roles, which can protect against neuro- and microvascular damage. Overall, convincing evidence shows a protective effect of the Mediterranean diet against diabetic retinopathy and age-related macular degeneration.

**Keywords:** Age-Related Eye Disease, Age-Related Macular Degeneration, Retinopathy, Diabetic retinopathy





## The Relationship between Branch-Chain Amino Acids and Metabolically Healthy and Unhealthy Overweight and Obesity Phenotypes

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**Introduction:** Obesity is a chronic disease with various causes and complexities. People who are obese display diverse phenotypes that are associated with varying metabolic risks. Individuals who are classified as metabolically healthy obese (MHO) are a subset of obese individuals who do not experience metabolic complications. Conversely, obese individuals who experience metabolic complications associated with obesity are referred to as metabolically unhealthy obese (MUO). Among the amino acids found in proteins, branched-chain amino acids (BCAAs) -

specifically leucine, isoleucine, and valine - are the most plentiful.

**Methods:** Consumption of BCAA was evaluated through a validated semi-quantitative food frequency questionnaire (FFQ). For the assessment of metabolic well-being, the Karelis criterion was employed, which included criteria such as triglycerides (TG)  $\leq 150$  mg/dL or the usage of medications to reduce lipids, high-density lipoprotein (HDL-C)  $\geq 50$  mg/dL, low-density lipoprotein (LDL-C)  $\leq 100$  mg/dL, insulin resistance evaluated through the homeostatic model assessment (HOMA)  $\leq 2.7$ , and C-reactive protein (CRP)  $\leq 3.0$  mg/L. Based on their metabolic health status, participants were divided into the MHO and MUO. If three or more of the aforementioned components are presented, we consider participants metabolically healthy.

**Results:** High intake of BCAA reduced the odds of being overweight and obese by 30% and 25%, respectively. Moreover, participants with greater BCAA levels also had higher triglycerides (143 vs. 114 mg/dL), LDL-c (133 vs. 124 mg/dL), and lower HDL-c (49.0 vs. 55.0 mg/dL). In terms of HOMA-IR, by increasing the intake of BCAA, HOMA levels decreased (95% confidence interval [CI]: 0.03–0.13,  $p=0.042$ ).

**Conclusions:** In conclusion, a higher intake of BCAA can be associated with MUO. These results can help us to have better dietary recommendations about BCAA.



**Keywords:** Obesity, BCAA, Phenotypes, Healthy obesity, Overweight, Chronic disease

## The association between fat quality indices and glioma

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**Introduction:** The most common type of central nervous system (CNS) neoplasm is called glioma, which originates from glial cells. Previous research used the cholesterol-saturated fat index (CSI) and the ratio of omega-6 to omega-3 (N6/N3) to explore the impact of the type of fat intake. CSI shows the level of cholesterol and saturated fats, which aids a person in taking care of themselves in the fight against high cholesterol. N6/N3 are two important fats that fall under the polyunsaturated fatty acids (PUFA) category.

**Methods:** Using the third version of the International Classification of Diseases for Oncology (ICD-O) and the morphological codes 9380–9481, glioma was identified through pathological testing. CSI and N6/N3 were computed using food consumption data from the food frequency questionnaire (FFQ). CSI was determined using the following formula:  $CSI = (0.05 \text{ mg}$

cholesterol) + (1.01 g saturated fat). N6 and N3 contents of meals were divided to determine N6/N3.

**Results:** Results showed that the likelihood of having glioma was 77% lower in those with PUFA intake in the top quartile compared to the bottom quartile (OR: 0.23; 95% CI: 0.11-0.48). When considering the impact of body mass index (BMI), people with higher PUFA intake had reduced probabilities of developing glioma than people with lower intake (OR: 0.20; 95% CI: 0.05-0.84). Gliomas were inversely correlated with higher intakes of total fat and cholesterol (high intake of fat: OR = 0.45, 95% CI 0.20-1.07; high intake of cholesterol: OR = 0.38, 95% CI 0.14-1.01).

**Conclusions:** In conclusion, high PUFA intake could affect the risk of glioma. Also, higher total fat and cholesterol intake were inversely associated with glioma.

**Keywords:** Glioma, Omega-6, Omega-3, Fatty Acids, Cholesterol, PUFA

## Relationship Mothers' Nutritional during Pregnancy with Low Birth Weight in Neonates

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**Introduction:** Low birth weight is considered one of the world's most serious health problems that put tremendous



pressure on the healthcare system and family. Poor diet and poor weight gain during pregnancy affect negatively on maternal health and infant birth weight. Objective: To determine the relationship between nutritional status and maternal weight gain during pregnancy with low-birth-weight term infants.

**Methods:** This study is a historical cohort conducted on the subjects consisting of 1177 mothers referred to the healthcare centers or posts for postpartum care or their children's vaccinations for two months, and all have health records. The mothers, based on their newborns' birth weights, were classified into two groups: mothers of underweight infants (2500 grams or less) and mothers of infants with normal weight (more than 2500- 4000 grams). Data were collected from maternal health records and organized interviews with mothers. For data analysis, descriptive statistics, chi-square, Fisher, Mann-Whitney U, and logistic regression models were used.

**Results:** The results showed a significant relationship between maternal nutritional status ( $p < 0.008$ ) and weight gain ( $p < 0.002$ ) during pregnancy with low birth weight. Low intake of dairy products 2/57 times ( $P < 0.018$ , OR=2.57), low consumption of fruits 3/75 times (slightly significant  $P < 0.069$ , OR=3.75), not taking iron supplements, multivitamins, and folic acid 13/16 times ( $P < 0.001$ , OR=13.16) during pregnancy seem to have increased the chances of the low birth weight.

**Conclusions:** Considering the dietary factors associated with low birth weight, the role of hygienic personnel in promoting public awareness about proper nutritional status and weight gain during pregnancy is important.

**Keywords:** Neonate, Low Birth Weight, Nutrition, Pregnancy, Prenatal Care

### **Study the effects of total chamomile extract on lung and breast cancer cell line proliferation and programmed cell death.**

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**Introduction:** Cancer can affect anybody part, at any age. Life expectancy plays a role in disease development due to DNA mutations. Chamomile contains compounds and flavonoids that have anti-inflammatory and anti-cancer properties. A study examined the potential anti-cancer impact of chamomile extract on two cell lines and



evaluated the expression of genes involved in programmed cell death.

**Methods:** The cell lines were subjected to varying concentrations of chamomile extract via MTT assay to determine the IC50. Real-time PCR data was obtained to calculate the expression of target genes relative to the reference gene (GAPDH). Using IC50 dosage, the cells were treated, and RNA extraction was carried out according to the kit protocol. Gene expression was further examined through Real-Time PCR assay.

**Results:** Based on the MTT data, it was found that the IC50 concentration of chamomile extract for A549 and MCF7 is 13.19 µg/ml and 45.5 µg/ml of luteolin concentration. The study also looked into genes that affect apoptosis and found that P53 expression decreased in A549 but increased in MCF7. Additionally, Bax expression increased in MCF7 while Bcl2 and Bax expression decreased in A549, and Bcl2 expression decreased in MCF7.

**Conclusions:** According to the findings of this study, it can be inferred from the Real-time PCR data that chamomile extract treatment did not affect the regulation of cell death in the A549 cell line and did not trigger apoptosis through the examined genes. However, the MCF7 cell line exhibited the desired and anticipated outcomes.

**Keywords:** A549 cell line, MCF7 cell line, Chamomile extract, BAX, BCL2

## L- Carnitine Supplementation Increases Nitric Oxide Concentration in Patients with Pemphigus Vulgaris: A Double-Blind Randomized Clinical Trial

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**Introduction:** Pemphigus Vulgaris (PV) is a rare autoimmune disease and is characterized by the formation of blisters in mucosa and skin. In this disease, Reactive Oxygen Species (ROS) levels are increased. Nitric Oxide (NO) is generated in the endothelial cells and is known to have antioxidant properties. L- Carnitine, a vitamin-like compound, has positive effects on the antioxidant levels. The aim of this study was to investigate the effects of LC supplementation on serum nitric oxide in PV patients.

**Methods:** This study is a double-blind clinical trial on 46 PV patients with an age range of 30 to 65 years. The patients were randomly assigned to the placebo (n = 23) and LC (n = 23) groups and received 2000 mg of LC or placebo tablets per day. The duration of the intervention was eight weeks, and the levels of serum LC and serum nitric oxide (NO) levels were measured before and after the intervention.



**Results:** No statistically significant differences regarding age, weight, height, and BMI existed between the LC and placebo groups at the baseline ( $p>0.05$ ). The patients in the LC group had significantly increased levels of serum LC ( $74.56\pm36.36$  to  $97.49\pm41.27$ ,  $p<0.001$ ) and NO ( $202.37\pm14.59$  to  $242.98\pm20.63$ ,  $p=0.006$ ) concentration at the end of the study in comparison with placebo ( $p>0.05$ ).

**Conclusions:** L-carnitine consumption at the dose of 2 g for eight weeks in patients with PV has beneficial effects on oxidative stress and increases serum nitric oxide levels.

**Keywords:** Pemphigus vulgaris, L-carnitine, Nitric oxide, Antioxidant, Oxidative stress

## **Nordic Diet and Cardiometabolic Diseases: A Review of Reviews**

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**Introduction:** The Nordic Diet is a diet based on Nordic countries' dietary habits, which includes fruits (e.g., apple and pear); berries (e.g., blueberries and bilberries); vegetables; legumes; whole grains and

dietary fiber (barley, oats, and rye); low-fat dairy; fatty fishes (e.g., salmon, herring, mackerel); and rapeseed oil. All these foods have been shown to have health benefits and may have an effect on adipose tissue metabolism. Whole-grain foods have been associated with a reduced risk of metabolic syndrome, cardiovascular diseases, and type 2 diabetes; on the other hand, consumption of vegetables, fruits, and berries, which are rich in polyphenols, have beneficial health effects and even reduced all-cause mortality. **Methods:** The current review provides related articles on the impact of the Nordic diet on Cardiometabolic Diseases, which were found through searching PubMed, Web of Science, and Embase databases from 2015 to 2023. Thirteen articles fulfilled the inclusion/exclusion criteria of this study, and seven of them were included in this review.

**Results:** Recently, studies have shown that isocaloric ND has beneficial influences on lipid metabolism, signs of systemic inflammation, and ambulatory blood pressure compared with the control diet. A healthy Nordic diet decreases inflammatory gene expression in abdominal subcutaneous adipose tissue compared with a control diet in individuals with features of metabolic syndrome. Studies have suggested that the Nordic diet is associated with health outcomes and may improve anthropometric measurements, lipid profile, blood pressure, and insulin resistance.



**Conclusions:** In conclusion, adherence to the Nordic dietary patterns is associated with a significant reduction in the risk of diabetes, cardiovascular and cardiometabolic outcomes because of decreasing LDL-cholesterol and other intermediate cardiometabolic risk factors.

**Keywords:** Nordic diet, Cardiovascular diseases, Metabolic syndrome, LDL-cholesterol

### **Serum HDL functionality in subjects from the MASHAD cohort study: its value in determining the risk of obesity**

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**Introduction:** The prevalence of obesity has increased in recent decades and has become a major health problem worldwide. Excess weight increases the risk of developing diseases such as high blood pressure, coronary artery disease, type 2 diabetes, and dyslipidemia. Obesity can cause disturbances in the level of plasma

lipoproteins, including a decrease in HDL levels. This disorder can ultimately lead to an increase in the risk of cardiovascular diseases in obese patients. According to recent studies, the importance of investigating HDL functions could be a good predictor of diseases

instead of its concentration. The observation showed that the measurement of cholesterol efflux capacity (CEC) has an inverse relationship with the occurrence of cardiovascular events and is also inversely associated with body mass index (BMI). Therefore, we aimed to evaluate HDL functionality in determining obesity in MASHAD (Mashhad-Stroke and Heart-Atherosclerotic-Disorders) cohort study subjects.

**Methods:** The study population comprised 339 individuals who developed obesity diagnosed with BMI>30 and 160 subjects without obesity (BMI<30). A modified cholesterol uptake capacity (CUC) method was used to assess HDL function in serum samples.

**Results:** The CUC evaluation was very reproducible with values for inter- and intra-assay variation (13.07 & 6.65, respectively). Evaluations indicate that the mean serum CUC was not significantly different in the obesity group compared to the control. Although, there were significant differences in BMI between the groups. Multivariate logistic regression analysis demonstrated that there was not a significantly negative association between CUC and obesity after



adjustment for confounding parameters (OR=0.72, 95%CI=0.44–1.18, P=0.1). We determined the optimum cut-off value of 1.7 a.u for CUC in the intended population.

**Conclusions:** Finally, the results of this study showed that the amount of CUC was not significant in determining obesity.

**Keywords:** HDL function, Cohort study, Obesity, Body mass index (BMI), Cholesterol Uptake Capacity (CUC)

## Optimal Sports Nutrition for Building Muscles and Enhancing Performance

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**Introduction:** Optimal sports nutrition plays a vital role in maximizing muscle growth and improving athletic performance. This article explores key nutritional strategies and dietary recommendations to fuel the muscles, enhance recovery, and boost overall performance in sports and fitness activities.

**Methods:** A search on the subject of electronic journals and databases such as websites Pubmed, Scopus, SID, Iran Medex, and Google Scholar from 2018 to 2023 was conducted.

**Results:** Proper nutrition ensures that the body receives essential nutrients required for energy, muscle growth, and recovery. To achieve optimal results, athletes should adopt a well-balanced diet that focuses on key components. Timing is key when it comes to sports nutrition. Eating a balanced meal or snack before and after workouts helps optimize performance and recovery. Pre-workout meals should consist of easily digestible carbohydrates, while post-workout meals should include protein to replenish glycogen stores and repair muscles.

Maintaining a calorie surplus is important to fuel muscle growth. Consuming an adequate amount of carbohydrates ensures an energy reserve, enabling athletes to push harder during workouts. High-quality proteins are essential for muscle repair and development, and athletes should consume them in every meal. Healthy fats, such as those found in nuts and avocados, promote hormone production, facilitate nutrient absorption, and aid muscle recovery. Additionally, proper hydration is vital for optimal performance. Drinking enough water before, during, and after exercise ensures that the body remains hydrated, aiding in digestion, circulation, and overall muscle function.

**Conclusions:** Optimal sports nutrition involves consuming a well-rounded diet that provides sufficient calories, proteins, carbohydrates, and healthy fats. Timing meals around workouts and staying



properly hydrated are the key elements. By paying attention to these aspects of nutrition, athletes can maximize muscle growth, enhance performance, and improve overall athletic capabilities.

**Keywords:** Sports Nutrition, Building Muscles, Enhancing Performance

### **Phase angle; reference intervals and clinical decision limit; a review**

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Phase angle (PhA) is a ratio of reactance and resistance  $\{\arctangent(\text{reactance } (X_c)/\text{resistance } (R)) \times (180^\circ/\pi)\}$ , which can be obtained by bioelectrical impedance analysis (BIA). It is dependent on the resistive behavior and the capacitive effect on the cell membrane and other interfaces. PhA has been proposed to indicate cellular health, where higher values reflect higher cellularity, cell membrane integrity, and better cell function. For this reason, it has been used as a health status tool and an important predictor of disease severity and survival in different medical conditions.

Reference values for phase angle are mandatory for the assessment of individual deviations of a patient in relation to the population average. PhA has limited usefulness in clinical practice because of a limitation of established reference values for different populations. The practical application of PhA measurements to define nutrition status requires reference cut-points from a relevant healthy population. The cut-offs of each population are not necessarily transferable to other populations and might thus not be applicable in the general clinical setting. However, the proper application of PhA in research and health care is convenient only as far as population reference values are available. In this study, we reviewed phase angle reference intervals and clinical decision limits in different societies and clinical conditions, as well as their possible application in general clinical settings.

**Keywords:** Phase angle, Reference interval, cut-off, Cellular health, Clinical decision limit

### **An overview of the connection between food waste and food security throughout the world**

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One of the most critical and rapidly developing issues facing the world in the





21st century is the loss and waste of food. It, directly and indirectly, undermines food security and has significant social, economic, and environmental repercussions on the planet's stability. About one trillion dollars are lost annually due to the wastage of about one-third of the food produced for human use. Twenty-eight % of the land used to grow food is wasted instead of serving hungry people. Food waste and food security are two related subjects, and many papers have investigated this relationship from multiple perspectives. It is critical that the potential of food waste management be used to improve food security to achieve the sustainable development goals predicted by the 2030 Agenda for Sustainable Development. This is because the world population is growing at an alarming rate, urbanization is rising, and the rate at which food is wasted is exceptionally high. For this purpose, Reliable and relevant data are required to investigate the connection between food waste and food security and assess the effects of managing this issue through policies. In order to ensure environmentally, economically, and socially sustainable development, policymakers need access to critical information throughout the world that is supported by evidence-based analysis of the effects of food loss and waste on food security. Studies show that developed nations squander a lot more food during the consuming stage compared to developing countries. The purpose of the present research is to understand this issue better to

establish effective strategies by looking into the relationship between food security and food waste in various countries worldwide.

**Keywords:** Food Waste, Food Security, Food Policy.

### **The role of the bark extract of French maritime pine (Pycnogenol) in the control of inflammatory and oxidative stress-related diseases**

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**Introduction:** The prevalence of chronic diseases has increased significantly with an increasing trend in sedentary lifestyles, reduced physical activity, and recent dietary changes over many decades. Inflammation and oxidative stress play an important role in the pathophysiology of certain chronic diseases, such as type II diabetes, cardiovascular disease, and liver disorders condition. Therefore, reducing inflammation and oxidative stress may be beneficial in the prevention and treatment of various chronic disorders. Due to chronic diseases cannot be completely cured, various methods have been proposed to control them.



**Method:** The comprehensive literature search was conducted using databases such as PubMed, Scopus, ISI Web of Science, and Google Scholar.

**Results:** Complementary therapies and the use of natural antioxidants and anti-inflammatory agents are part of these new approaches. Pycnogenol (PYC) is a natural compound that may control inflammation and oxidative stress. Furthermore, some previous studies have shown that PYC can effectively reduce inflammation through downstream signaling of insulin receptors, inhibiting the phosphorylation of serine residue of insulin receptor substrate 1, reducing inflammatory cytokines and indicators of oxidative stress through stimulation of antioxidant pathways, increasing free radical scavenging activities, preventing lipid peroxidation, and protecting red blood cells in individuals with glucose-6-phosphate dehydrogenase deficiency.

**Conclusions:** Bark extract of French maritime pine had reduced inflammatory cytokines, increasing free radical scavenging and stimulation of antioxidant pathway.

**Keywords:** Bark extract of French maritime pine, inflammation, oxidative stress

## **Novel adjuvant therapy with zinc gluconate supplementation in patients with Behcet syndrome: A double-blind, randomized placebo-controlled clinical trial**

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**Introduction:** The cross-talk between inflammation and oxidative stress in the pathogenesis of Behçet's disease (BD) has been extensively described in previous studies. Malondialdehyde (MDA) and C-reactive protein are the main indicators of this condition. In addition, dysregulation of Toll-like receptors 2 and 4 (TLR2 and TLR4) is involved in the pathogenesis of BD. The aim of this study was to investigate the effect of zinc gluconate as a potential anti-inflammatory and antioxidant agent in improving MDA, CRP, TLR2, and TLR4 in BD patients.

**Methods:** Fifty consecutive BD patients for 12 weeks were randomly assigned to groups



of zinc gluconate (30 mg per day) and placebo in a ratio of 1:1. The surface and gene expression of TLR2 and TLR4 and the serum level of MDA and CRP before and after the intervention were measured by flow cytometry, real-time PCR, TBARS, and turbidimetry, respectively. The main effect size was assessed using an analysis of covariance. Our protocol was registered with IRCT (No. IRCT20100606004105N30).

**Results:** Zinc gluconate supplementation led to a significant decrease in CRP ( $P=0.012$ ) as well as TLR2 gene ( $P=0.038$ ) and surface expression ( $P=0.034$ ) compared to the placebo group. There was a significant decrease in the TLR-4 surface ( $P=0.012$ ) and gene expression ( $P=0.028$ ) as well as MDA level ( $P<0.001$ ) within the zinc group. However, this decrease was not significant compared to the placebo group ( $P>0.05$ ).

**Conclusions:** According to our findings, zinc gluconate can be considered as a new adjunctive therapy to relieve oxidative stress and inflammation in BD patients.

**Keywords:** zinc, toll-like receptor 2, toll-like receptor 4, malondialdehyde, C-reactive protein, Behcet syndrome

## **The differential effects of dietary protein sources on energy metabolism: A systematic review**

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**Introduction:** The effects of dietary proteins have been studied extensively, which shows that energy-restricted high-protein diets improve metabolic parameters. It seems that various protein types exhibit diverse effects on metabolic responses because the digestibility and the content of amino acids vary between proteins from different sources. This systematic review aimed to compare the findings of controlled clinical trials with the differential effects of dietary protein sources on markers of energy metabolism.

**Methods:** This systematic review was done by searching in Scopus, Web of Science, PubMed, and Medline databases. A combination of related keywords and mesh terms was used to find relevant articles. We tried to address all effects of dietary protein sources on energy metabolism.

**Results and conclusion:** The effects of different protein sources on postprandial resting metabolic rate (RMR), diet-induced thermogenesis (DIT), and substrate oxidation were controversial. However, some studies show that animal proteins induce RMR compared with plant proteins than PPs.



**Keywords:** Dietary protein, Resting metabolic rate, Energy expenditure

## Revolutionizing the Future of Health: Groundbreaking Innovations in Nutrition

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**Introduction:** In our quest for a healthier future, groundbreaking innovations in nutrition are revolutionizing the way we approach our well-being. Promising advancements are transforming the understanding of optimal health, offering new insights into the relationship between nutrition and overall wellness. This article explores the exciting advancements in nutrition that are reshaping the way we perceive and approach healthcare.

**Methods:** A search on the subject of electronic journals and databases such as websites Pubmed, Scopus, SID, Iran Medex & Google Scholar from 2018 to 2023 was conducted.

**Results:** Groundbreaking innovations in nutrition have revolutionized the way we approach food and health. One remarkable achievement is the development of genetically modified organisms (GMOs), which allows scientists to enhance the

nutritional value of crops. Through genetic engineering, GMOs can be fortified with essential vitamins, minerals, and antioxidants, tackling malnutrition on a global scale. Another significant breakthrough is the rise of personalized nutrition. Advancements in science and technology enable individuals to have tailored diets based on their genetic profile, lifestyle, and specific nutritional needs. This approach, made possible by emerging fields like nutrigenomics, is transforming how we view dieting, health management, and disease prevention. Furthermore, sustainable food production methods have gained momentum as a key innovation in nutrition. These advancements ensure a secure supply of healthy food for a growing population while reducing the environmental strain on our planet.

**Conclusions:** Groundbreaking innovations signify a shift towards a future where nutrition is not only focused on meeting basic dietary requirements but also optimizing health, preventing diseases, and protecting the planet.

**Keywords:** Innovations, Nutrition, optimizing health

## Saffron and Depression: A Review of Systematic Reviews

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**Introduction:** Depression is a common mental disorder that is characterized by a combination of psychological, physical, and behavioral symptoms, including depressed mood, loss of interest in daily activities, decreased ability to think, and weight loss or gain, as well as sleep and appetite disturbances. Herbal psychopharmacology and remedies have increased due to concerns about the safety and side effects of many antidepressants. Saffron, *Crocus sativus* (Iridaceae), is an herb that has gained popularity both as a medicine and a spice. The benefits of saffron as an antidepressant are well documented. The major bioactive compounds identified were safranal (for the aroma), crocin (for the color), and picrocrocin (for the bitter taste). Recent studies have confirmed the medicinal properties of saffron as an antioxidant, anticancer, memory enhancing, neuroprotective, and cardioprotective.

**Methods:** The present article provides relevant reviews of the available in vitro, in vivo and clinical evidence on the effectiveness, safety, and mechanism of action of saffron and its active components in the treatment of anxiety, depression, and other mental disorders studies were found by searching PubMed, Web of Science, and

Embase databases from 2004 to 2022. Twelve articles fulfilled the inclusion/exclusion criteria of our review and 4 systematic review articles were included.

**Results:** Preclinical studies suggest that the compounds in saffron have a multiple of potentially relevant mechanisms of action, including antioxidant and anti-inflammatory properties, and may modulate blood brain-derived neurotrophic (BDNF) expression and the hypothalamic-pituitary-adrenal (HPA) axis. In particular, several clinical trials have demonstrated that saffron and its active ingredients have antidepressant properties similar to those of current antidepressants such as fluoxetine, imipramine, and citalopram, but with fewer side effects. Saffron may exert antidepressant effects and represents an effective and safe treatment.

**Conclusions:** In conclusion, saffron may be an effective intervention against symptoms of depression and anxiety; however, further research is needed to improve our understanding of saffron's role and effects in major depression.

**Keywords:** Depression, Saffron, Nutraceutical, Mental health, Mood disorder

## **Single-cell oil as a source of essential fatty acids: Health Benefits, Production, and Applications**

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Single-cell oils (SCOs) are intracellular storage lipids of microorganisms that are similar in composition to vegetable oils and animal fats. SCOs are produced by oleaginous microorganisms such as algae, fungi, and bacteria which are able to accumulate higher than 20% (w/w) lipids in dry cell weight. Many studies have been conducted on the health-giving effects of essential fatty acids that cannot be synthesized by the human body and must be provided through dietary sources. Classical sources for these fatty acids are porcine liver and fish oil. However, concerns regarding overfishing and environmental pollution have prompted the exploration of alternative sources, such as SCO. We aimed to investigate applications of microbial lipids with an emphasis on food applications. Related articles from 2010 to 2023 were searched in Google Scholar, PubMed, and Web of Science databases. Among the 10 articles found in this regard, 6 related papers were used. In the food industry, lipids rich in PUFAs are highly demanded and used as food additives. Considering the ever-growing human population and limited natural PUFA sources, SCOs considered as new sources of nutraceuticals. SCOs are preferred to the other lipid sources due to

their fast production rates, independence from climatic changes, and ease of scale-up for industrial processing. All current SCOs are considered by the FDA to be 'highly refined oils' and known as GRAS that are not associated with allergic reactions. Besides the application of microbial oils as food supplements, other applications such as biodiesel and Oleochemicals are thinkable and desirable, too.

**Keywords:** Biotechnology, Essential Fatty Acids, Functional Food, Microbial Oil, Nutraceuticals, Single Cell Oil

## **Impact of Soluble Fiber Supplementation on Serum Lipid Profile: A Comprehensive Systematic Review and Dose-Response Meta-Analysis of Randomized**

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**Introduction:** To examine the effects of soluble fiber supplementation on cardiovascular risk factors in type 2 diabetes mellitus (T2DM) patients.

**Methods:** Databases (PubMed/MEDLINE, Scopus, and ISI Web of Sciences), reference



lists of all related articles, and key journals were searched for RCTs up to 4 May 2021. RCTs reporting data on changes in cardiovascular disease risk factors in T2DM patients following soluble fiber supplementation. Data from RCTs were pooled using the generic inverse variance method and expressed as mean differences (MD) with 95% confidence interval (CIs). Fractional polynomials modeling was used to examine potential non-linear effects of soluble fiber dosage (grams/day) and treatment duration (weeks) on cardiovascular disease risk factors and body composition outcomes. The heterogeneity of data was assessed and quantified (I<sup>2</sup> statistic), and the Grading of Recommendations Assessment, Development, and Evaluation approach was used to evaluate the overall certainty of the evidence.

**Results:** Forty-five RCT studies consisting of 49 arm treatments (2600 T2DM patients; n=1468 intervention and n=1132 control group) were included in the meta-analysis. Mean difference outcomes altered to a statistically significant and clinically relevant extent following soluble fiber supplementation were fasting blood glucose (FPG) (-15.76 mg/dl, -20.53 to -10.99, I<sup>2</sup> =87.3%, n=49 with low evidence certainty), hemoglobin A1c (HbA1c) (-0.58%, -0.79 to -0.41, I<sup>2</sup> =80.7%, n=39 with high evidence certainty), fasting insulin (FI) (-0.52 Hedges' g, -0.87 to -0.16, I<sup>2</sup> =86.2%, n=20 with moderate evidence certainty), Homeostatic

Model Assessment for Insulin Resistance (HOMA-IR) (-1.16, 1.65 to -0.68, I<sup>2</sup> =89%, n=18), triglycerides (TG) (-19.05 mg/dl, -29.94 to -8.17, I<sup>2</sup> =93.1%, n=44), high-density lipoprotein (HDL) (1.23 mg/dl, 0.58 to 1.88, I<sup>2</sup> =75.4%, n=42), low-density lipoprotein (LDL) (-11.48 mg/dl, -15.30 to -7.66, I<sup>2</sup> =84.2%, n=39), body mass (BM) (-0.79 kg, -0.93 to -0.64, I<sup>2</sup> =0.0%, n=36), and Body Mass Index (BMI) (-0.31 kg/m<sup>2</sup>, -0.46 to -0.17, I<sup>2</sup> =49%, n=28).

**Conclusions:** Meta-analysis indicates that soluble fiber supplementation has the potential to improve cardiovascular risk factors and body composition in patients with T2DM. Soluble fiber supplementation may provide a feasible approach to improving metabolic health in T2DM patients.

**Keywords:** Type 2 diabetes, Soluble fiber, Cardiovascular, Meta-analysis

## **The effects of Spirulina supplementation on anthropometric parameters and lipid profile in overweight and obese subjects: A systematic review of randomized controlled trials**

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**Introduction:** Obesity is one of the medical global challenges and its prevalence is increasing immediately. Obesity is associated with various health-related comorbidities such as cardiovascular events, diabetes, metabolic syndrome, and hypertension. A healthy diet that includes functional nutrients has also been identified as a way of weight loss and obesity-related risk factors in recent years. Spirulina representing a blue-green alga is a filamentous cyanobacterium and is one of the most prophylactic and healing nutritional ingredients in the 21st century. So, we aimed to examine the related effect in this systematic review.

**Methods:** We conducted a systematic literature review of articles published in August 2023 in Databases, including MEDLINE, ISI Web of Science, and Scopus. The review included randomized controlled trial studies to investigate the effect of Spirulina supplementation on anthropometric parameters and lipid profiles in overweight and obese adults.

**Results:** The dosage and follow-up period of the final trials intervention respectively ranged from 1 to 8 g/day and 4 to 12 weeks. By Spirulina supplementation in healthy overweight and obese but not dyslipidemic subjects, no significant differences were seen in TG, TC, LDL-C, and HDL-C levels. However, TG and TC were reduced significantly in one trial. Anthropometric parameters like weight, BMI, and body fat

decreased in intervention groups compared with placebo groups.

**Conclusions:** Spirulina supplementation may have no improvement on lipid profile in healthy overweight and obese adults. However, Weight, BMI, and body fat can be reduced after this supplementation.

**Keywords:** Spirulina, lipid profile, obesity, anthropometry

## **The Association of Macro Socioeconomic Variables with Trend of Food Intakes in Iran during 1991-2018: Time-series Model**

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**Introduction:** Nutritional transition is a concept that implies major changes in the structure of food and diet. Diets evolve over time and are influenced by many factors and complex interactions. Income, prices, individual preferences and beliefs, cultural traditions as well as geographic, environmental, social, and economic factors all interact in a complex manner to shape





dietary consumption patterns. Economic development is usually associated with improvement in food supply and gradual elimination of dietary deficiencies in the country. Iran is also experiencing a nutritional transition that is happening rapidly. There is an obvious imbalance in people's consumption, which is characterized by low levels of dietary micronutrients at all income levels. Since dietary intake is one of the main causes of chronic diseases, a strong understanding of dietary intake is essential in order to design strategies to reduce diet-related diseases at the national and global levels.

Objectives & (hypothesis OR questions) :

Determining the relationship between macroeconomic and social variables on the trend of food intake in Iran during 1991-2018

**Methods:** In the current study, in order to investigate the changes in the food basket of Iranian households in terms of the amount of intake of different food groups, the data of the household food expenses section of the survey of Iranian households' expenditure and income during the years 1370 to 1398 were used. The data related to the studied variables (including macro-economic and social variables including inflation, country population, gross domestic product (GDP), and percentage of urbanization) were obtained using the data of the World Bank, Central Bank, Iran Statistics Center, and articles. By using the data collected in a time range, a time series was formed and the

changes during the desired period were examined.

**Results:** Studies have shown that the trend of consumption of bread, cereals, rice, and pasta food groups increases with the increase in inflation and decreases with the increase in GDP and the increase in the urban population. The trend of consumption of vegetable food groups decreases with the increase of inflation and increases with the increase of GDP. The consumption trend of the fruit food group decreases with the increase of inflation and increases with the increase in urban population and GDP. The consumption trend of dairy food groups decreases with the increase in urban population and increases with the increase in GDP. The trend of consumption of fats, oils, sugars, and sweets food group increases with increasing urbanization. The results of the investigations for the food group of meat, chicken, fish, eggs, legumes, and nuts did not differ significantly.

**Conclusions:** A positive relationship was observed between the consumption of fats, oils, sugar, and sweets, and urbanization, and an inverse relationship was observed between the consumption of bread, cereals, rice, pasta, fruits, and dairy products, and urbanization. Also, the consumption of vegetables, fruits, and dairy products increased with GDP, but the consumption of bread, cereals, rice, and pasta decreased. Also, the consumption of bread, beans, rice, and pasta increased with inflation, and vegetables and fruits decreased. Also, a



positive relationship was observed between the consumption of bread, cereals, rice, pasta, and precipitation.

**Keywords:** Macro Socioeconomic Variables, Trend of Food Intakes, Iran, Time-series Model

## between a plant-based diet and breast cancer: A systematic review

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**Introduction:** Breast cancer is the most common cancer among women worldwide and diet has been implicated in its development. A plant-based diet, rich in fruits, vegetables, whole grains, and legumes, has been suggested to have preventive and therapeutic effects against breast cancer. The aim of this study is to examine the relationship between a plant-based diet and breast cancer.

**Methods:** A systematic review of published studies was conducted on the relationship between a plant-based diet and breast cancer. The PubMed and Medline databases were searched using specific keywords. Only human studies that met the inclusion criteria were included.

**Results:** Nineteen human studies, including prospective cohort studies, case-control, and RCTs. 14 out of 19 examined the effects of a plant-based diet on breast cancer incidence or risk, and 11 reported a significant reduction in breast cancer incidence among individuals who consumed a plant-based diet. Four studies examined the effects of a plant-based diet on breast cancer biomarkers, and all reported significant improvements in biomarkers. One study examined the association between a plant-based diet and breast cancer prognosis and reported a significant reduction in breast cancer mortality

**Conclusions:** This systematic review found that a plant-based diet may have preventive and therapeutic effects against breast cancer. The review suggests that adhering to a plant-based diet could reduce breast cancer incidence and improve biomarkers, leading to a reduction in breast cancer mortality. However, the limited number of human studies and the heterogeneity in outcomes highlight the need for further research.

**Keywords:** breast cancer, plant-based diet, vegetarian, vegan, fruits, vegetables, whole grains, legumes

## The effect of the DASH diet on stress, anxiety, and depression

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**Introduction:** Stress, anxiety, and depression are prevalent issues that affect millions of people around the world. The Dietary Approach to Stop Hypertension (DASH) diet is a dietary pattern that has been shown to lower blood pressure and is promoted to prevent and control hypertension. Our study aimed to evaluate whether the DASH diet, known for its beneficial effects on cardiovascular health, may also improve mental health in adults.

**Methods:** In this randomized clinical trial, we investigated the effect of the DASH diet on stress, anxiety, and depression among 563 participants, including both students and their families from various parts of Iran. Participants were divided into two groups: a control group that followed their normal diet and an intervention group that adhered to the DASH diet. The DASS-21 questionnaire was used to measure self-reported stress, anxiety, and depression symptoms among participants.

**Results:** The results showed a significant reduction in stress scores in the DASH diet group; however, this reduction was not significant between the control group and the DASH diet group ( $p = 0.90$ ). Moreover, the DASH diet group had significantly lower self-reported depression symptoms than the control group ( $p = 0.02$ ). After adjusting for known confounding variables, the results

did not remain significant. While anxiety scores were not significantly different within and between groups.

**Conclusions:** Changes in stress scores were not statistically significant between the two groups. These findings suggest that adhering to the DASH diet was effective in reducing depression scores in participants. However, further studies are needed to clarify a definite conclusion.

**Keywords:** depression, anxiety, stress, DASH diet, mental health

### **The relation between dietary phytochemical index and deficit/hyperactivity disorder in children: a case-control study**

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**Introduction:** a common behavioral disorder among children is Attention Deficit/Hyperactivity Disorder (ADHD). It is said that phytochemicals may have inverse effects on the risk of ADHD. The aim of this article is to clarify the association of dietary



phytochemical index (DPI) with the odds of ADHD.

**Methods:** we chose 360 children and adolescents 7–13 years old from Yazd, Iran to conduct our study. Subjects were divided into case (n=120) and control groups (n=240) based on matching sex and age. We used The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSMIV-TR) to diagnose ADHD. Food intake was measured by using a Food frequency questionnaire. We calculated DPI by the percent of daily energy intake from foods rich in phytochemicals. The relation between DPI and the odds ratio of ADHD was examined by logistic regression.

**Results:** Subjects in the highest quartile of DPI have a higher intake of vitamins B12, B6, folic acid, zinc, iron, calcium, macronutrient, eicosatetraenoic acid, and docosahexaenoic acid compared to the lowest quartile. After adjusting for potential confounders, subjects in the highest quartile of DPI compared with subjects in the lowest quartile showed a lower risk of ADHD (OR: 0.44; 95% CI: 0.18–0.90). The odds of ADHD significantly decreased across the increasing quartile of DPI (P: 0.02).

**Conclusions:** our study showed that DPI score and ADHD are conversely related. A higher DPI score decreases the risk of ADHD in children. More cohort and clinical studies are needed to establish this result.

**Keywords:** ADHD, phytochemicals, DPI, Diet

## **Effect of beetroot combined with vitamin C supplementation on oxidative stress and inflammatory fatty acids in coronary heart disease patients: A randomized, double-blind, placebo-controlled clinical trial**

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**Introduction:** Coronary artery disease is known as the most common type of cardiovascular disease with high prevalence and mortality worldwide and most often, atherosclerosis causes CAD. Considering the role of a healthy diet in preventing atherogenesis, the use of beetroot as a functional food with anti-inflammatory, antioxidant, and anti-dyslipidemic effects due to its high nitrate content and bioactive compounds, is one of the interesting approaches in chronic diseases. Therefore, the aim of the present study was to investigate the effect of beetroot /beetroot capsules with vitamin C on serum fatty acids



and related inflammation, and oxidative stress factors in patients with chronic coronary artery disease.

**Methods:** This study was a double-blind randomized clinical trial that was conducted on 90 male (67.8%) and female (32.2%) patients with chronic coronary artery disease with an average age of  $24.8 \pm 8.6$ . 52 years for 4 weeks. The participants were randomly divided into three groups receiving 3 daily doses of 500 mg 1- beetroot capsules, 2- beetroot capsules with vitamin C, and 3- placebo capsules. The outcomes in this study included saturated fatty acids, monounsaturated fatty acids, polyunsaturated fatty acids, total antioxidant capacity, total oxidant status, malondialdehyde, and myeloperoxidase, which were evaluated before and after the intervention.

**Results:** In the study subjects with 4 weeks of consumption of beetroot, significant changes in the level of heptadecanoic acid (-0.02 mg/ml), behenic acid (0.01 mg/ml), SFAs/PUFAs (-0.13), PA/OA (-0.25) and MPO (-9.60 U/L) was established. In subjects consuming beetroot along with vitamin C, heptadecanoic acid (-0.02 mg/ml), lauric acid (-0.01 mg/ml), lignoceric acid (0.01 mg/ml), behenic acid (0.01 mg/ml), docosahexaenoic acid (0.01 mg/ml), omega 3 (0.03 mg/ml), EPA + DHA (0.01 mg/ml), SFAs/PUFAs (-0.37), PA/OA (-0.36), TOS (-1.42  $\mu$ M) and MPO (-12.42 U/L) had significant changes. Also, there was a considerable increase (26.03  $\mu$ M) in the level

of TAC in subjects consuming beetroot along with vitamin C.

**Conclusions:** Oral consumption of beetroot capsules in patients with chronic coronary heart disease had favorable effects on serum monounsaturated and polyunsaturated fatty acids. Also, this supplementation improved TOS and MPO, which are categorized as oxidant and atherogenesis factors. The mentioned positive effects seem to be enhanced by adding vitamin C to beetroot.

**Keywords:** coronary heart disease, red beet, vitamin C, fatty acids, oxidative stress

## **Investigating the relationship between nutrition and the occurrence and exacerbation of symptoms in chronic lung diseases based on epidemiological studies: a systematic review**

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**Introduction:** Chronic obstructive pulmonary disease (COPD) is a leading cause of death and healthcare burden worldwide. The extrapulmonary manifestation of COPD is weight loss and malnutrition. COPD risk factors: smoking, air pollution, and improper diet. Changing the diet, reducing the



consumption of fruits, and increasing the use of processed foods have been used to help increase the prevalence of COPD. The purpose of this study is to investigate the effect of diet on COPD.

**Methods:** First, a search was conducted in PubMed and Scopus databases with keywords diet, nutrition, COPD, mortality, morbidity, and severity until July 2023. The observational studies that were published in peer-reviewed journals regarding the relationship between nutrition in the form of dietary patterns and the incidence or exacerbation and mortality of COPD were extracted and screened in two stages (reviewing the title and abstract and then reviewing the full text). The results of selected studies were summarized and analyzed.

**Results:** The total articles found were from the two databases PubMed and Scopus 3634, after the screening process, the findings of 9 articles that were related to the purpose of the study were evaluated. Among these articles, 4 articles related to men and one article related to women reported a significant relationship between omega-3 consumption and the possibility of COPD. Two articles reported a significant relationship between fiber consumption and the possibility of COPD, and one article reported a significant relationship between the amount of protein. reported receiving and exacerbation of COPD symptoms. One article reported a significant association between fish and fruit consumption and

mortality from COPD. The findings of this study showed that there is a negative relationship between a diet rich in fruits, vegetables, and fish and the risk of COPD, and there is a positive relationship between a diet rich in refined grains and COPD.

**Conclusions:** Nutritional factors can play a role in the prevention and control of COPD symptoms. The findings of this study can help design dietary guidelines for the prevention and control of COPD at the community level.

**Keywords:** chronic obstructive pulmonary disease, food pattern, nutrition, incidence, mortality

## Unlocking the Power of Nutrition: Harnessing Its Potential in Disease Prevention

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**Introduction:** In today's world, the importance of nutrition in maintaining good health and preventing diseases cannot be overstated. By understanding and harnessing the power of nutrition, we can pave the way towards disease prevention and a healthier future. This article dives into the significance of nutrition and explains



how it can be a vital tool in safeguarding our well-being.

**Methods:** A search on the subject of electronic journals and databases such as websites Pubmed, Scopus, SID, Iran Medex & Google Scholar from 2018 to 2023 was conducted.

**Results:** The power of nutrition in disease prevention has become increasingly recognized in recent years. Numerous studies have demonstrated that a well-balanced diet can lower the incidence of conditions such as obesity, heart disease, diabetes, and certain types of cancer. Consuming a diet rich in fruits, vegetables, whole grains, and lean proteins provides essential nutrients and antioxidants that protect the body against free radicals and inflammation. Additionally, specific nutrients like omega-3 fatty acids, vitamin D, and calcium have been shown to enhance immune function, and bone health, and reduce the risk of certain autoimmune disorders.

Public awareness campaigns and healthcare initiatives are essential to educate individuals about the potential of nutrition in disease prevention. Encouraging healthy eating habits and making nutritious choices more accessible can have a significant impact on reducing the burden of chronic diseases worldwide. Furthermore, healthcare practitioners should integrate nutrition education into their practice. By identifying individuals at risk of specific diseases, clinicians can prescribe

personalized diet plans and lifestyle modifications to optimize their patient's health outcomes.

**Conclusions:** Unlocking the power of nutrition and harnessing its potential in disease prevention is a fundamental step toward building a healthier future for individuals and communities across the globe. Making informed nutritional choices can have a profound impact on the body's immune system, energy levels, and overall functioning, leading to a healthier and more fulfilling future.

**Keywords:** Nutrition, Disease Prevention, Healthcare

## **Effects of Different Vegetable Oils on the Nonalcoholic Fatty Liver Disease: A Review**

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**Introduction:** Non-alcoholic fatty liver disease (NAFLD) is the most common liver disorder, affecting 22–28% of adults and more than 50% of the obese population globally. The articles did not mention the main causes and most useful treatments for NAFLD. Although causes and treatments are well researched, they are not well known. Consumption of vegetable oil, containing omega-6 fatty acids like linoleic acid, is the most effective way of inducing NAFLD. Medium-chain triglycerides and omega-3 fats protect against NAFLD. Some vegetable oils like soybean oil may cause several harmful metabolic effects of high fat and fructose diet. Therefore, canola oil is suggested to be beneficial in the treatment of comorbidities of metabolic syndrome especially NAFLD. Vegetable oil is rich in omega-6 and it is used in food processing and cooking.

**Methods:** The present review provides articles related to the relationship between vegetable oil and NAFLD. Searching PubMed and Embase databases from 2010 to 2023 led to finding the articles. Fourteen articles fulfilled the inclusion/exclusion criteria of this review and six of them were used in this research.

**Results:** Excess omega-6 fats are transformed into inflammatory prostaglandins and liver inflammation, while omega-3 may inhibit them. Omega-3 and omega-6 consumption amounts should be the same, but in the Western diet, omega-6 intake is 20 times more. Heating omega-6

polyunsaturated fats results in toxic oxidation products, which are worse than the trans fats, that may cause hepatic damage and destroy its histological structure through accumulation of fat and oxidative stress. Using different omega-3, omega-7, omega-6, and omega-9-rich lipid formulations may lower NAFLD.

**Conclusions:** The results concluded that commercial vegetable oils especially canola oil contribute to preventing or reducing NAFLD.

**Keywords:** NAFLD, Vegetable oil, Omega 6

## **Role of Biotechnology in Functional Foods and Nutraceuticals**

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**Introduction:** The article aims to provide an overview of the latest trends and technologies in the development and formulation of functional foods and nutraceuticals.

**Methods:** The search for this article was conducted using various databases such as PubMed, ScienceDirect, and Google Scholar. The keywords used for the search were "biotechnology," "functional foods," "nutraceuticals," "bioactivity," "bioaccessibility," and "bioavailability."

**Results:** Genetic Modification





Genetic engineering techniques are employed to introduce or modify specific genes in plants or animals to produce desired traits. Like enhancement of antioxidant levels in fruits or the fortification of crops with essential vitamins and minerals. Fermentation techniques involve the use of microorganisms to make functional foods with improved nutritional profiles and enhanced digestibility. Probiotics, such as *Lactobacillus* and *Bifidobacterium* strains, are commonly used for their health-promoting properties. Enzymes are utilized to catalyze specific reactions, such as the conversion of complex carbohydrates into easily digestible forms. Biotechnological processes are employed to make bioactive compounds with health benefits like the bioconversion of soy isoflavones produces equol, a compound known for its anti-cancer and hormone-balancing properties.

**Conclusions:** Emerging technologies have been used to develop functional foods and nutraceuticals with improved traits. The use of biotechnology in the development of functional foods and nutraceuticals has several advantages, including enhancing the nutritional value of food ingredients, increasing the shelf life of food products, and improving the safety of food products.

**Keywords:** Genetic disorders, PGD, NIPT, Gene editing, Gene therapy

## A Successful Early Nutritional Intervention in a 70% Burned Patients Admitted to Burns ICU of Imam Reza Hospital – A Case Report

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**Introduction:** This case study involves a 30-year-old male patient with 70% grade II and III burns who was transferred to Imam Reza Hospital on the 5th day of burns. The patient was initially admitted to the burns ward and subsequently transferred to the Intensive Care Unit (ICU) within two days. All necessary nutritional interventions were implemented.

**Method:** On the first day of admission at Imam Reza Hospital, a nutritional intervention was initiated for the patient. This intervention was carried out by the ward's nutritionist and was supervised by a specialist. The specific interventions were adjusted based on the daily conducted.

**Result:** Prior to the intervention, the patient's biomarker levels were Albumin 2.3, urea 36, Creatinine 1.2, Na 132, K 3.5, and Ca



6.8. The patient experienced wasting, catabolism, and mild anorexia. The intervention involved providing the patient with 3400 kcal of energy and 140 g of protein daily (60% diet + 40% oral and parenteral nutrition support). The patient also received daily doses of amino acids, vitamin C, syrup zinc plus, syrup of multivitamins, and selenium, which were adjusted according to blood test results every day. Additionally, weekly intake of vitamin E, a one-time dose of vitamin A (on day 7), and vitamin D (on day 1) were administered. The patient was able to return from the ICU within 12 days, following successful wound healing, and was discharged on day 16 with an Albumin level of 3 and improved biomarkers.

**Conclusion:** The implementation of a comprehensive nutritional intervention consisting of adequate protein, vitamins, and minerals from the 5th day of burn injury may be beneficial for severe burn patients.

Keywords: burning, clinical nutrition, burn ICU, minerals, vitamins

## **Investigating recent developments in nanoencapsulation of plant essential oils in the electrospun zein nanofibers**

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Today, consumers all over the world want to use healthy and quality food without harmful chemical compounds. For this purpose, we need to develop suitable food packaging materials and consider the disadvantages of plastic packaging materials and chemical additives. This study deals with the recent advances in the field of nanoencapsulation of plant essential oils in electrospun zein nanofibers. Zein is recognized as a cost-effective, biodegradable, and generally safe (GRAS) biopolymer and can create coatings and films with low moisture absorption and high thermal resistance. However, some disadvantages of electrospun zein nanofibers, such as poor mechanical properties and fast dissolution rate, limit their application in food packaging. To overcome these limitations, combining zein with other biopolymers, especially carbohydrates (gelatin) is recommended for the development of nanofibers. Also, encapsulating plant phenolic compounds in these nanofibers improves its antioxidant and antimicrobial activity. Based on the results of this study, this active packaging technology can be widely optimized in the global market to preserve highly sensitive and perishable food products.

**Keywords:** zein, plant essential oils, nanofibers, nanoencapsulation



## The impact of garlic on improving Alzheimer's disease: A systematic review

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**Introduction:** Alzheimer's disease (AD) is a degenerative brain condition that gradually affects the cells within the brain. This condition ultimately results in memory loss. Garlic is renowned for its high antioxidant properties attributed to the presence of organosulfur compounds, especially allicin. This study aims to realize the role of garlic in improving AD.

**Methods:** This systematic review was carried out through PubMed, Science Direct, SciELO, Google Scholar, SID, Web of Science, and Wiley online library until August 2023. The keywords were Alzheimer's, Alzheimer's disease, garlic, improvement, and enhancement. Out of the 73 articles identified, a total of 27 relevant articles remained. All articles were selected from English and Persian articles.

**Results:** This study uncovered a total of 27 articles. Given that AD was a complex condition with multiple factors, the utilization of garlic extract offered the

benefits of a multi-target approach, effectively targeting various biochemical sites in the human brain. Most forms of garlic were recognized as potent agents with anti-inflammatory and antioxidant properties, capable of producing notable neuroprotective effects. A thorough analysis of the articles revealed that the components present in garlic exerted influences on amyloid beta, oxidative stress, and tau protein, ultimately leading to potential improvements in AD.

**Conclusions:** The findings suggest that garlic may have the potential to improve AD. Future investigations could explore the therapeutic efficacy of garlic in treating AD and its potential for preventing other associated complications.

**Keywords:** Alzheimer's, Alzheimer's disease, Garlic, Improvement, Enhance

## Nutrition and Psoriasis

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**Introduction:** Psoriasis is a chronic inflammatory skin disease that causes rashes which most appear on the scalp, elbows, knees, and lower back. Increased activation of T helper (Th)-1 and Th-17 T cells leads to increased cytokines such as interleukins (IL) IL-1, IL-6, IL-23, IL-22, IL-17, IL-33 and tumor necrosis factor-alpha (TNF- $\alpha$ ). These cytokines are due to the



abnormal proliferation of epidermal keratinocytes. Alcohol, Smoking, Weather, stress, and infection trigger psoriasis. According to studies, more than 2.5% of Asian people have psoriasis. We want to answer the question of how nutrition can reduce or prevent the severity of psoriasis.

**Methods:** We conducted a comprehensive search in PubMed, Google Scholar, and Medline databases for trials, case-control, and cohort studies.

**Results:** Gluten-free diets, Mediterranean diet (MD), VLCD (very low-calorie diet), and plant-based diets can decrease the symptoms of psoriasis. Gluten can stimulate the immune system. A gluten-free diet not only is useful in celiac disease but also can reduce cytokines. MD emphasizes plant-based foods, healthy fats, fruits, whole grains, fish, and olive oil. Reducing red and processed meat intake can improve the immune system by decreasing cytokines and promoting the growth of beneficial commensal bacteria. There is a two-way relationship between obesity and psoriasis. Psoriasis can cause depression and weight gain. Fat tissue releases a special type of cytokines, called adipokines. Some of these adipokines can trigger inflammation that leads to autoimmune conditions, including psoriasis.

**Conclusions:** We should adopt a healthy lifestyle to prevent psoriasis and reduce the symptoms.

**Keywords:** Psoriasis, Mediterranean Diet, Gluten, Cytokines, Obesity

## Altered of inflammation and Anxiety in MASHAD cohort study

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**Background:** Anxiety is the most common mental health problem worldwide. Anxiety is also comorbid with a variety of medical conditions, exacerbating symptoms, hampering recovery, and increasing the risk for other mental disorders, such as alcoholism and depression. In healthy subjects, it has been consistently found that inflammatory markers are increased by stress and anxiety. So, there remains a great deal to understand about the association between anxiety and inflammation. Therefore, in this study we investigate the relationship between inflammation and anxiety

**Methods:** after 10 years follow-up, from 9704 healthy participants in MASHAD cohort study at baseline, 7561 completed the study. Inflammation markers such as WBC, platelets, RDW, Plt/HDL, Neut/HDL, SII, Lym/HDL, neu/lym, Plt/lym, RDW/lym, RPR (RDW/Plt), hs.CRP were measured at baseline and we assessed the association of them with incidence of anxiety after 10 years



follow-up. Anxiety defined by Beck questionnaire.

**Results:** The result of this study showed that mean platelets, neutrophil, RDW, NLR and SII in subjects with anxiety were significantly higher than healthy subjects. Moreover, using regression model after adjusting data by age and sex, we found that increase one unit in platelets, RLR and SII can rise chance of anxiety 0.5%, 2.8%, 0.3%, respectively. Although, increase one unit in PLR could decrease chance of anxiety 23.8%.

**Conclusion:** The results of this study suggest that altered in inflammation markers can be a good predictor for anxiety in long time.

### **Occupation: prediction of masculine cardiovascular mortality**

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**Background:** Cardiovascular diseases (CVD) have been remained as the leading cause of death in Iran recently. Occupation plays an essential role in cardiovascular diseases through different ways including access to community facilities for health.

**Method:** This project was a prospective observational study aimed to investigate the predictive value of occupation as a modifiable risk factor for cardiovascular mortality. This study was done based on the Vic Chancellery of Health Questionnaires information from 2016 until 2019 year. Decision tree (DT) was used to predict association of cardiovascular risk factors and mortality.

**Result:** Overall information on 1084,598 adults aged 30≤years old was included in the study. According to the results, occupation was an important factor associated with cardiovascular mortality (P = 0.05).

**Conclusion:** Lack of occupation may be an important factor that accelerates cardiovascular death among Iranian men versus women.

**Keywords:** Cardiovascular disease, mortality, occupation

### **Cardiovascular disease and Ramadan fasting complications**

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**Background:** Nowadays 17.9 million deaths occur due to cardiovascular diseases (CVD) yearly. Fasting appears as a lifestyle modification to have a positive effect on CVD risk factors including blood lipids, blood pressure, and diabetes. However, it is not clear that fasting is without complications in people with cardiovascular diseases. This study aimed to evaluate association of Ramadan fasting complications and cardiovascular disease.

**Method:** This retrospective cohort was down on the subjects derived from the second phase of Mashhad stroke and heart atherosclerotic disorder (MASHAD) study (2010-2020).

**Result:** Total of 7747 women and men aged 35-65 years who completed validated Ramadan fasting nutritional habits questionnaire included to study. The occurrence of stroke, heart attack, severe hypoglycemia, and loss of consciousness during Ramadan fasting was significantly higher in subjects with CVD compared to healthy population ( $P < 0.001$ ).

**Conclusion:** fasting during Ramadan may be associated with complications such as

stroke, heart attack, severe hypoglycemia, and loss of consciousness among cardiovascular patients.

**Keyword:** Cardiovascular disease, Ramadan fasting, complications

## Effect of *Moringa oleifera* supplementation on metabolic syndrome risk factors; a review study

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Metabolic syndrome is a significant global health concern, associated with an increased risk of cardiovascular diseases and type 2 diabetes. This review study delves into the potential of *Moringa oleifera*, a well-researched medicinal plant, to address metabolic syndrome risk factors. The article critically evaluates current research on the effects of *Moringa oleifera* supplementation in both human and animal studies. Although there is a scarcity of direct human studies on *Moringa oleifera*'s impact on metabolic syndrome, in-depth investigations into its effects on individual syndrome components offer valuable insights. Human studies exploring *Moringa oleifera*'s influence on specific risk factors, such as blood pressure



and glycemic control, have yielded promising results. However, some contradictions in the findings call for further investigation. In contrast, animal studies have provided substantial evidence supporting the potential benefits of *Moringa oleifera*, including lowering fasting glucose levels, improving lipid profiles, and combating obesity. This effect is achieved through its antioxidant properties, enzyme modulation, and regulation of gut microbiota. Despite the limited human evidence, *Moringa oleifera* shows promise as a natural remedy for addressing metabolic syndrome. Further research is necessary to determine optimal dosages and long-term effects. By delving deeper into the potential of *Moringa oleifera*, we may discover a valuable solution to mitigate the impact of metabolic syndrome on global health.

## **The Effects of Probiotics on Systemic Lupus Erythematosus (SLE)**

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Systemic Lupus Erythematosus (SLE) is a complex autoimmune disease with a multifactorial etiology. This disease mainly affects women of reproductive age and affects a variety of organs including skin,

joints, kidney, lung, heart and digestive system, etc. The etiology of SLE is multifactorial, with both genetic and environmental factors contributing to its pathogenesis. Recent research has explored the potential therapeutic benefits of probiotics in managing SLE symptoms and modulating the immune response.

This abstract aims to provide a comprehensive review of the effect of probiotics on SLE. The review explores the role of gut dysbiosis in SLE, highlighting the disruption of the intestinal microbiota and its implications for immune dysregulation. Probiotics, which are living microorganisms that offer potential health advantages, have demonstrated the potential to rebalance the gut microbiota and modulate the immune system.

Furthermore, this review examines the existing preclinical and clinical studies investigating the impact of probiotics on SLE. The results indicate that probiotics could potentially play a beneficial role in managing SLE by decreasing disease activity, enhancing symptom management, and promoting overall quality of life. In addition, probiotics can serve as a complementary approach to minimize the adverse effects of glucocorticoids and immunosuppressants. The results of this review suggest that probiotics have the potential to serve as a complementary therapeutic approach for SLE. They may help alleviate symptoms, reduce disease activity, and improve overall well-being in SLE patients. However, while



more research is needed to fully understand the benefits of probiotics for SLE management, there are some limitations and challenges in the current studies. These include the lack of standardized protocols, the diversity of SLE patients, limited clinical evidence, the need for long-term studies, and potential interactions with medications. It's important to consider these factors when evaluating the effectiveness of probiotics in SLE.

In conclusion, in conclusion, there is growing evidence suggesting that probiotics may have potential benefits in managing SLE. Probiotic supplementation has shown promising results in modulating the immune response and improving clinical outcomes. This review sets the stage for future research and provides insights into the potential of probiotics as a therapeutic option for SLE patients.

**Keywords:** probiotics, systemic lupus erythematosus, SLE, inflammation, immune dysregulation, immune tolerance, Bifidobacterium bifidum, Lactobacillus, autoimmunity, microbiota, probiotics

## **Functional Foods, Nutraceuticals and Probiotics**

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**Introduction:** Functional foods are classified as traditional or staple foods that

provide an essential nutritional level and share potentially positive effects on host health, including the reduction of disease by optimizing the immune system's ability. Functional foods have been described to modify physiological mechanisms at the gastrointestinal tract (GIT) level by increasing biochemical parameters and improving neuronal functions and classified into 4 categories.

**Methods:** We conducted a comprehensive search in PubMed, Google Scholar, and Medline databases for trials, case-control, and cohort studies.

**Results:** Different Classes of Probiotic Products include: Dairy-Based Functional Foods Containing Probiotics, Fresh and Fermented Milk, Yogurt, Cheese, and Other Dairy Products. Probiotic bacteria have been isolated from various products of dairy origin, such as butter, Plant-Based Products Containing Probiotics (which contain high levels of cellulose), Fruit-Based Products Containing Probiotics, Cereal-Based Products Containing Probiotics and Meat-Based Products Containing Probiotics. Mechanisms of Probiotic Functionality and Their Beneficial Effects on Gastrointestinal Disorders, Inflammatory Bowel Diseases (IBD), Diarrhea, Food Allergy, Helicobacter pylori Infection, Lactose Intolerance, and Cancer.

**Conclusions:** In the development of probiotic foods, different strains of LAB (such as lactococcus, lactobacillus, and streptococci) as well as some strains of





bifidobacterium and yeasts that have GRAS are used. However, although the probiotic market is dominated by fermented dairy products, several screening studies have been conducted on various non-dairy matrices (traditional fermented foods) to select new probiotic strains for the food industry.

**Keywords:** functional foods, probiotics, nutraceuticals, lactic acid bacteria, microbiota

## The association between GM foods and cancer

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**Introduction:** Genetically modified (GM) organisms are plant or animal organisms, the genotype of which has been changed in a way that is not natural for nature, using methods of genetic engineering to give the body new properties: resistance to herbicides, pests, diseases and salinity, to the action of high and low temperatures, increase calories; to solve the problems of cleaning the environment from organic pollution and heavy metals; to ensure the synthesis of certain compounds in the plant organism and the use of plants for the production of these compounds. The present review aimed to clarify the association between GM foods and cancer.

**Methods:** A search was conducted on the Persian (SID, Magiran) and English (PubMed, Medline, Web of Science, CINAHL, Scopus) databases from 2010 to June 01, 2023. Search terms were: “genetically modified foods and cancer”, “genetically modified foods and Neoplasms”, “GM foods and Neoplasms”, and “transgenic food and Neoplasms”. 17 articles were found through the investigation of such databases. The screening process of articles was conducted by three-reviewer respectively. After title, abstract, or full-text reading and applying exclusion criteria, we reviewed 8 studies on the consumption of GMO foods and cancer. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

**Results:** Findings show that they might include some carcinogenic substances, but at the same time, they could prevent cancer. Higher levels of antioxidants, vitamins, iron, folic acid, phytosterol, beta-carotene, essential fatty acids, and some amino acids in GM products help prevent cancer and some other diseases. Bt maize contains lower concentrations of mycotoxins, fumonisins, and thricotecens which are toxic and carcinogenic to humans and animals. Some literature mentions that GM foods contain some toxic and carcinogenic substances, but we must consider the amount of these substances. Also, lots of our daily foods contain carcinogenic materials; for example, apple contains 22 ppm of formaldehyde but we can't mention apple as



harmful fruit because the amount of formaldehyde in apple is too low. One notable point of GM products was milk from GM cows. It could increase the IGF-1 concentration in serum which is positively correlated with breast, lung, and colon cancer.

**Conclusions:** In general, genetically modified products are not as harmful as the advertisements show. However, before they enter the market, they must undergo rigorous evaluations, in which case they are both economically beneficial and healthy.

**Keywords:** Transgenic food, genetically modified organism, GM, cancer, carcinogen

## The relation of Thrombocytopenia at Admission among Adult Critically Ill Patients with the Severity of the Diseases, Nutritional status, and Mortality Risks

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**Introduction:** Thrombocytopenia is common in intensive care unit (ICU) patients. The current study aims to evaluate the association between thrombocytopenia and the severity of the disease, nutritional status, and mortality rate among critically ill patients.

**Methods:** This cross-sectional study was performed on 650 adult patients admitted to the general ICU of Imam Reza Hospital, Mashhad, Iran. Data was obtained from recorded information on the ICU patients. The Sequential-Organ-Failure-Assessment (SOFA) and the Acute-Physiology-and-Chronic-Health-Evaluation (APACHE) scores were used to evaluate the severity of disease and mortality. For the nutritional status of patients, the modified Nutrition-Risk in the Critically ill (mNUTRIC) score was used. Platelet counts less than  $150 \times 10^9/L$  or a reduction of more than 50% from baseline value are defined as thrombocytopenia.

**Results:** The mean age of patients was 47.08 years, and the mean platelet counts on the first day were  $200.45 \pm 103.49 \times 10^9/L$ . The prevalence of thrombocytopenia on the first day of admission was 24.5%. The mean of SOFA (7.55 VS. 5.09;  $p < 0.001$ ), APACHE



(15.17 VS. 13.64;  $p=0.002$ ), and mNUTRIC (3.00 VS. 2.15;  $p<0.001$ ) scores was significantly higher in patients with thrombocytopenia compared to patients with normal platelet counts. In addition, the percentage of mortality (43.4% VS. 24.6%;  $p>0.001$ ) was significantly higher in patients with thrombocytopenia compared to patients with normal platelet counts.

**Conclusion:** Findings showed that thrombocytopenia was highly prevalent in ICU-admitted patients. It has a considerable correlation with the severity of diseases, the risk of malnutrition, and the increased mortality risk in critically ill patients.

**Keywords:** Thrombocytopenia, Critical Care, Mortality, Intensive care unit, APACHE, SOFA.

### **Curcuma. Longa and curcumin reduced inhaled paraquat-induced heart, liver, lung and kidney oxidative changes and lung inflammation in rats**

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**Introduction:** Curcumin is a bright yellow phytochemical derived from the rhizome of *Curcuma longa*. It possesses a wide range of

biological effects that is attracting great attention from the researchers of the medical field. The present study was undertaken to understand the effect of *Curcuma. Longa* and curcumin on inhaled paraquat-induced heart, liver, lung and kidney oxidative changes and lung inflammation in rats.

**Method:** Control rats were exposed to normal saline and PQ groups to 54 mg/m<sup>3</sup> aerosols. Nine other PQ groups were treated with *Curcuma longa* (Cl, 150 and 600 mg/kg/day), nano-curcumin (Cur, 2 and 8 mg/kg/day), pioglitazone (Pio, 5 and 10 mg/kg), low dose of Pio + Cl and Cur and dexamethasone (0.03 mg/kg/ day) that were intraperitoneal (ip) injected and nano-CU was administered orally (po) for 16 days after PQ exposure period ( $n = 8$ ).

**Result:** Total and differential WBC counts, malondialdehyde (MDA) were increased but thiol, catalase (CAT), superoxide dismutase (SOD) was decreased in the surum and desired organs in the PQ group ( $p < 0.05$  to  $p < 0.001$ ). Treatment with Dexa and both doses of Cl, Cu, and Pio improved all measured variables compared to the PQ group ( $p < 0.05$  to  $p < 0.001$ ). The improvements of most variables in the treated group with low dose of Pio + Cl and Cur were higher than the effects of three agents alone. Systemic inflammation and oxidative stress induced by inhaled PQ were improved by Cl, Cur and Pio. The improvement of most variables in the PIO + Cur (L) group was significantly higher than



in the PIO and Cur(L) groups alone that suggesting n PPAR $\gamma$  mediated effects of the plant and its derivative Cu.

**Conclusion:** These results indicate Curcuma. Longa and curcumin reduced inhaled paraquat-induced heart, liver, lung and kidney oxidative changes and lung inflammation in rats and also we can explain that PQ exerts its toxic effects by enhancing peroxidative damage to the membranes of mentioned tissues, thus disturbing cellular functions.

**Keywords:** anti-inflammatory, turmeric, anti-Oxidant, Paraquat, tissues.

### **Exploring the Relationship between Sociodemographic Variables and Muscle Mass; Persian Cohort, Mashhad: A Cross-Sectional Study**

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**Introduction:** Several studies have found that sociodemographic variables such as age, sex, education, and wealth are associated with muscle mass. Age has been found to have a negative association with muscle mass in both sexes. Muscle mass was also found to be significantly associated with sex,

with men having higher muscle mass than women. Most studies did not find a direct association between education and muscle mass.

**Method:** The study analyzed the relationship between socioeconomic and demographic variables and skeletal muscle mass using data from the Persian Cohort. The data was obtained from 4573 volunteers and included information from the WSI questionnaire and Personal characteristics questionnaire. Linear regression was performed using SPSS, and the Beta coefficient, 95% confidence interval and R squared were calculated.

**Result:** The results revealed a significant relationship between gender and muscle mass, higher muscle mass had seen in males. In addition, a positive relationship has been shown between education level and muscle mass; each degree of increase in education level indicates greater muscle mass. Also there were shown a positive relation between wealth and muscle thickness.

**Conclusion:** Overall, the association between sociodemographic variables and muscle mass is complex and multifactorial. While some studies have found positive associations between sociodemographic variables with muscle mass, other studies have identified additional factors such as physical activity and diet that may also play a role. One of the limitations of this study is that the type of alkaline phosphatase measured is not specified. Further research is needed.



**Keywords:** Serum creatinine, Skeletal muscle mass, FFM, Sociodemographic variables

Resistin and adiponectin in the Gestational

**Diabetes: plasma levels, gene polymorphisms and their association with Gestational Diabetes and related metabolic parameters.**

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**Introduction:** Low concentrations of adiponectin, the protein product of the adiponectin gene (ADIPOQ), and high concentrations of resistin have been reported to be associated with obesity and insulin resistance. The purpose of the present study was to investigate the association of the two most well-known single nucleotide polymorphisms (SNPs) of ADIPOQ (+45T>G and +276G>T) with serum adiponectin concentrations, metabolic parameters associated with Gestational Diabetes. We also aimed to investigate the associations between serum adiponectin and resistin levels with the metabolic parameters and the prevalence of Gestational Diabetes.

**Method:** We performed a cross-sectional study using a representative sample of 140 unrelated pregnant women with Gestational Diabetes and 66 non-diabetic healthy subjects. The polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method was used to determine the distribution of allele and genotype frequency of the SNP +45T>G polymorphism (exon2) and SNP +276G>T polymorphism (intron 2) in ADIPOQ. Lipid profile was measured by enzymatic methods.

**Results:** It was observed that obesity, insulin resistance and Gestational Diabetes are associated with low serum adiponectin levels. Compared with the control group, the Gestational Diabetes group exhibited lower adiponectin levels and higher resistin levels. The G allele and TG/GG genotype of SNP +45T>G occurred more frequently than the common T allele and TT genotype in Gestational Diabetes women compared to the controls (TG were associated with lower serum adiponectin levels. There was no statistically significant difference in allele and genotype frequencies of SNP +276G>T comparing control group with Gestational Diabetes group. No association with metabolic parameters was detected with either of the SNPs.

**Conclusion:** In summary, our results demonstrated that, adiponectin SNP +45T>G, rather than SNP +276G>T is more associated with adiponectin levels. However, we could not confirm an association of these two SNPs with



metabolic parameters of the metabolic syndrome.

**Keywords:** polymorphism, Gestational diabetes, adiponectin

## **Introduction of Some Methods Related to Aflatoxin Reduction in Different Types of Food: A Review Study**

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Aflatoxins as carcinogenic and toxic mycotoxins are produced by certain strains of the *Aspergillus* genus in various foods and animal feed. These compounds were identified for the first time in 1961 as a result of the death of a hundred thousand turkeys in their feed. According to the report of the Food and Agriculture Organization (FAO), a quarter of the world's crops are affected by mycotoxins. Twenty different types of aflatoxins have been identified. The main forms of aflatoxins are B1, B2, G1, and G2, which are found in contaminated food and feed. Aflatoxins M1 and M2 occur in the milk of ruminants after consuming feed contaminated with aflatoxins B1 and B2. The International Agency for Research on Cancer (IARC) has placed aflatoxin B1 in the first group of human carcinogens. Worldwide, aflatoxins have received attention due to

their existence in different types of agricultural products. These toxins have adverse effects on the safety and health of food. Based on the scientific evidence, aflatoxins lead to liver problems, cancer, and immunosuppression. Therefore, it is focused on reducing the contamination of aflatoxins through different methods. Based on the literature review, physical, chemical, and biological methods can decrease the amount of aflatoxins in food and animal feed. Among the physical methods, biosorbents have a positive effect on controlling the aflatoxin amount. In chemical methods, ozonation can degrade the structure of aflatoxins. Additionally, the application of probiotics, as a biological method, is an appropriate and safe procedure to decrease the aflatoxins in foodstuff.

**Keywords:** aflatoxin, reduction, food, biosorbent, ozonation, probiotic

## **An overview of frauds and their detection methods in raw milk**

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**Introduction:** Milk is a healthy and nutritious dairy product and is consumed by the majority of the population around the world. However, adulteration of milk always reduces its quality and may introduce



dangerous substances into the dairy supply chain, which endangers consumers' health. Various cases of milk adulteration have been reported worldwide, in which substances such as extra water, foreign proteins, whey proteins, melamine and urea, vegetable or animal fats, and many minor milk fat components are added. This review focuses on different methods of detecting these counterfeit substances in milk using techniques such as DSC, RP-HPLC, LC-GC, HPTLC, immunoassays: CE, ELISA, FAMPST, FTIR, NIR spectroscopy, PAGE, IEF, DNA-based. It is focused.

**Method:** This study used milk, dairy products, and counterfeits keywords to find related articles from scientific databases, including Science Direct, Scopus, and PubMed.

**Result:** In this review, an attempt has been made to provide a clear understanding of the most appropriate methods for determining the various sources of fraud. The best methods mentioned in valid references indicate that immunoassay-based methods (65%) have been successful. Time-consuming methods based on chromatography are placed in the second category.

**Conclusion:** Detecting milk fraud is complicated because the indicators of milk fraud can be quantitatively different due to various biological, climatic, and agricultural factors. In addition, processing can significantly change the composition of minor components, which can be

problematic in setting specification ranges for different inspection methods.

**Keywords:** Milk, Fraud, Detection

## **Artificial intelligence technology in food safety**

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Artificial Intelligence (AI) has emerged as a promising solution in realm of food safety. With the increasing concern over foodborne illnesses, AI technologies have shown significant potential in enhancing food safety practices. This abstract provides an overview of the application of AI in the context of food safety, highlighting its challenges, and future prospects.

AI-based systems offer several benefits in improving food safety standards. Machine learning algorithms can analyse vast amounts of data, including historical records, sensory data, and real-time sensor measurements, to detect patterns that indicate potential food safety hazards. These algorithms can identify correlations between certain attributes and foodborne outbreaks, helping to prioritize interventions and prevent future incidents. AI can also facilitate the early detection of pathogens by analysing microbial growth



patterns. Additionally, AI-powered robotic systems can automate tasks such as sorting, packaging, and quality control and minimizing human error.

Despite these advantages, one of the key challenges is the availability and accessibility of high-quality data. Therefore, collaborations between food safety regulatory bodies, research institutions, and food businesses are crucial to collect, share, and standardize data for AI analysis. Looking forward, the integration of AI with emerging technologies such as the Internet of Things and blockchain can provide a comprehensive and traceable view of the entire food supply chain.

In conclusion, AI can aid in the detection and prevention of foodborne illnesses, automate food processing tasks, and improve the overall efficiency of food safety management

**Keywords:** “Artificial intelligence”, “blockchain” and “food safety”.

## Dietary considerations after cholecystectomy.

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**Introduction:** Gallstones have the highest among digestive diseases. This disease has a prevalence of 3.2 to 15.6% in Asia. Cholecystectomy is the definitive treatment for symptomatic gallstones. After cholecystectomy, patients have reported

post-cholecystectomy syndromes such as abdominal symptoms, indigestion, and diarrhea. If there is insufficient evidence, a low-fat diet is recommended after cholecystectomy. The aim of this review is to investigate dietary considerations after cholecystectomy.

**Method and material:** A systematic search of PubMed, google scholar, web of science, Scopus from 2013 to 2023 was conducted. the search strategy included the keywords and MeSH terms: “gallstone” ‘“cholelithiasis” “diarrhea”, “diarrhoe”, “Indigestion”, “dyspepsia”, “stomach pain”, “constipation”, “heartburn” ‘“acid regurgitation” “abdominal pain”, “bloating”, “gastrointestinal” “symptom”, “nausea”, “vomiting”, “flatulence”, “post-cholecystectomy syndrome”, “diet”, “nutrition therapy”, “medical nutrition therapy”, “cholecystectomy”, “hypolipidemic diet.”

**Results:** The results of studies are different, but most of them confirm that a low-fat diet is not effective in improving and preventing symptoms after cholecystectomy in the long term, and only in a short period of time in order to prevent diarrhea, especially in people ≤45 years of age, of male sex, and had a high preoperative tendency for diarrhea.

**Conclusion:** According to the results of the articles, follow a low-fat diet for at least 1 week after cholecystectomy is advised, especially in people high preoperative tendency for diarrhea, Sufficient evidence was not found in favor of continuing a low-





fat diet after surgery in reducing complications after laparoscopic cholecystectomy.

## Stakeholders and social network analysis to reduce vitamin A deficiency among children 15 - 23 months in Iran

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**Introduction:** Within a decade, Iran's prevalence of vitamin A deficiency (VAD) among children 15 to 23 months increased from 0.5% to 18.3%. The commitment, ownership, and accountability of all stakeholders are necessary for successful management of public health programs that aim to manage VAD. This research identified and prioritized, by applying social network

analysis, the main stakeholders to manage VAD in Iran.

**Methods:** This is qualitative research through content analysis of the relevant documents and semi-structured, in-depth interviews with relevant experts. We used the policymaker software for stakeholders' social network analysis. VAD risk factors and stakeholder network analysis were conducted using Gephi software version 0.9.2.

**Results:** We identified 45 stakeholders, 71% public, 4.5% international, 11.11% private, and 13% from civil society. The Ministry of Health and Medical Education (MOHME) revealed with the most direct influence on VAD policies, while 62% and 38% of stakeholders were related to executive and education matters, respectively.

The computed network metrics reported degree, closeness, betweenness, and eigenvector centralities, with the highest degree value allocated to the Secretariat of the Supreme Council for Health and Food Security, UNICEF, FAO, and Deputies of Public Health across the universities of medical sciences.

**Discussion & Conclusion:** The MOHME is the most important stakeholder in VAD policy. In addition to legislation, the MoHME plays a key role in collaboration with other stakeholders. Our study identified certain powerful and influential stakeholders with low or medium level of interest in the policy processes. Senior managers and policymakers can benefit from raising



awareness through deliberate and effective tactics, ongoing negotiations, improving advocacy, and promoting awareness.

## Dietary acid load in end-stage renal disease

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In patients with end-stage renal disease (ESRD), metabolic acidosis causes body disorders associated with increased mortality. Treatment of metabolic acidosis in patients on hemodialysis involves adding bicarbonate to dialysate to treat metabolic acidosis. However, adding bicarbonate rapidly and excessively to correct acidosis during hemodialysis, is potentially life-threatening. In order to prevent such complications, the serum bicarbonate level prior to dialysis should be maintained at more than 22 mEq/L, based on the recommendation by the Kidney Disease Outcomes Quality Initiative (KDOQI). The quantity of acid produced in the body can be affected by diet and nutrients. Among the foods that produce non-volatile acids in the blood are animal proteins and grains that contain sulfur-containing amino acids. Alkali (HCO<sub>3</sub>) is also produced in the body by vegetables and fruits, that are usually high in potassium. Therefore, "Dietary Acid Load" (DAL) has been suggested to determine a

food's ability to produce acid in the body, which can be assessed based on food intake using two indices: Potential Renal Acid Load (PRAL) and Net Endogenous Acid Production (NEAP). In fact, identifying the association between dietary factors and acidosis in hemodialysis patients contributes to maintaining pre-dialysis serum bicarbonate levels above 22 mEq/L, thereby preventing the complications of rapidly correcting their acidosis on dialysis. In this review we aimed to describe the relationship between DAL and pre-dialysis serum bicarbonate levels in patients under hemodialysis.

**Keywords:** Dietary acid load, Pre-dialysis serum bicarbonate, End-stage renal disease, hemodialysis

## Dietary supplementation of garlic (*Allium sativum*) in patients with active rheumatoid arthritis: Effect on inflammatory biomarkers, fatigue, and clinical symptoms

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**Introduction:** Garlic extract has been shown to enhance antioxidant and anti-inflammation activities in humans. The present study investigated the effects of garlic supplementation on serum concentration of some inflammatory biomarkers, clinical symptoms, and fatigue in women with active rheumatoid arthritis.

**Methods:** In this randomized, double-blind, placebo-controlled trial study, 70 women with RA were randomly divided into two groups: The intervention group received 1,000 mg of garlic daily, and the control group received a placebo for 8 weeks. At baseline and the end of the study, clinical symptoms, fatigue, serum level of C-reactive protein (CRP), tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), and erythrocyte sedimentation rate (ESR) were assessed.

**Results:** After the intervention, significant decreases in serum levels of CRP ( $p = 0.018$ ) and TNF- $\alpha$  ( $p < 0.001$ ) were observed in the garlic group as compared with the placebo group. On the other hand, pain intensity, tender joint count, disease activity score (DAS-28), and fatigue were significantly decreased in the intervention group compared with the control group ( $p < 0.001$ ; for all). The Swollen joint count was significantly decreased in the garlic group.

**Conclusion:** Because of improving inflammatory mediators and clinical symptoms garlic supplementation can be considered a potential adjunct treatment in patients with RA. However, further studies with a more significant duration are needed.

**Keywords:** clinical symptoms, fatigue, garlic, inflammatory biomarkers, rheumatoid arthritis

## Evaluating the effect of consuming probiotics containing lactic acid microorganisms on colorectal cancer patients

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**Introduction:** Lactic acid has a direct impact on the extensive proliferation of cancer cells in colorectal cancer (CRC). The beneficial effects of probiotics on different diseases are well-established. In this systematic review, we aimed to examine the effect of lactic acid microorganisms' probiotics in CRC patients.

**Methods and materials:** All original studies from online databases, including PubMed, Science Direct, and Medline, were included.

**Results:** The findings suggest that LDH genes need to be suppressed to inhibit fermentative glycolysis, which produces lactic acid as a by-product. This inhibition



also affects the growth and multiplication of CRC cells. The objective is to observe if silencing LDH genes in LAB can suppress the expression of LDHA, LDHB, and LDHL proteins, thereby modulating the development of CRC cells. On the other hand, in vitro experiments have demonstrated that certain strains of Lactobacillus, which are types of probiotics, have anti-mutagenic properties. These strains can exhibit anti-carcinogenic effects by decreasing the activity of the glucuronidase enzyme. Therefore, while probiotics are beneficial for intestinal health and help to maintain its well-being, the use of probiotics for colon cancer patients must be under the supervision and prescription of a doctor, considering the information mentioned in this discussion.

**Conclusion:** Based on the research conducted on the effect of lactic acid bacteria on the growth and proliferation of colon cancer cells, it is strongly recommended to consume probiotic foods containing this microorganism with caution.

**Keywords:** probiotics, lactic acid, colorectal cancer (CRC)

## **The assessment of fasting effects on the reaction of cancer and normal cells to chemotherapy**

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**Introduction:** Dietary restriction, known as fasting, involves restricting food consumption for 24–120 hours, followed by the refeeding course. Based on observations, fasting modulates metabolite levels that affect apoptosis. Hence, the combination of fasting and chemotherapy might provide a cooperative effect on cancer cell death while increasing normal cell resistance.

**Methods and materials:** We performed a thorough search using online databases, such as Science Direct, PubMed, and Medline.

**Results:** The analyses in normal leukocytosis revealed that after 48 and 72 hours of fasting the DNA damage was decreased during the chemotherapy course. In vitro studies proposed the role of fasting against neurovascular damage via the activation of Sirt3, reducing the suppression of anti-apoptotic factors, namely P53. Chemotherapy drugs in a nutrient-insufficient environment increase the susceptibility of breast cancer cells to apoptosis. Meanwhile, the cell cycle arrest caused by the fasting preserves normal cells against apoptosis induced by chemotherapy medicines. Fasting also modulated the upregulation of the Nrf-2 pathway, enhancing the detoxification of ROS in normal tissues, thereby restricting the chemotherapy-induced damage. Furthermore, cancerous cells have a metabolic activity primarily based on



glycolysis. Thus, glucose deprivation makes cancerous cells more susceptible to the harmful effects of chemotherapeutic medicines and increases apoptosis.

**Conclusion:** According to multiple studies, fasting can be practical, and capable of enhancing chemo radiotherapy, inducing an anticancer immune response and reducing carcinogenesis in some patients. Furthermore, a fasting-simulating diet will hopefully enhance the good effects of fasting while decreasing the harmful effects of chronic calorie limitation.

**Keywords:** fasting, cancer, chemotherapy

## Assessment of Dietary Intakes in a Large Population in Iran

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**Introduction:** Monitoring the trends in nutritional assessment is an important key

factor to formulate and redefine policies to reduce the adverse outcomes of vulnerable populations. Therefore, the aim of the present study is to design a short questionnaire in Iran to determine the status of food and nutrient intake indicators.

**Method:** Total 2880 participants were selected from different urban, suburb and rural regions of Iran, based on sex and five age groups. Dietary exposure was assessed using the valid 65-item semi-quantitative Food Frequency Questionnaire (FFQ) by phone.

**Results:** Energy and fat intake were above the RDA in the children and adolescents while, vitamin A, vitamin D, zinc, and calcium were lower than the DRI in this group. In adults, the mean energy intake was in the range of the RDA while, vitamin D and vitamin A, zinc, calcium, and iron intake were lower than the DRI. In addition, vegetables, dairy products and legume intakes were less than the recommendation of the food pyramid). The mean intakes of meats were less than recommendation of the food guide pyramid. All subjects' intake of sugar was less than 10% except for children groups. The mean intake of rice, fruit and sugar in all age groups was higher than the Iranian desirable food basket while bread, potato and dairy product intakes in all age groups were less.

**Conclusion:** In order to improve food and nutrition quality, food and nutrition authorities should implement reasonable taxes on unhealthy foods and beverages and



provide subsidies for fruits, vegetables and dairy products.

**Keywords:** Nutrition, Diet, Iran, Nutrients

## The relationship of gonadotropin-releasing hormone agonists and anthropometric indices of girls with premature idiopathic central precocious puberty

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**Introduction:** This study aims to determine the effect of different GnRH agonist brands on body mass index (BMI), weight, and height in patients referred to the pediatric endocrinology clinic of Akbar Hospital.

**Methods:** In this cohort study, 80 girls aged 5-8 years diagnosed with precocious puberty cases were included according to

the Tanner staging and at the second puberty stage. The patients were classified into three groups of GnRH agonists, A, B, and C, receiving Diphereline, Microrelin, and Variopeptyl, respectively. Height, weight, and BMI were calculated every three months.

**Results:** In group A, the weight ( $P=0.007$ ) and BMI ( $P<0.001$ ) percentiles and weight ( $P=0.024$ ) and height ( $P=0.021$ ) z-scores were significantly increased compared to the baseline. In group B, the weight ( $P=0.024$ ) and height ( $P=0.020$ ) z-scores also increased at the end of the study. However, the changes in group C were not significant. In addition, the weight, height, and BMI z-scores were significantly increased in normal-weight subjects compared to overweight and obese participants. The results of comparing the changes in the weight and height between the three-drug groups showed no significant difference ( $P=0.142$  and  $0.161$ , respectively).

**Conclusion:** The findings of this study revealed that GnRH agonists could increase height, weight, and BMI; however, this increase was not significant for one type of GnRH agonist. Future prospective long-term follow-up studies are required to elucidate whether GnRH treatment affects final adult weight and height and clarify the difference between various types of GnRH agonists among participants with diverse health statuses.



**Keywords:** Obesity, Body mass index, GnRH agonist, precocious puberty.

## How is Russia-Ukraine conflict affected on global food security?

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This abstract explores the implications of the Ukraine and Russia conflicts on global food security. The ongoing war between two major agricultural powers have leading to severe consequences including:

1. Agricultural production disruption: The conflict has disrupted agricultural production in Ukraine, which is known as the "breadbasket of Europe." Ukraine has extensive fertile lands and is a major exporter of grains, such as wheat, corn, and barley.

2. Trade restrictions: Restricting trade has hindered the flow of food products, impacting food security. Ukraine has been forced to find new markets for its agricultural goods, while Russia has sought alternative food sources.

3. Dependency on imports: Both Ukraine and Russia have become more dependent on food imports due to the conflict. Russia, on the other hand, has become more reliant on imported food commodities, especially since

it imposed its own retaliatory sanctions on certain western agricultural products.

4. Displacement and humanitarian crisis: The conflict has caused a massive displacement of people, particularly in eastern Ukraine. This has led to a humanitarian crisis, with many internally displaced persons struggling to access food and basic necessities.

5. Rising food prices: The disruptions in agricultural production, trade restrictions, and currency devaluations have contributed to inflation, making food less affordable for many people, especially those with lower incomes.

As the war continues, there is a growing likelihood that food shortages, particularly of grains and vegetable oils, will become acute, leading more countries to turn to restrictions on trade.

**Keywords:** conflicts, food security, Russia, Ukraine

## Importance of nutrition in fertility and infertility

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A lot of evidence shows that there is a relationship between diet and women's



reproductive health. Rising infertility rates have given researchers a growing interest in identifying lifestyle and environmental factors that may affect fertility. Nutrition is one of the most important factors affecting reproductive health from the age of puberty and even before that, which has received less attention.

Traditional views focused on the effect of nutrients or foods on fertility, but due to the lack of success of single-nutrient intervention studies, it is believed that dietary patterns of a multidimensional nature provide researchers with a more comprehensive concept. Dietary patterns examine the composition, type and amount of food consumed in the diet. The potential effect of certain dietary patterns, such as the Mediterranean and Western diets, on infertility has been studied. Current studies show that the Dietary Approaches to Stop Hypertension (DASH) diet has a positive effect on fertility. This diet is rich in whole grains, vegetables, fruits and low-fat dairy products, while limiting intake of saturated fat, cholesterol and sodium. It can increase the chances of fertility if formulated as a balanced and varied diet. Even with the combined use of supplements, especially curcumin as natural plant polyphenols, an additive effect can be observed. Despite major advances in the field of dietary patterns and fertility, key research gaps remain, such as understanding the role of dietary patterns in genetic interactions and

individual responses to diet, and methodological issues affecting diet.

**Keywords:** Nutrition, Fertility, Dietary pattern

## **Legal aspects in nutrition program according of Iran law up to 2023 year**

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**Objective:** nowadays, complaints against the medical staff due to Negligence about treatment of patient who suffer from obesity is increasing.

**Methods:** The definition of the above items is in brief: Omission: Nonperformance of an act which scientifically is expected to be done. carelessness: Performance of an action which scientifically should not be done. Lack of skill: Includes cases in which the physician does not have the scientific skill for a certain work. Failure to comply with government regulations.

**Results:** Examples of the four listed in Materials and Methods above, includes the following: 1-in a skinny patient with pain in pelvic and history of falling not request x ray before starting glucocorticoide. 2- Prescribing zinc sulfate for a patient who has high level of zinc in blood sample 3- Incorrect Injection of vitD (IV) in patient. 4-:





Not obtaining informed consent in necessary cases in an obese person.

**Conclusion:** Due to the special conditions of patient who need to starting a new diet, doctors should be more careful in examining and taking history so as not to make mistakes in the diagnosis and treatment of them.

**Keywords:** nutrition program, omission, carelessness, Lack of skill, government regulations

### **Meat consumption and the risk of cardiovascular and all-cause mortality: Isfahan Cohort Study**

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**Introduction:** The association between red and processed meat with cardiovascular disease (CVD) and all-cause mortality is still controversial. This study aims to explore the association between red and/or processed meat and cardiovascular and all-cause mortality in Iranians.

**Method:** This longitudinal cohort study (ICS) was conducted on 5432 individuals aged  $\geq 35$  y in 2001, and followed until 2015. Dietary intake was assessed using a validated, 48-item food frequency questionnaire. Hazard ratios (HRs) for the CVD and all-cause mortality across the

tertiles of red and processed meat were measured.

**Result:** A total of 179 CVD deaths and 483 all-cause deaths were recorded. After adjustment for potential confounders, higher red meat consumption, either alone or in combination with processed meat increased CVD risk by 58% (95% CI: 1.06-2.35) and 47% (95% CI: 1.02-2.08), respectively. Red meat alone and in combination with processed meat were not associated with all-cause mortality. Similarly, no significant association was found for processed meat either with all-cause or CVD-mortality.

**Conclusion:** Higher intake of red meat and red plus processed meat is positively linked with CVD, but not all-cause, mortality. No association was found for processed meat and either CVD or all-cause mortality.

**Keywords:** Meat, Cardiovascular disease, Mortality, Cohort study

### **Metabolic engineering of microorganisms and microbial proteins production for the future of food security**

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The common definition of food security from FAO is as follows: "Food security exists when all people, at all times, have access to



sufficient, safe and nutritious food sources to meet their nutritional needs for an active and healthy life". Due to the rapid growth of the world's population and the increase in global demand for food supply, as well as the reduction of natural resources, challenges arise that require the discovery of new, innovative and unconventional protein sources to strengthen the human diet. One of the most promising ways to achieve cheap and sustainable approaches to improve productivity is microbial resources. For hundreds of years, microorganisms, as cellular factories, have been widely used in the formulation and production of a variety of nutritious and spoilage-resistant foods. Among the dietary protein supplements is the production of SCP (Single Cell Protein), which are a healthy source of vitamins, carotenes and carbohydrates. Today, metabolic engineering is defined as the purposeful and determined change of the metabolic pathways of microorganisms. This method can improve the performance of microorganisms in the direction of protein production, host selection, metabolic pathway reconstruction, increasing tolerance, metabolic flux and optimization of processes and increasing biomass scale. Studies have shown that the metabolic engineering of microorganisms by promoting the biotechnological production of microbial proteins will be a sustainable source for meeting the nutritional needs of humans in the future. It is a strategic method in ensuring food security through

production and improved storage of food products and protein supplements.

**Keywords:** Food Security, Metabolic Engineering, Microorganism, Food Supplement

## **Nutrigenomic Studies and Investigating the Effect of Whey Protein Supplement on Pro-Myogenic Factor in Skeletal Muscles**

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**Introduction:** Nutrigenomics is an approach that examines genomic information and genetic differences of individuals in relation to nutrition. Whey protein is a protein source for increasing muscle mass and is known as the main factor in hypertrophy. Also, exercise increases muscle mass through different molecular pathways. Therefore, investigating the relationship between the effect of exercise and protein diet on the expression of a number of pro-myogenic genes in response to exercise in skeletal muscles is the aim of this study.

**Materials and methods:** In this study, 20 male mice were divided into four groups:



placebo, treatment with whey protein supplement, exercise, and simultaneous treatment with supplement and exercise. Then the muscle tissue sample was taken and the expression of FNDC5 gene in muscle and its correlation with exercise was evaluated.

**Findings:** Studies showed that gene-diet interactions affect the biomarkers related to sports performance. It was found that the consumption of whey protein supplement had a positive effect on the expression of FNDC5 gene and the correlation of irisin levels caused by gene expression and endurance exercise was confirmed.

**Conclusion:** Since skeletal muscle, as an indicator for changing metabolism, capacity and volume, has a great impact on the metabolic homeostasis of the whole body, in response to various changes, including exercise and dietary interventions, it finds significant adaptation. Therefore, cellular adaptation to exercise, protein supplementation and dietary manipulation can affect on skeletal muscle gene expression. This review explains the effective role of genetics in how athletes react to foods and nutrients.

**Keywords:** Nutrigenomics, Whey Protein, Supplementation, Gene Expression, Skeletal Muscle.

## Navigating Health through a Mobile Application: Integrating artificial intelligence and Traditional Chinese Medicine for Personalized Nutrition

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**Introduction:** Traditional Chinese medicine (TCM) with more than 3,000 years of history has many approaches to treating diseases with nutritional principles. The aim of this study is to provide personalized nutrition plans based on TCM principles.

**Method:** The study proposes a diagnostic process in which patients input their health data through a comprehensive questionnaire and upload photos of their tongue. The AI algorithm then analyzes the questionnaire responses and tongue images, mapping them against Chinese medicine principles to identify imbalances and disharmonies. Based on this analysis, personalized nutrition plans are generated, including food choices, cooking methods, meal timings, and herbal remedies in the context of TCM.

**Results:** Integration of TCM with AI in a mobile app can provide personalized nutrition plans based on TCM principles. The inclusion of personalized tongue assessment



enhances holistic wellness by addressing meridian imbalances.

**Conclusion:** Integration of TCM principles with AI-driven nutrition in this mobile app is unique due to its personalized tongue assessment. This approach goes beyond previous methods by addressing meridian imbalances and enhancing holistic wellness. Additionally, the financial advantage of this innovation makes personalized healthcare more accessible to a wider population.

**Keywords:** nutritional app, traditional Chinese medicine, smartphone application, artificial intelligence

## Ochratoxin And Its Reduction by Using Probiotics: A Review Study

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Today, people are exposed to various environmental and chemical pollutants from industry and agriculture. Food contamination, such as persistent organic pollutants, heavy metals, and mycotoxins, is a serious concern for food safety worldwide, with economic and public health consequences, especially in developing countries. Eating healthy food is a fundamental human right throughout life. Food contamination is a primary concern

worldwide due to its importance in human life. Recently, many health problems caused by toxic metabolites of fungi in contaminated food have been identified. Many agricultural products, especially cereals, are exposed to fungal contamination in the field and during storage. These fungi produce secondary toxic metabolites called mycotoxins. One of the essential types of mycotoxins is a compound called ochratoxin, produced by *Aspergillus* and *Penicillium* fungi. This mycotoxin has been reported in various foods, including cereals, coffee, dried fruits, grape juice, and processed and dried meat products. Ochratoxin has teratogenic, neurotoxic and nephrotoxic properties, which causes chronic complications such as Balkan endemic nephropathy, urinary tract tumors and kidney fibrosis. There are new and advanced methods for measuring mycotoxins in food, which include biological-immunological, and chromatography-based methods, as well as polymerase chain reactions. Currently, a promising approach to reducing the risk associated with ochratoxin in food is biological detoxification performed by probiotic strains and their enzymes. Probiotics are live microbial food supplements that benefit consumers' health by maintaining or improving the intestinal microbial balance. Many studies have confirmed that probiotics are practical, feasible, and inexpensive in preventing ochratoxin complications and reducing toxicity.



**Keywords:** Ochratoxin, Probiotics, Safety, Health, Food

## The Association between dash diet and quality of life: a randomized controlled clinical trial

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**BACKGROUNDS:** Prior research has shown a connection between both physiological and psychological disorders and quality of life. However, limited research has been conducted on the relationship between quality of life and Dietary Approaches to Stop Hypertension (dash diet). Therefore, this study aims to investigate how the DASH diet affects the quality of life of individuals.

**METHODS:** The current a randomized controlled clinical trial study was conducted on 563 Iranian students and their families aged 18 and above over 3 months. The participants were randomly divided into two groups, the DASH diet group and the control diet group. Mental (or psychological) health (measured with PHQ questionnaire) and quality of life (measured with SF12-v2 questionnaire) were evaluated at the baseline and after 3 months. Logistic

regression was applied to comparison between two groups.

**RESULTS:** Among the participants, the prevalence of quality-of-life score was 44.8%. There was no significant difference in PHQ scores and sf12-v2 score between the DASH diet and control groups (P-value: 0.23, P-value:0.16). Also, after adjusting for confounding factors (age, sex, baseline value, body mass index, and physical activity), there was still no significant difference found between the two groups (P-value: 0.77, P-value:0.14)

**CONCLUSIONS:** The dietary choices can't have a significant impact on overall well-being and Quality of life in 3 months. Further studies, particularly Long-term studies, are needed to confirm this relationship

**Keywords:** DASH diet, quality of life, PHQ

## The validity of diet advice by ChatGPT: For real cases with food disorders

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**Introduction:** Artificial intelligence tools, like ChatGPT, are the trending subject of



applications in contexts such as health care. This study evaluates the Correctness, and Clarity of the answers provided by ChatGPT on the topic of food diet.

**Materials and methods:** This study is a quantitative and practical type, which was designed by a researcher-made questionnaire. Then two real cases were given to ChatGPT to receive the diet and the outputs were sent to 5 nutritionists for verification. After filling the questionnaire, the data was analyzed by SPSS.

**Result:** According to this research, technologies such as artificial intelligence can help to design a diet, but this tool alone cannot play the role of a nutrition consultant because the diets provided by it have fundamental flaws that can be problematic for people.

**Conclusion:** More research is needed to determine the validity of ChatGPT. However, based on the research done so far, it is not currently recommended to rely solely on ChatGPT for diet therapy.

**Keywords:** ChatGPT, nutrition's, validity, artificial intelligence, Food disorders, diet

## **Effect of vitamin D supplementation on infertility and spermogram patterns in men: a systematic review of clinical trials**

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**Introduction:** At the global level, infertility has become an important problem. 40 to 50 percent of infertility cases are caused by male factors. Several studies have been conducted on the effect of certain vitamins on infertility and improving the quality of semen. Therefore, the present study was conducted with the aim of the effect of vitamin D supplementation on infertility and spermogram parameters in men: a systematic review of clinical trials.

**Methods:** In this study, articles published in the period 2000-2023 regarding the effect of vitamin D supplementation on infertility and spermogram parameters in men were reviewed in Science of Web, Google Scholar, PubMed, Cochrane library databases using the keywords (((Micronutrients OR Minerals OR Vitamins OR "Vitamin D") AND Men AND (infertility OR infertile))) In order to evaluate the quality of the studies, the Jadad scale was used and the data was analyzed qualitatively.

**Results:** Of the total number of 885 studies, finally 5 clinical trial studies with a sample size of 577 people were examined. 4 studies



confirmed the lack of effect of vitamin D supplementation on spermogram parameters and semen quality, in one study, vitamin D supplementation had no effect on semen volume, sperm count, and normal sperm morphology, but it was effective on sperm motility. In only one study, vitamin D supplementation was effective on spermogram parameters in infertile men.

**Conclusion:** Although the results of the studies are conflicting, most of the studies indicated no effect of vitamin D supplementation on spermogram parameters and semen quality.

**Key words:** Vitamin D, Infertility, Men

### **Association of job status and obesity: IRNOR population**

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**Introduction:** Obesity is one of the main health problems and it has several comorbidities. In Iran the prevalence of obesity is 35.9% and it is rising. We aimed to evaluate the association of job status and obesity in Iranian National Obesity Registry in this study.

**Method:** It was a population based cross-sectional study from Iranian National

Obesity Registry (IRNOR) that it is a web-based obesity registry. Participants were overweight and obese (body mass index  $\geq 25$ ) aged over 18 year. It conducted between 2021 to 2023. According to the body mass index overweight and obesity categories was separated. The job status was in employed, unemployed (students and without any job individuals), housewife and retired categories.

**Result:** Total of 1991 overweight and obese subjects and their job registered in IRNOR. Findings showed that there is a significant correlation between job and BMI categories (overweight and obesity). In the housewife status the risk of  $30 \leq \text{BMI} < 40$  increased by 60% than employed group.

**Conclusion:** We reported that the housewife individuals had higher BMI in IRNOR population. So, it is necessary consideration to the housewife and obesity in healthcare policies.

**Keywords:** IRNOR, obesity registry, job, demographic

### **Nutrition and its role in depressive disorder: a systematic review**

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**Introduction:** To achieve a healthy and peaceful body, a healthy mind is needed, and a healthy mind is not possible without a healthy body. The body cannot be healthy without nutrition. Currently, depression is one of the most common mental illnesses in the world that affects women twice as much as men. The World Health Organization (WHO) estimates that depression will be the second most common disease in the world in 2020, after cardiovascular diseases. Depression is a multifactorial disorder in which genetics and environmental factors such as diet play a role in its etiology and treatment.

**Method:** In this research, related articles in PubMed, Google Scholar, Scopus, Sid, Magiran databases with the keywords of nutrition and depression, from 2011 to today, were comprehensively and accurately examined.

**Results:** After reviewing potentially eligible articles, 15 articles met the inclusion criteria. All included studies were randomized controlled clinical trials or descriptive and prospective studies. Studies have shown that obesity increases depression by 18%. In a study conducted on the relationship between folate, B12, B6 and depression, it was found that among male smokers, low folate intake is associated with depression. Lack of folate in the body is directly related to the ineffectiveness of antidepressants. Also, in women, the relationship between vitamin B12 deficiency and depression has been proven in epidemiological studies.

Research has shown that low intake of selenium, lack of omega-3 fatty acids is associated with an increase in depression and its symptoms in alcohol users. In Islamic medicine, basil leaves have been prescribed for a long time due to its anti-depressant properties. Recently, the opinion of researchers has been drawn to the role of vitamin D in mental and mental health and reducing the symptoms of depression. The best way to absorb vitamin D and deliver it to the body is exposure to sunlight. Citrus fruits contain vitamin C, alpha and beta carotene and folate and are very useful for protecting nerves from damage caused by free radicals, for getting rid of mental pressure, anxiety and insomnia. Other useful foods include sesame seeds, chamomile tea and whole grain breads.

**Conclusion:** It is necessary to make changes in the diet of people who have suffered from mild depression and to use appropriate foods and to have a constant energy reserve to maximize the health of the nervous system throughout the body and cause it to function at an optimal level. Improper diet plays an important role in the development of mental disorders, especially depression. Considering the increasing spread of stress and anxiety in the living environment, the importance of knowing the factors that cause it and the ways to control and treat it is of particular importance. Diet alone may not cure depression, but it can be helpful when combined with treatments prescribed by a doctor.





**Key words:** nutrition, depression, mental disorders, systematic review

## **Prevalence of Malnutrition in the Cancer Patients Admitted to Shahid ghazi Hospital in Tabriz, Iran**

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**Background:** Malnutrition is a common complication in patients with cancer and is associated with a higher rate of morbidity and mortality. It can negatively affect the outcome of treatments. The prevention and management of malnutrition are recognized as the essential element of cancer care.

The aim of this study is to investigate the prevalence of malnutrition in the cancer patients admitted to Shahid ghazi Hospital affiliated to Tabriz University of Medical Sciences, Iran in 2022.

**Methods:** The patient generated-subjective global assessment (PG-SGA) was used for detecting malnutrition in 120 cancer patients, who were selected from the Cancer Research Center of Shahid Ghazi Hospital. Data were analyzed in SPSS version 16.

**Results:** The PG-SGA scores indicated the moderate degree of malnutrition in %23 and severe malnutrition in %61 of patients. Severity of malnutrition was positively correlated with the stage of cancer. Over %40 of patients were experiencing anorexia. During the prior six months, %64 of patients lost weight (1–10 kg).

**Conclusion:** According to the results, high rate of malnutrition observed in the cancer patients receiving active treatment across all the treatment settings based on the PG-SGA scores. The identification of anorexia at an early stage, highlights the importance of obtaining early identification of patients at risk to improve the efficacy of nutritional interventions.

**Key words:** Malnutrition, PG-SGA, anorexia

## **Does the consumption of soy products reduce the risk of gastric cancer?**

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**Introduction:** Gastric cancer (GC) is one of the most common and deadly neoplasms in the world, especially in East Asia. Over a million new cases of GC are diagnosed each year. Many factors increase the risk of GC such as smoking, family history, Helicobacter pylori (H. pylori) infection, GERD, and diet. Soy products are increasingly consumed because of their high



protein content and other benefits. Fermented soybean inclusive miso soup, natto and soybean paste, and non-fermented soybean Contains tofu, soymilk, and bean sprouts. Isoflavones such as genistein are found in high amounts in soy products, especially fermented ones.

**Methods:** We comprehensively searched PubMed, Google Scholar, and Medline databases for trials, case-control, and cohort studies.

**Results:** All the studies confirm that consumption of Soy products especially non-fermented soybeans in higher quantities reduced the risk of GC from 15% to 57% (overall RR: 0.65, CI: 0.48-0.91) in different studies also soy intake of more than 3 to 4 times a week reduces the risk of GC by 43%. No significant relationship was found between fermented soybean consumption and sexuality with GC.

**Conclusions:** Soy intake especially non-fermented, could significantly reduce the risk of GC. Isoflavones have anti-inflammatory and antioxidant effects and strengthen immunological functions. Genistein decreases GC cell tumorigenicity, pro-inflammatory mediators, and gastric mucosal apoptosis. Although the abundance of isoflavonoids is higher in fermented soybeans high amounts of salt increase gastritis, Helicobacter pylori colonization in the stomach, and endogenous N-nitroso compound formation.

**Keywords:** Soybeans, Gastric Cancer, Isoflavones, Apoptosis, Salt

## The Association of micro- and macro-nutrient patterns on the risk of arthritis rheumatoid disease in newly diagnosed cases: a case-control study

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**Introduction:** Rheumatoid arthritis is a disease that causes inflammation in joints. Nutrition is a key risk factor; however, no study has assessed micronutrient intake patterns. This study aims to identify these patterns and develop an optimal diet for clinical use.

**Methods:** A cross-sectional analysis was performed using data from 50 patients with newly diagnosed RA and 100 healthy individuals living in Mashhad, Iran. The individuals' dietary intake was evaluated using a food frequency questionnaire (FFQ). During this study, all the data were reanalyzed with reference to the 2021 USDA



database, and the intake of 138 macro and micronutrients was determined.

**Results:** Five nutrient patterns were identified: 1. Low inflammatory, low fat, high carbohydrate, high fiber with healthy eating indexes; 2. High protein, high fat, low carbohydrate with quality protein; 3. Low protein, low milk products; 4. High saturated fat; 5. Based on trans-fat and cholesterol. There was a significantly lower OR of RA in T2 (OR(95%CI)= 0.14(0.05-0.35)) and T3 (OR(95%CI)= 0.14(0.05-0.35)) of pattern 1 and T2 (OR(95%CI)= 0.269(0.114-0.632)) and T3 (OR(95%CI)= 0.24(0.101-0.574)) pattern 2 in all models and adjustments. It was while a pattern of low protein and milk products was (OR (95%CI=3.431)(1.461-8.057)) higher risk of RA.

**Conclusion:** Our findings show greater adherence to diets low in DII scores, fat, and high in carbohydrates and fiber may associate with lower odds of having RA. Otherwise, a pattern of low protein and milk products was associated with higher risk of RA in a convenience sample of Iranians.

**Keywords:** Rheumatoid arthritis, Macro-nutrient, Micro -nutrient, Pattern

## **Prevalence of Malnutrition in Cancer Patients Admitted to Shahid Ghazi Hospital in Tabriz, Iran**

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**Introduction:** Malnutrition is a common complication in patients with cancer and is associated with a higher rate of morbidity and mortality. It can negatively affect the outcome of treatments. The prevention and management of malnutrition are recognized as the essential element of cancer care.

The aim of this study is to investigate the prevalence of malnutrition in cancer patients admitted to Shahid Ghazi Hospital affiliated with Tabriz University of Medical Sciences, Iran in 2022.

**Methods:** the patient generated-subjective global assessment (PG-SGA) was used for detecting malnutrition in 120 cancer patients, who were selected from the Cancer Research Center of Shahid Ghazi Hospital. Data were analyzed in SPSS version 16.

**Results:** The PG-SGA scores indicated a moderate degree of malnutrition in 23% and severe malnutrition in 61% of patients. The severity of malnutrition was positively correlated with the stage of cancer. Over 40% of patients were experiencing anorexia. During the prior six months, 64% of patients lost weight (1–10 kg).

**Conclusions:** According to the results, a high rate of malnutrition was observed in the cancer patients receiving active treatment across all the treatment settings based on the PG-SGA scores. The identification of anorexia at an early stage highlights the



importance of obtaining early identification of patients at risk to improve the efficacy of nutritional interventions.

**Keywords:** Malnutrition, PG-SGA, anorexia

## **The effect of Covid-19 on food safety and food supply and demand**

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**Introduction:** The COVID-19 pandemic has had a significant impact on food safety and the supply and demand of food worldwide. Ensuring a stable food supply chain is crucial in providing food safety to people globally. Improving the efficiency of the food supply chain is recognized as an essential tool for increasing food safety and reducing pressure on natural resources.

Since the beginning of 2020, the COVID-19 disease has affected food safety. The prevalence of the disease has caused an economic threat to food safety at the global level, resulting in quarantine measures, economic decline, restrictions on food trade, and increased food inflation. While some studies have attempted to examine the issue of food insecurity caused by this disease at the household and community level, there is a limited number of studies conducted at the macroeconomic level, and their results may be subject to change.

**Methods:** In this review study, we identify and rank different aspects of households' vulnerability to food insecurity, analyze the potential effects of the COVID-19 pandemic on the economic activities of food processing due to supply and demand shocks, and investigate the impact on food processing through an experimental study of the relationship between COVID-19 and the food system at the stages of production, consumption, and waste disposal.

**Results:** The approach presented in this paper helps create a framework that equips policymakers with up-to-date estimates of the consequences of the health crisis in terms of economic parameters related to food availability and access to raw materials in food-insecure communities.

**Conclusions:** Overall, improving the efficiency of the food supply chain is crucial in ensuring food security during and after the COVID-19 pandemic.

## **The effect of food policies implemented on patients with covid-19, hospitalized in Imam Reza Hospital in Tabriz, Iran**

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**Introduction:** COVID-19 is an epidemic viral disease with a high transmission rate. Some people, due to multiple medical injuries, cannot be treated at home and are admitted to the hospital.

**Aims:** This study was conducted with the aim of investigating the effect of food policies applied on patients hospitalized in Imam Reza Hospital, Tabriz, Iran.

**Methods:** In this study, 100 patients with COVID-19 who were able to receive oral nutrition were selected and these people were divided into two groups of 50 people. Frey characteristics, appetite, anthropometric characteristics, and biochemical indices were taken from both groups through a questionnaire. The following nutritional policies were implemented for the first group for one month: serving natural fruit juice twice a day, serving soup as an appetizer at lunch and dinner, serving healthy snacks including simple cake and fruit, and serving 500 ml water every three meals. For the second group, only the usual hospital food was served. One month after the implementation of the aforementioned policies, the following two variables were examined: improvement in appetite of patients and length of hospitalization.

**Results:** The obtained results showed that the application of nutritional policies in the first group compared to the second group,

increased the amount of appetite by %21 and reduced the duration of hospitalization by %11.

**Conclusions:** Results showed that Covid19 is one of the diseases in which nutrition plays an important role in its treatment process and it is necessary to implement approved nutritional policies in hospitals. Because in addition to the effect of these policies in reducing the length of hospitalization, it is also economical for hospitals.

**Keywords:** food policies, Covid19, hospitalization

## Different types of ketogenic diet used in epilepsy patients

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**Introduction:** Epilepsy is a neurological disorder that affects millions of people worldwide. One of the treatment options for epilepsy is the ketogenic diet, which has been shown to reduce the frequency and severity of seizures in many patients. Therefore, the current study was designed to review the different types of ketogenic diets used in epilepsy patients.

**Methods:** The present study was the result of a systematic review by searching the international and national databases of



PubMed, Scopus, Google Scholar, and SID and with the keywords of ketogenic diet, epilepsy, and their English equivalent during the years 2000 to 2023. After reviewing the search results, finally, 45 articles were used to write this study.

**Results:** The classic ketogenic diet is a strict, high-fat diet that requires careful monitoring and planning. The modified Atkins diet is less restrictive than the classic ketogenic diet and includes more protein and carbohydrates.

The medium-chain triglyceride (MCT) diet, which uses MCT oil as the main fat source, and the low-glycemic index (LGIT) diet, which focuses on low-glycemic index foods, are more tolerable.

**Conclusions:** Different types of ketogenic diets can be used to treat epilepsy, and each has its strengths and weaknesses. Patients should work with their healthcare providers to determine which type of ketogenic diet works best for them. More studies are needed to identify ketogenic diets compatible with Iranian food culture, as well as to fully understand the effectiveness and safety of different types of ketogenic diets for the treatment of epilepsy.

**Keywords:** Ketogenic diet, Epilepsy

## Association between Main Meal Duration and Anxiety

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**Introduction:** Anxiety is one of the most prevalent mental health problems that can severely affect everyday activities. Duration of main meal eating can be related to anxiety. So, this study aimed to explore the association between the duration of main meal eating and anxiety.

**Methods:** In this cross-sectional study, 604 adults between 18 to 65 years old with a mean of 34 years participated from different regions of Iran. The DASS-21 questionnaire was used to assess anxiety. Logistic regression analysis in crude and adjusted models was used to investigate the association between the duration of main meal eating and anxiety.

**Results:** There was no significant association between individuals who ate their meal in more than 30 minutes and those who ate their meal in less than 10 minutes (OR: 0.74; 95%CI: (0.25\_2.16); p: 0.58) in the crude model. The adjusted model also showed no significant relationship after controlling potential confounders factors such as age, BMI, total Kcal, gender, smoking, menstruation, and loss of relatives (OR: 0.76; 95%CI: (0.23\_2.50); P: 0.65).



**Conclusions:** There was no significant link between how long people eat their main meal and anxiety. These findings need to be verified by prospective studies.

**Keywords:** anxiety, eating pattern, eating duration, meal timing

## **Liposomes as delivery systems for food and pharmaceutical components**

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**Introduction:** Liposome technology has found very successful applications in the pharmaceutical and cosmetic industries, but there has been only limited development of this technology in the food industry. Here, it provides the formation, structures and physicochemical properties of liposomes, their main identification methods and their potential applications from the perspective of food technology, and the applications of liposomes in food systems. And using their potential as a carrier for bioactive compounds in foods will be determined.

**Methods:** Phospholipids accumulate in a bilayer structure. The hydrophobic substance is placed inside the membrane.

The input energy (e.g., heat, sound, or mechanical) overcomes the activation energy required to form the liposome, and the bilayer sheet curls around to form a closed spherical structure—a liposome. Some hydrophilic substances in the environment may be trapped inside the blue core of the liposome during formation.

**Result:** Milk phospholipids have been proposed as a suitable alternative to soy and egg sources for the preparation of liposomes. The composition of milk phospholipids is quite unique. While egg phospholipids contain mainly PC, soybean phospholipids are a mixture of PC, PE and PI, milk phospholipids contain PC, PE, SM and PS. The high ratio of PC to SM creates unique properties in bilayers to be.

**Conclusion:** Compared to liposomes prepared with soy phospholipids, liposomes prepared with milk phospholipids show a higher phase transition temperature, lower membrane permeability and a thicker membrane. Also, phospholipid liposomes Milk has better stability with pH and in the presence of salt compared to soy phospholipid liposomes. In addition to their unique physical properties, milk sphingolipids are increasingly recognized as molecules with important biological activities, which make formulations containing milk phospholipids attractive in food-drug and health products has done.



## Application of micro-coating with spray drying and bulking method in food industry

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**Introduction:** Microcoating is a process that preserves the natural and inherent characteristics of the product for a certain period of time. One of the applications of nanotechnology in food processing is the coating of active and nutritious compounds with food coatings of nano and micro size and adding these particles to food. Micro-coating technology has many applications in the food, pharmaceutical, cosmetic and health industries, among its applications in the food industry can be mentioned the use in packaging materials, agriculture and food production processes. Spray drying is one of the oldest processes of microencapsulation of active ingredients and is very common in foods, so that it is often not considered as a microencapsulated material (such as spray-dried flavor).

**Methods:** During this process, a film is formed on the surface of the droplets, which

selectively delays the evaporation of the larger molecules of the active substance when the smaller water molecules evaporate. Spray dryers in the food industry usually spread the incoming material with a high pressure nozzle or a centrifugal wheel (rotating spreader) and in order to minimize excessive heating of the particles, they work with the air flow aligned with the particles. . This will be important if the substance is sensitive to heat or somewhat volatile (such as aromatic substances).

**Result:** Temperature of the droplet surface at any point of the dryer until the droplet surface is wet; It depends on the bubble temperature of the gas phase surrounding the droplets. The bubble temperature in standard spray drying conditions is approximately 50°C. By controlling the inlet air temperature (around 200°C-150°C), the flow rate, the speed and temperature of the input material and the cooling caused by evaporation, it should be ensured that the temperature of the drop will not exceed 100°C.

**Conclusion:** Micro-coated materials release their active ingredient immediately after adding to water (which also depends on the porosity of the particles) in the usual spray drying method. However, the recent emergence of highly hydrophobic or cross-linked carrier materials can provide their gradual removal after dilution in water. This process is useful for applications where the coating should not be separated within food products.





## **Pomegranate juice and sumac for treatment of outpatients with COVID-19: a randomized placebo-controlled trial**

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**Objectives:** The COVID-19 pandemic is a global outbreak of coronavirus. Sumac and pomegranate juice are rich in bioactive compounds, which show numerous beneficial health proprieties, such as antioxidant, anti-inflammatory and antiviral activities. This study is aimed at investigating the effect of a diet based on the

use of sumac and pomegranate juice on the treatment of outpatients with COVID-19.

**Methods:** Patients are randomly divided into intervention and control groups and received a diet containing pomegranate juice and sumac or only standard drugs.

**Results:** Consumption of pomegranate juice and sumac in outpatients with COVID-19, led to a significant decrease in fever, chills, cough, and shortness of breath, compared with outpatients with COVID-19 who received only standard treatment.

**Conclusion:** The use of pomegranate juice and sumac can be efficacious in reducing COVID-19 respiratory symptoms.

## **Excessive Fat-Free Mass Loss Roux-en-Y gastric bypass (RYGB): two years follow-up**

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**Objective:** Roux-en-Y gastric bypass (RYGB) is the most effective approach for achieving sustained weight loss. Fat-free mass (FFM) loss is a concerning aspect of RYGB, but little is known about its time course and the factors that affect it. The aim of this study was to assay the progress of FFM loss up to 24 months after RYGB and determine the prevalence and determinants of excessive FFM loss.

**Materials and Methods:** In this longitudinal study, data were collected for up to 2 years RYGB during follow-up. For analysis of body composition, Bioelectrical impedance analysis was performed preoperatively, 6- and 24-months post-surgery. Changes in anthropometric data were assessed by mixed model analysis. Data were analyzed by using SPSS 12.0. The pair-t-test was used to compare paired data before and after surgery.

**Results:** The total cohort consisted of 54 patients (83% females) with an age of  $43.5 \pm 11.1$  years and a preoperative BMI of  $45.2 \pm 6.1$  kg/m<sup>2</sup>. FFM reductions of  $9.3 \pm 6.4$  kg within 2 years post-surgery. The highest rates of FFM loss were found at 6 months post-surgery, and no significant changes occurred up to 24 months post-surgery. Based on the cutoff value of 20%, excessive FFM loss was found in 11% of patients at 24 months post-surgery. Prevalence of excessive FFM loss (FFM loss/weight loss (= %FFML/WL)) was  $22.8 \pm 19.7$ , ranging

from -17.14 to 115.20% at 24 months post-surgery,

**Conclusion:** According to our study, FFM is mostly lost within 6 months post-surgery, due to the acute impact of bariatric surgery on body composition. Patients lose a substantial amount of FFM after bariatric surgery, with the highest rate at 6 months post-surgery.

**Keywords:** Gastric Bypass Surgery, Bariatric Surgery, Fat-free mass, Muscle.

### **Weight Regain Following Roux-en-Y Gastric Bypass (RYGB): two years follow-up**

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**Objective:** The Roux-en-Y gastric bypass (RYGB) surgery is the most effective



approach for achieving excellent excess weight loss that improves or resolves comorbidities. However, some patients experience weight regain. The aim of this study was to assay the rate of weight regain in RYGB patients after 2 years.

**Materials and Methods:** This was a prospective cross-sectional study. Fifty-six consecutive RYGB patients were recruited and divided into weight-regain and weight-stable cohorts. In this prospective cross-sectional study, fifty-four consecutive RYGB patients were recruited, and anthropometric data were collected for up to 2 years of RYGB during follow-up. patients divided into weight-regain and weight-stable. Weight regains was defined as a weight gain of more than 10% of the lowest weight experienced by the patient. Data were analyzed by using SPSS 12.0 for Windows (SPSS Inc., Chicago, IL, USA).

**Results:** The patients' percentage of excess weight loss was 78.1%. Eighteen patients (33.3%) had weight regain. Half of them had a body mass index of more than 30 kg/m<sup>2</sup>. The rate of weight regain was equal between obese (BMI $\geq$ 30) and super obese (BMI $>$ 35) patients (14 patients in 42, versus 4 patients in 12) and there was no significant difference. Also, there was no significant relationship between the rate of weight gain and fat-free mass loss in the first two years

**Conclusion:** According to this study, weight regain is independent of BMI before surgery and it seems that factors other than anthropometric factors are effective on

weight regain and the etiology of weight regain is multifactorial. Multidisciplinary management is imperative.

**Keywords:** Gastric Bypass Surgery, Bariatric Surgery, weight regain, weight loss, excess weight loss.

### **Resting metabolic rate and weight loss after bariatric surgery in Longitudinal study**

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**Objective:** The evidence about resting metabolic rate (RMR) in patients after Roux-en-Y gastric bypass (RYGB) are lacking and little is known about long-term energy expenditure adaptation after bariatric surgery. This study aim to understanding the relationship between body composition



(BC) and energy expenditure that help to successful weight loss after surgery. It has been

**Materials and Methods:** We assessed weight, fat mass (FM), fat-free mass (FFM), by bioelectrical impedance assay, and RMR by indirect calorimetry, in 22 RYGB patients at a mean follow-up of  $22.2 \pm 3.1$  months post-surgery. The RMR value was adjusted per kilogram of weight (RMR/kg). The patients were divided in 3 groups, based on patterns of change in the RMR/kg after surgery: decrease (group 1), remain stable (group 2), increase (group 3).

**Results:** A significant relation between FFM and RMR for both before and after surgery ( $P < .01$ ) was observed. Excess weight loss was 73% and was had a significantly correlation with pre and post-RMR/kg ( $P < .01$ ). Patients with excess weight loss  $> 50\%$  and successful weight loss had higher RMR at the end of study. Patients in group 3 had better weight loss than others.

**Conclusion:** This study suggested that low resting metabolic rate (RMR) could be associated with poor weight loss and FFM is the major key to best weight loss.

**Keywords:** Gastric Bypass Surgery, Bariatric Surgery, resting metabolic rate, weight loss, fat-free mass.

## The Roles of Crocin, Crocetin and Safranal Supplements on Obesity: A Comprehensive Review

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**Introduction:** Obesity is an inflammatory disease and a major health problem with an increasing worldwide prevalence that causes complications. Saffron and active compounds such as Crocin, Crocetin, and Safranal are strong scavengers of free radicals and are inversely related to abdominal obesity, metabolic disorders, and oxidative stress. The present study aimed to identify the role of Crocin, Crocetin, and Safranal supplements on obesity.

**Method:** The present review summarized the role of Crocin, Crocetin, and Safranal supplements on anthropometric indices, biochemical factors, and appetite levels on obesity. PubMed, Scopus databases, and Google Scholar were also searched for publications.

**Result:** The findings of our study showed that saffron bioactive substances had a positive effect on appetite pathways, anthropometric indices, lipid profiles, and blood sugar. Crocin, Crocetin, and Safranal probably regulated food intake and satiety by influencing the synthesis and secretion of signaling peptides in the gastrointestinal tract. Additionally, they inhibited the reuptake of serotonin by affecting the dopamine pathway in the brain, increased glucose absorption, and adjusted the lipid profile by improving insulin sensitivity. Also,



they prevented the absorption of fat and cholesterol and improved the lipid profile.

**Conclusion:** Given the positive effects of Crocin, Crocetin, and Safranal supplements on appetite pathways, biochemical factors, and anthropometric indices, Saffron can be recommended as an adjunctive treatment for obesity control in combination with diet. However, more studies should be carried out to confirm the weight-reducing characteristics of saffron.

**Keywords:** Crocin, Crocetin, Safranal, Obesity  
**Association between Omega-3 Supplement Use and stress levels in a random sample of urban Iranian**

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**Introduction:** Although the role of omega-3 fatty acids is known to be effective in the prevention and treatment of cardiovascular diseases, its role for some disorders is unknown. This study was conducted to determine the association between the

Omega-3 supplements use and the level of stress in an Iranian population.

**Methods:** This cross-sectional study was conducted on a population over 50 years old in Tehran in 2021. The sample size included 1015 people, whose information was collected randomly by random digit dialing method. The use or non-use of Omega-3 supplements during the last 5 years were evaluated. The stress level was measured with the 4-item Perceived Stress Scale (PSS). The score obtained from the questionnaire is between 0 and 16 and the higher score indicates a higher stress level. Multiple Linear Regression with adjustment for other variables was used. Stata software version 12 was used for analysis.

**Results:** In total, 22.66% of the participants reported taking Omega-3 supplements. The average stress level score was 5.42 with a standard deviation of 2.47. The results of multiple linear regression showed that there is a significant and inverse association between the stress level and the consumption of Omega-3 supplements, so that a lower stress score was observed in people who had a history of omega-3 consumption (P-value= 0.04).

**Conclusion:** The present findings showed that taking Omega-3 supplements is related to reducing stress levels. Biological studies are needed to understand the mechanisms through which stress reduction occurs.

**Keywords:** Omega-3 fatty acid, supplement, stress levels, random digit dialing



## Investigating the nutritional status of adolescent girls in Khorram Abad in 1402

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**Background:** Adolescence is a transitional stage of physical and psychological development that generally occurs during the period from puberty to adulthood. During this stage, there is a significant increase in growth compared to childhood, which requires special nutritional needs. One of the public health concerns is the eating habits of teenagers. There is a direct relationship between behavior and lifestyle during adolescence and the occurrence of obesity and the risk factors of chronic non-communicable diseases.

**Methods:** In this cross-sectional study, 468 female adolescents aged 13-19 years were selected randomly with multistage sampling from the north, center and south areas of Khoramabad city in 2023. A food frequency questionnaire consisting of 168 items was used. Trained interviewers collected data using a two-part questionnaire that recorded demographic characteristics such as age, family income, and school type. One sample t-test was used to compare the standards

**Findings:** 269(57/5%) of girls were in junior high school and 199(42.5%) of them were in senior high school. (23.29%) of students studied in privet schools and also (76.71%) of them studied in public schools. The family income was categorized as low, average, and high. 9.29% of families had low income, 82.29% had average income, and 8.42% had high income. It should be said that the severity of deficiency is very important in defining and measuring adequate food intake. In this way, if a society receives less than 80% of the required calories, it indicates extreme insecurity. If a society receives more than 120% of the needed calories, it is considered a surplus. Based on the results obtained from the target population, the energy intake is slightly different from the dietary reference intake (DRI) tolerable upper intake levels, but the protein intake is sufficient. The investigated adolescents are deficient in daily intake of iron, calcium, phosphorus, aluminum, vitamin E, B9, B7 and D.

**Conclusion:** The results showed that there was malnutrition among the participants, so surveillance and providing nutritional services for the members of this age group proved to be necessary. One of the key factors in addressing nutritional issues and ensuring the health of students is to develop and implement an appropriate meal plan in schools. By adopting a healthier lifestyle, teenagers can ensure the health of future generations.



**Keywords:** nutritional status, adolescent girls, adolescents, nutritional status of adolescents

## **Does adherence to diet quality index reduce metabolic syndrome factors in overweight and obese women?**

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**Background:** Obesity and overweight status increase the risk of metabolic syndrome. Diet quality can also predict the risk of metabolic syndrome in obese and overweight patients. Therefore, in this study, we sought to examine the relationship between diet quality index (DQI) and metabolic syndrome factors in obese and overweight women.

**Method:** A cross-sectional study was conducted on 197 Iranian women with a Body Mass Index (BMI) > 25, 18–48 years, and recruited from 20 Tehran Health Centers. Nutritional intake and DQI were assessed using a 147-item semi-quantitative food frequency questionnaire (FFQ). Additionally, MetS were evaluated.

**Results:** MetS components including WC, FBS, TG, HDL, SBP, before and after adjustments, was lower in the third tertile of DQI compared to the first tertile, this relationship was not significant (P-value > 0.05).

**Conclusion:** This study provides evidence that dietary intake and DQI are associated with MetS and that dietary modification may be a predictor for reducing WC, FBS, TG, HDL, SBP. However, more research is needed to develop a DQI that reflects changes in MetS by considering women's eating habits and patterns.

**Keywords:** MetS, DQI, dietary intake, obesity

## **Using anthropometric factors to predict Type 2 diabetes mellitus cases: An Artificial Neural Network method**

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**Introduction:** Type 2 diabetes mellitus (T2DM) is a chronic disease that is one out of nine causes of death. This study attempts to construct a prediction model by Artificial Neural Network (ANN) for Type II diabetes using anthropometric indices and age.

**Method:** The 9354 participants (of which 5399 were women and 3955 were men) were included in the Mashhad stroke and heart atherosclerotic disorder (MASHAD)



study, a 10-year cohort from Iran. We used anthropometric features such as ABSI (A Body Shape Index), BMI (Body Mass Index), BAI (Body Adiposity Index), BRI (Body Roundness Index), HC (Hip Circumference), WC (Waist Circumference), WHR (Waist-to-hip Ratio), WHtR (Waist-to-height Ratio), Demispan, and Age to investigate the association of them with diabetes target. The analysis was done for men and women separately. To investigate the relationship between anthropometric predictors and binary target (diabetic, and non-diabetic), a machine learning technique named Artificial Neural Network (ANN) was used. Also, Chi-square and Fishers exact tests were applied to measure the association between qualitative variables. We calculated the accuracy, sensitivity, and specificity parameters to evaluate the classification model. The most important variables for predicting, the receiver operating characteristic (ROC) curve and Area under the ROC curve (AUC) were calculated. The SPSS Modeler 18.0 and SPSS 23 were used for analysis.

**Result:** The accuracy of the ANN model for predictive diabetic men and women was 91.42% and 87.92% respectively. The sensitivity and specificity of the ANN model for men were 74.1% and 95.92% and for women were 80.2% and 90.94% respectively. Age, WHtR, BRI, and WHR were the most important features for predicting diabetic men. Also, features such as age and WHR had an important role in predicting

diabetic women. AUC of the model for men was 0.868 and for women was 0.892.

**Conclusion:** Anthropometric predictors can predict diabetic cases efficiently in the ANN model. The accuracy of the ANN model was high for both men and women. Age and WHR were the most important factors for predicting T2DM in both men and women.

**Keywords:** Diabetic, ANN, Anthropometric predictors, machine learning

### **Animal protein sources and risk of inflammatory bowel diseases: a systematic review and meta-analysis of cohort studies**

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We aimed to conduct this dose-dependent meta-analysis to examine the relation between animal protein and its sources with inflammatory bowel disease (IBD). We searched databases, comprising PubMed/Medline, Web of Science (ISI), Embase, and Google Scholar, for the published studies up to March 28, 2023. Prospective cohort study designs that investigated associations between dietary intake of various animal protein sources and





with risk of IBD in the general population were identified. Eleven prospective cohort studies with 4,302,554 participants and 8067 cases were considered eligible. Findings indicated that higher intake of dairy was significantly associated with a lower risk of IBD (RR: 0.81; 95% CI: 0.72, 0.90), Crohn's disease (RR: 0.69; 95% CI: 0.56, 0.86), and ulcerative colitis (RR: 0.84; 95% CI: 0.75, 0.94). There was no association between different sources of animal protein and the risk of IBD. The dose-response analysis suggested that each 100 g/d increment in dietary total meat consumption was associated with a 38% greater risk of IBD. Moreover, A positive linear association was found between total meat intake and risk of IBD ( $P_{\text{nonlinearity}}=0.522$ ,  $P_{\text{dose-response}}=0.005$ ). Overall, among the dietary sources of protein, the risk of IBD increased only with increasing total meat intake, and the consumption of protein from dairy products was found to be a protective factor against the IBD risk.

**Keywords:** Animal protein, Inflammatory bowel diseases, Meta-analysis, Meat, Dairy

### **Animal protein sources and risk of Parkinson's disease: a systematic review and meta-analysis of cohort studies**

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We aimed to investigate the associations between dietary intake of animal protein sources and the risk of Parkinson's disease (PD). These animal protein sources included total dairy, milk, yogurt, cheese, total meat, red meat, processed meat, poultry, fish, and egg. PubMed, Scopus, and Web of Science were searched until October 2021. Prospective cohort study designs that investigated the association between dietary animal protein sources and PD risk were included. A random-effects model was used to pool the relative risks (RR). In addition, a dose-response relationship was examined between dietary animal protein source intake and PD risk. The certainty of the evidence was rated using The Grading of Recommendations Assessment, Development, and Evaluation (GRADE). Eight prospective cohort studies were eligible. The risk for developing Parkinson's disease was significantly higher in those with the highest compared to the lowest intake categories of total dairy (RR: 1.49, 95% CI: 1.06, 2.10;  $n = 5$ ) and milk (RR: 1.40, 95% CI: 1.13, 1.73;  $n = 6$ ). A linear dose-response meta-analysis revealed that each additional 200g/d of total dairy consumption was associated with an 11% higher risk of PD (RR: 1.11, 95% CI: 1.02, 1.20;  $n = 4$ ). There was evidence of departure from linearity between total dairy intake and risk of PD ( $P_{\text{nonlinearity}}= 0.31$ ,  $P_{\text{dose-response}}= 0.01$ ;  $n = 6$ ). Overall, a higher



intake of dairy consumption is associated with an increased risk of Parkinson's disease. Future, well-designed prospective studies, incorporating well-controlled randomized controlled trials are needed to validate the present findings.

Registration: PROSPERO  
(CRD42021281887)

**Keywords:** Animal protein, Parkinson, Meta-analysis, Meat, Dairy

## Is the use of oral nutrition supplements an effective way of nutritional support for the elderly? A systematic review

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**Introduction:** Today, the world is facing an increase in the elderly population in different countries. Aging is a combined process of changes in physical, mental and social performance, which can affect the nutritional status.

**Method:** Studies from 1970 to 2023 were searched in PubMed, Embase, Google Scholar, and Scopus databases by the determined keywords. The quality assessment of the articles was checked by the CASP tool.

**Result:** After searching the databases, 3260 articles were found, and 19 articles were selected for data extraction. Studies have

shown different **results**. Studies that selected oral nutrition supplements alone as a nutritional support method showed Significant positive changes in MNA score, quality of life (QoL), muscular strength (P = 0.002), weight (P = 0.08), and improved appetite. Also, these interventions were associated with an increase in protein intake (p < 0.001), calf circumference (p < 0.001), hand grip strength (p < 0.001), and 6-meter gait speed (p < 0.001). Some studies were associated with a reduction in length of hospitalization (P = 0.04) (and a reduction in infection. Some studies used oral nutrition supplements and physical activity as a combination, which included the results of increasing lean body mass (P < 0.001) and muscle strength (P < 0.05), decreasing fat mass (P < 0.05) and improving physical function (P < 0.05).

**Conclusion:** The use of oral nutrition supplements can be considered as a safe and effective method in improving the nutritional status of the elderly. However, more studies are needed to be certain about this.

**Keywords:** oral nutrition supplement intervention, old, geriatric, oral intervention, Case-control, RCT, cohort



## Investigating biochemical factors and inflammation in people with heart disease with type D personality before and after schema therapy

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Running title: biochemical factors and inflammation and heart disease and type D personality and schema therapy

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**Background:** The main cause of death in the world, especially in developed countries, is cardiovascular disease, which has attracted the attention of researchers. Recent studies show that cardiac risk factors include increased levels of FBG, TG, HDL, LDL, and cholesterol, as well as inflammatory factors, physical inactivity (exercise), poor diet, smoking, type D personality, and stress-anxiety. Cardiac rehabilitation studies aim to reduce psychological and physiological stress associated with CVD and improve heart function to help increase the quality of life of cardiovascular patients. In this study,

the effect of schema therapy on biochemical and inflammatory factors in cardiovascular patients has been investigated.

**Method:** This study was conducted in Mashhad Faculty of Medical Sciences and Boali Research Institute on 60 heart patients with personality type D from the ages of 20 to 60 years, who all received the same diet. Among these people, 30 people were randomly selected to participate in counseling sessions. In order to investigate biochemical and inflammatory factor, blood samples were taken after fasting for 10-12 hours, and anxiety and depression were determined by using personality type D questionnaire.

**Result:** By examining the blood samples of 60 cardiovascular patients with personality type D, it was found that these people had HDL, LDL, cholesterol and inflammatory factor hs-CRP higher than normal and obesity and high blood pressure. By doing interventions such as schema therapy and diet Cholesterol( $P<0.001$ ), FBG ( $p<0.04$ ), Hs-CRP( $P<0.001$ ), HDL( $P<0.001$ ), LDL( $p=0.04$ )and weight( $p=0.008$ )There is a significant relationship. Based on this study, better results were observed in drug treatment combined with food and schema treatment than in the control group.

**Conclusion:** In this study, cholesterol, HDL, glucose, hs-CRP and arm circumference, waist circumference, body fat mass and weight improved after schema therapy. In this regard, we suggested using schema therapy in CVD subjects to improve mental



health and following that biochemical markers. Actions should be taken for primary prevention through having a healthy lifestyle and proper diet and even psychotherapy as soon as possible with the aim of delaying or preventing the onset of atherosclerosis due to the risk of CVD.

**keywords:** schema therapy, heart disease, personality type D, biochemical factors, inflammatory factor

## **Investigating Behavioral Differences in Energy Balance in Elementary and High School Adolescents: A systematic review**

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**Introduction:** To examine the basic changes in the physical and social environment of children during the transition from elementary school to high school may have a significant impact on adolescent energy balance. (Such as inactivity, dietary behaviors, physical activity level (PA), and sleep behavior).

**Method:** In order to find relevant studies, selected keywords in PubMed, EMBASE, Google Scholar, PsycINFO and databases SPORT Discus were searched until 2023. The study inclusion criteria included: reporting longitudinal studies, one or more behaviors

related to energy balance; And The measurements were taken in both primary and secondary schools.

**Result:** After searching the databases, a number of 4125 were obtained, among which 42 were eligible. In these studies, strong evidence for inactivity, moderate evidence for reducing fruit and vegetables Consumption and inconclusive evidence for changes in overall physical activity, light and moderate to vigorous intensity, screen time, unhealthy snack consumption, and sugar-sweetened beverage consumption were found among adolescents transitioning from elementary to high school.

**Conclusion:** As adolescents transition from elementary school to high school, the inactivity, screen watching time and the amount of fruit and vegetable consumption change unfavorably. More high-quality research is needed, especially on energy changes, that show behaviors related to energy balance during the school transition, especially regarding sleep behavior.

**Keywords:** Adolescents, Physical activity, Sedentary behavior, Sleep behavior, Dietary behavior

## **Seasonal Initiation in Ramadan Fasting and CBC Marker**

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**Background:** Ramadan holds significant religious importance for Muslims, serving as a sacred month during which adherents are obliged to observe fasting, refraining from both food and drink from dawn until nightfall. This study seeks to investigate variations in Complete Blood Count (CBC) markers based on the season when fasting was initiated among participants in the MASHAD cohort study.

**Methods and Materials:** This retrospective cohort study encompassed 8,771 adult individuals who were queried about their fasting practices from seven years prior. Inclusion criteria encompassed individuals aged 35 to 65, while those with a history of cardiovascular disease or pregnancy were excluded. Analysis of Variance (ANOVA) was employed to assess differences in CBC markers concerning the season when fasting commenced. Statistical significance was set at a P-value < 0.05.

**Results:** This study's findings present the mean±standard deviation (SD) values of CBC

markers across various seasons of fasting initiation. Notably, among the CBC markers examined, including Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), Platelet count (Plts), Red Cell Distribution Width (RDW), and monocyte count, statistically significant differences were observed (with corresponding P-values of < 0.001, < 0.001, < 0.001, 0.01, and 0.003, respectively).

**Conclusion:** This study demonstrated the difference of CBC markers in seasonal initiation in Ramadan fasting. Randomized clinical study was suggested to clarify causal relation between Ramadan fasting and CBC markers among adults' populations.

## **Nutritional status and Related Factors among Newly Diagnosed Esophageal Cancer Patients: A Cross-sectional Study**

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**Introduction:** Malnutrition is prevalent in esophageal cancer and can affect the patient's prognosis. This study aimed to determine the relationship between physical



activity, psychologic status, and DASS with nutritional status, and related nutritional complications among patients newly diagnosed with high-stage esophageal cancer.

**Methods:** A cross-sectional study was conducted among newly diagnosed esophageal cancer patients referred to Reza Radiation Oncology Center (RROC), Mashhad, Iran between February 2017 and February 2019. We assessed the demographic and disease information anthropometric indices, a Patient-Generated Subjective Global Assessment (PG-SGA) tool, body composition, dietary intake, and nutritional-related complications. We used the International Physical Activity Questionnaire-Short form (IPAQ) to collect data on the participants' level of physical activity. For quality of life, we used the European Organization for Research and Treatment of Cancer QLQ-C30 questionnaire and DASS21 for assessing depression, anxiety, and stress.

**Results:** The included patients' median age was  $67.3 \pm 12$ . According to the PG-SGA score, 76.6% of subjects needed immediate nutritional intervention and symptom management (PG-SGA score > 8). The mean of total energy intake and protein intake was  $898.15 \pm 503.43$  and  $29.69 \pm 20.36$ , respectively. The mean MET-minutes/week of the subjects was 1008.8, representing moderate physical activity. Mean depression score was  $8.5 \pm 7$ ; anxiety score,  $10.7 \pm 9$  and stress score  $8.7 \pm 8$ . Mean emotional

functioning was  $65.5 \pm 26.0$ ; Physical functioning,  $79.7 \pm 25.8$ ; role functioning,  $82.3 \pm 25.2$ ; cognitive functioning,  $88.9 \pm 16.7$ ; social functioning,  $81.0 \pm 24.1$  and global functioning was  $48.2 \pm 25.3$ .

**Conclusion:** This study shows a significant diminished nutritional status among esophageal cancer patients and Quality of life and high depression, anxiety, and stress and low physical activity. Therefore, regular counselling for nutrition, physical activity and psychological status may contribute to better management in these patients.

## Reduction of fertility; the role of dietary cholesterol and oxidized cholesterol

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**Introduction:** In previous studies we have established that high level of cholesterol and oxidized cholesterol in diet is a risk factor for cardiovascular and central nervous system diseases. The current study was designed to study the effects of cholesterol and oxidized cholesterol enriched- diet on male fertility and sperm parameters.

**Method:** Wistar rats were assigned into three groups and were fed for 14 weeks with three different diet; normal, cholesterol-rich and oxidized cholesterol-rich diet. Oxidized Cholesterol prepared according to the previously described method. Blood lipid



profile, sperm parameters, sex hormones level, as well as sex organs weight were evaluated

**Result:** The sex organs weight in oxidized cholesterol-fed group was considerably reduced ( $P < 0.05$ ). Spermatozoa count in the group with high serum concentration of OxLDL ( $64 \pm 4.2 \times 10^6$ ) was markedly lower ( $P < 0.01$ ) than that of normal rats ( $87 \pm 4.1 \times 10^6$ ) and rats with high serum level of LDL ( $90 \pm 6.3 \times 10^6$ ). Similarly, the percentage of viable spermatozoa was significantly ( $P < 0.001$ ) decreased from 78% to 52% by high level of OxLDL in serum. While, non-oxidized LDL did not have suppressive effects on spermatogenesis and organs weight. Consistent with these effects, the serum concentration of sex hormones including FSH ( $P < 0.001$ ), LH ( $P < 0.001$ ) and testosterone ( $P < 0.01$ ) was significantly decreased only in rats with high level of OxLDL but not in rats with high level of non-oxidized LDL.

**Conclusion:** In conclusion, high OxLDL level showed higher destructive effect on reproductive system compared to the high LDL level

**Keywords:** oxidized cholesterol, male fertility, hypercholesterolemia

## Ramadan fasting adherence and hypertension

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**Introduction:** Hypertension is an important risk factor for cardiovascular disease. Ramadan is the ninth month of the lunar calendar. Fasting is obligatory for Muslims and is considered one of the five pillars of Islam. In the present study, Ramadan fasting adherence and hypertension have been investigated.

**Method:** This was a retrospective cohort study conducted on the Mashhad stroke and heart atherosclerotic disorder (MASHAD) population that completed the Ramadan fasting questionnaire in the second phase. Three study groups were compared in this study including healthy participants in both phases of the study (HTN1-, HTN2-), subjects with diagnosed hypertension in the 10-year follow-up (HTN1-, HTN2+), and subjects who had increased blood pressure from the beginning of the study (HTN1+, HTN2+). SPSS version 18 was used for statistical analyses.

**Results:** The results show the relationship between fasting in the last 8 years and the incidence of hypertension. Based on these results, there was a significant relationship between fasting in the past years and hypertension ( $P < 0.01$ ). In addition, with time from 2011 to 2017, the number of days that a person with hypertension fasted has decreased. Also, there was a significant relationship between the average years of



fasting and hypertension ( $p < 0.01$ ). This study shows that the average fasting in subjects who have recently been diagnosed with hypertension is more than in the other two groups.

**Conclusion:** The number of fasting days during Ramadan among patients with diagnosed hypertension was reduced during that time.

**Keywords:** Ramadan, Fasting, Hypertension

## **Probiotics as a potential treatment for multiple sclerosis**

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Chronic inflammation, a persistent and long-term type of inflammation, is a growing concern, affecting a large proportion of the population. Chronic inflammatory diseases (CID) are of various natures such as autoimmune, toxins and xenobiotics, cancer, metabolic syndrome, age-related defects, etc. and are capable of affecting multiple body systems, thus impacting patients' daily basis. Multiple sclerosis (MS), though its precise causes are still unknown, is believed to be an autoimmune CID that impairs the central nervous system through Demyelination and neurodegeneration. MS is capable of inducing a wide range of

symptoms from physical signs like fatigue and weakness, numbness, mobility disorders, vision problems, etc. to psychological symptoms such as depression, anger, agitation, hallucination and unstable mood. Unfortunately, despite massive research and studies on potential therapeutics, there are no medications to cure MS yet and the effect of these treatments is limited to managing the symptoms, alleviating the frequency and severity of relapses and delaying the progression of MS. Such medications also contain various severe side effects in long-term consumption. Considering all the limitations of current therapeutics, scientists are looking for new ways and mechanisms to treat MS and other autoimmune diseases. Probiotics are live non-pathogenic microorganisms with a long history in ameliorating disorders, modulating the immune system and maintaining human health and are now being examined as potential candidates for the treatment of MS. Studies on animal models have shown positive effect of probiotics on MS through alleviating the severity of symptoms, slowing down the progression and reducing inflammation. Studies on patients with MS have also indicated positive results in the modulation of the immune system, anti-inflammatory effect and improving their condition when using probiotics. In conclusion, probiotics seem to be meritorious candidates in the treatment of MS and other autoimmune





diseases. However, more studies are needed to prove the efficacy of probiotic therapy for MS.

**KEYWORDS:** Multiple sclerosis, Probiotics, Chronic inflammation, Microbiota

## **Exposure, and risk assessment of inorganic nanostructures in food applications**

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Nanotechnology brings about a lot of changes to the food industry for enhancing the quality and safety of food. However, many people are worried about the presence of nanostructures (NSs) in food products. In this review we will come up with the application of inorganic NSs in the food industry and their possible health risks. Also, different exposures to them are highlighted. The NSs may enter into the food directly from delivery systems and food additives or indirectly from the food packaging. Many NSs have positive effects on human health and are unlikely to have a negative effect. However, some NSs, especially inorganic ones, may have adverse health effects. The potential health risks related to NSs such as

disruption of normal gastrointestinal tract (GIT) function, changing the gut microbiota, increasing the unfavorable bioavailability of some compounds in the body, and accumulation of NSs within specific organs such as liver and cellular malfunction are discussed in this paper. It is of great concern to perform a risk assessment on specific NSs before their application in a food product and commercialization.

**Keywords:** Nanostructure, Safety, Food, Risk assessment

## **Association of life long Ramadan fasting and hypertension**

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**Introduction:** This study aims to investigate the association between lifelong Ramadan fasting and hypertension.

**Method:** This was a retrospective cohort study conducted on the population of the Mashhad stroke and heart atherosclerotic disorder (MASHAD) study that completed the Ramadan fasting questionnaire in the second phase. Three study groups compared in this study including healthy participants



in both phases of the study (HTN1-, HTN2-), subjects with diagnosed hypertension in the 10-year follow-up (HTN1-, HTN2+) and subjects had increased blood pressure from the beginning of the study (HTN1+, HTN2+). SPSS version 18 was used to statistical analyses.

**Results:** This study showed that 5.9% of healthy individuals had no experience of Ramadan fasting in their lifetime. About 92.8% of them fasted only in the month of Ramadan and 33.7% of them fasted at least one day in other months of the year. Also, 6.5% of newly diagnosed hypertensive subjects (HTN1-, HTN2+) and 5.9% of hypertensive patients (HTN1+, HTN2+) had never fasted in their life. Among patients with newly diagnosed hypertension (HTN1-, HTN2+), 93.5% of participants fasted only in Ramadan and 33.7% in other months of the year. In the group (HTN1+, HTN2+), these numbers were reported as 94.1% and 33.6%, respectively. Regarding the experience of fasting during life, fasting in Ramadan, and fasting in not-Ramadan months, no significant difference was observed between the three study groups ( $P=0.19$  and  $P=0.11$  and  $P=0.98$  respectively).

**Conclusion:** According to this study Ramadan fasting was not associated with hypertension incidence.

**Keywords:** Ramadan, Fasting, Hypertension

## Beta-adrenergic receptor stimulation, Histamine receptors inhibition and potassium channel opening are contributed to the relaxant effects of crocetin on airway smooth muscle

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**Introduction:** Obstructive pulmonary diseases are characterized by airflow limitation secondary to air way wall thickening, airway narrowing, and increased mucus secretion. Crocetin is the active ingredient of saffron (*Crocus sativus* L, *C. sativus*) has shown anti-inflammatory, antioxidant and immunomodulatory effects and promising effects for treating various disorders

**Method:** The study was conducted on 54 male Wistar rats in 8 groups. TSM was contracted by methacholine (10  $\mu$ M) and KCl (60 mM), and the relaxant effects of four cumulative concentrations of crocetin, petal extract of saffron and theophylline were examined on non-incubated and TSM incubated with propranolol,



chlorpheniramine, diltiazem, atropine, glibenclamide, and indomethacin were investigated

**Result:** In non-incubated TSM contracted by methacholine or KCl, crocetin, petal extract of saffron and theophylline showed concentration-dependent relaxant effects (all,  $P < 0.001$ ). However, various concentrations of crocetin showed significantly lower relaxant effects compared to those of theophylline (all,  $P < 0.001$ ). In the methacholine-induced contraction of TSM, the relaxation effect of the last concentration of crocetin in the TSM incubated with propranolol was lower than the non-incubated TSM ( $P < 0.05$ ). In the incubated TSM with chlorpheniramine, the relaxant effects of the two last concentrations of crocetin were significantly lower than the non-incubated tissues contracted by KCl ( $P < 0.05$  and  $P < 0.0$ ). The levels of EC50 crocetin in the incubated TSM with glibenclamide, chlorpheniramine, and indomethacin were markedly lower than in non-incubated (all,  $P < 0.05$ ).

### **CBC Indices and Meal Consumption Patterns during Ramadan Fasting: MASHAD Cohort Study**

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**Background:** The ninth month of the Islamic lunar calendar, Ramadan, is of profound significance as the most sacred period for Muslims worldwide. During this month, millions of Muslims engage in daily fasting, abstaining from food and drink from dawn until sunset. The purpose of the current study was to evaluate variances in Complete Blood Count (CBC) indices related to different meal consumption patterns during Ramadan fasting within the MASHAD Cohort Study population.

**Methods and Materials:** In this retrospective cohort study, we surveyed a total of 8,771 adult participants over a seven-year period to gather information about their fasting practices. We applied inclusion criteria to focus on individuals aged 35 to 65, while excluding those with a history of cardiovascular disease or those currently pregnant. Our study employed univariate models, with the dependent



variables being various Complete Blood Count (CBC) markers, and the independent variable being the type of fasting. We adjusted the dataset for covariates such as age, gender, occupation, and marital status. In our study, we examined CBC indices in four different meal consumption patterns during Ramadan fasting, which included: Pattern 1: Iftar and Sahar, Pattern 2: Sahar, Iftar, and Dinner, Pattern 3: Iftar and Dinner, Pattern 4: Iftar. Statistical significance was defined as a P-value below 0.05.

**Results:** Among all the CBC indices studied, we found significant differences in the mean values of White Blood Cell count (WBC), Hemoglobin, and Mean Platelet Volume (MPV) across these four meal consumption patterns. Specifically, the mean±SD of WBC (6.35±1.99, 6.6±3.43, 6.77±1.75, and 6.2±1.31), Hemoglobin (14.22±1.62, 14.54±1.57, 14.18±1.46, and 14.14±1.46), and MPV (10.01±0.97, 9.90±0.99, 10.14±1.03, and 10.09±0.93) displayed statistically significant differences as determined by ANOVA (with P-values of 0.037, < 0.001, and 0.019, respectively).

**Conclusion:** Our study has revealed significant differences in the mean values of WBC, Hemoglobin, and MPV among the four different meal consumption patterns during Ramadan fasting. We recommend further investigations to explore the values of CBC markers in additional meal consumption patterns during Ramadan fasting to gain a more comprehensive understanding of this relationship.

## The role of nutrition and vitamins in endometriosis: A narrative review

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**Objectives:** Endometriosis is defined as the presence of endometrial tissue outside the lining of the uterus. It usually involves the outer surface of the uterus, ovaries, fallopian tubes, abdominal wall, and intestines. Endometriosis is a common pelvic disease associated with dyspareunia, pelvic pain and infertility. Treatment options for endometriosis are limited. While over-the-counter medications may be used to relieve acute pain, hormone treatments are common but may interfere with fertility. In more severe cases, laparoscopic removal methods and even hysterectomy are used. Nutritional interventions may be useful in the prevention and treatment of endometriosis and associated pain.

**Materials and methods:** This narrative review was conducted by searching endometriosis, nutrition, diet, vitamin in



Farsi and English literature. The findings of related articles were evaluated.

**Results:** Decreasing dietary fat and increasing dietary fiber reduce circulating estrogen concentrations, which represents a potential benefit for people with endometriosis. Meat consumption is associated with a higher risk of endometriosis. The anti-inflammatory properties of plant-based diets may be beneficial for women with endometriosis. In addition, seaweed has estrogen-modulating properties that are beneficial for postmenopausal women and have the potential to reduce estradiol concentrations in premenopausal women. Additionally, vitamin D supplementation has been shown to reduce endometrial pain through increased antioxidant capacity, and supplementation with vitamins C and E reduce endometriosis symptoms compared to placebo.

**Conclusion:** More randomized clinical trials are needed to clarify the role of diet in endometriosis.

**Keywords:** endometriosis, diet, nutrition, vitamins

## **Sleep quality in multiple sclerosis patients and its comparison with healthy people**

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Multiple sclerosis is one of the most common causes of neurological disability. Multiple sclerosis is an autoimmune disease, progressive and damaging to the tissue and nervous system, so lifestyle can affect the course of the disease. The role of nutrition in improving the conditions of these patients during the illness is very important, and the quality of sleep and the amount of physical activity of these patients can have a great effect on the quality of life and recovery conditions of these patients. In this case-control study, 63 people were assigned to each of the control and male groups. Data were collected using valid demographic and sleep questionnaires (PSQI) and analyzed with t-test, Fisher"s test and chi-square. In terms of sleep quality, sleep duration and the use of sleeping pills, no significant difference was observed. However, there was a significant difference between the two studied groups in terms of delay in falling



asleep ( $p = 0.001$ ) and sleep disorders ( $p < 0.001$ ). The number of people who had insufficient sleep (less than 5 hours), sleep disorder and taking sleeping pills was more in the patient group. Reducing the quality of sleep has different complications and sleep disorders can affect the type of nutrition and quality of life of patients with multiple sclerosis.

### **Physical Activity Distribution and Its Relationship with Sleep Quality in Youth: An Examination of Children and Adolescents**

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One of the most important lifestyle behaviors is physical activity and sleep, which in childhood and adolescence will be the basis for health and illness in adulthood. In this study data analysis was conducted using R (version 4.0.1). The relationship between Physical Activity and Sleep Quality was assessed using the Pearson correlation coefficient. The dataset consisted of 458 students, with a gender distribution of 38.86% boys ( $n=178$ ) and 61.14% girls ( $n=280$ ). Physical activity levels were assessed using the International Physical Activity Questionnaire (IPAQ), with a mean score of  $4348.56 \pm 4716.58$ . The distribution of physical activity levels across the sample varied widely, as evident from the quantile values: 25% (1116), 50% (2640), and 75% (5988). More specifically, it indicates that 25% of the students had a physical activity score below 1116, while 50% had a score below 2640. Additionally, and 75% of the students had a score below 5988. The mean of PSQI was  $5.20 \pm 2.45$ . In terms of gender, a positive association was observed between physical activity and the Pittsburgh Sleep Quality Index specifically among female participants ( $r = 0.17$ ,  $P\text{-value} = 0.007$ ). However, no statistically significant correlation was found between these variables among



male participants ( $r = 0.001$ ,  $P$ -value = 0.964). Therefore, due to the importance of adolescence, it is recommended that students' variety of sleep, and physical activity in health-oriented education in school be considered. Besides, psychological counseling for students to reduce fear and anxiety, should be considered.

### **Association between Omega-3 supplement use and stress levels in a random sample of urban Iranian**

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**Introduction:** Although the role of omega-3 fatty acids is known to be effective in the prevention and treatment of cardiovascular diseases, its role for some disorders is unknown. This study was conducted in order to determine the association between the Omega-3 supplements use and the level of stress in an Iranian population.

**Methods:** This cross-sectional study was conducted on the population over 50 years old in Tehran in 2021. The sample size included 1015 people, whose information was collected randomly by random digit dialing method. The use or non-use of Omega-3 supplements during the last 5 years were evaluated. The stress level was measured with the 4-item Perceived Stress Scale (PSS). The score obtained from the questionnaire is between 0 and 16 and the higher score indicates a higher stress level. Multiple Linear Regression with adjustment for other variables was used. Stata software version 12 was used for analysis.

**Results:** In total, 22.66% of the participants reported taking Omega-3 supplements. The average stress level score was 5.42 with a standard deviation of 2.47. The results of multiple linear regression showed that there is a significant and inverse association between the stress level and the consumption of Omega-3 supplements, so that a lower stress score was observed in people who had a history of omega-3 consumption ( $P$ -value= 0.04).

**Conclusion:** The present findings showed that taking Omega-3 supplements is related to reducing stress levels. Biological studies are needed to understand the mechanisms through which stress reduction occurs.

**Key words:** Omega-3 fatty acid, supplement, stress levels, random digit dialing



## The effect of ultrasound cavitation on local slimming

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**Introduction:** Given that we live in the age of technology, sedentary lifestyle and lack of physical activity are significant issues these days, leading to weight gain and obesity, especially among young individuals in society. Obesity can also result in serious health conditions such as type 2 diabetes, heart attacks, cancers, and even mental health disorders and decreased self-confidence. Therefore, weight loss is among the top priorities for countries today. One of the methods that contributes to weight loss is the use of ultrasound cavitation.

**Method:** This method, along with a proper diet and exercise regimen, is highly effective reduction.

**Result:** Based on articles, its significant impact can be observed on total cholesterol (TC), triglycerides (TG), low-density lipoprotein (LDL), waist circumference (WC), arm circumference (AC), waist-to-arm ratio (WHR), body fat mass (BFM), and body fat percentage (TF). Additionally, a notable increase in HDL compared to pre-treatment is evident.

**Conclusion:** Thus, one of the important recommendations from nutrition experts and even physiotherapists, alongside a

healthy diet and exercise plan, is the utilization of ultrasound cavitation.

**Keywords:** Obesity, Ultrasound cavitation, Diet, Lifestyle, Exercise

## The effect of herbal medicine on onset of labor: a randomized controlled trial

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**Introduction:** Preparation of the cervix and induction of labor is necessary before the onset of labor. In traditional medicine, rose water has been used as an effective factor in the onset of labor contractions. However, clinical studies on its efficacy are very rare. This study was done to Effect of herbal medicine on onset of labor

**Method:** This study was a randomized clinical trial in 2020 on 62 primiparous women with 40 weeks of gestation who were assigned to two groups of 30 people of





intervention and control using method of intervention blocks. Intervention group consumed five ml of Rose water daily orally since 40 week of gestation for one week and the control group, was received routine care. One, three and seven days after beginning of the intervention and entering the labour, Bishop's score was measured. Data were gathered by a questionnaire form, physical examination, observing and counting fetal movement and check list of rose-water consumption. Data were analyzed using T-tests, analysis of variance and repeated values. Significance level was considered  $p < 0.05$ .

**Result:** The mean age of patients in the intervention and control group was  $26.53 \pm 5.16$ ,  $26.53 \pm 5.28$  respectively. The onset of labor did not show a significant difference in two groups ( $p=0.303$ ). Analysis of variance in duplicate measurements showed that the mean of Bishop's grade point average on the third and seventh days after beginning of intervention in the two groups did not differ significantly from each other ( $p=0/160$ ). Also, the results of this test showed that the trend of bishop score changes in both groups was incremental.

**Conclusion:** Consumption of 5 ml of rose-water daily, no significant effect on preparing cervix and was safe. It is recommended for future research to assess the effect of higher dose of rose-water on preparing cervix and induce labor, compare it with the control group, for future research.

**Keywords:** ripening, Rose, pregnancy, Delivery, women

## The Usability of Complementary Medicine in Sexual Performance of Postmenopausal Women: A Systematic Review

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**Background:** Sexual performance is among the most important aspects of postmenopausal women's life. The long-term side effects of hormone replacement therapy during menopause have led women towards the use of complementary therapies to improve sexual performance. This systematic review was conducted to investigate the effectiveness of complementary therapies in improving the sexual performance of postmenopausal women.

**Methods:** In this systematic review, studies in English and Persian languages were searched in national (SID, Magiran, and IranMedex) and international databases (PubMed, Science Direct, Embase, Cochrane Library, and Google Scholar) until 2023. The search keywords were selected based on the Medical Subject Heading (MeSH) and



included "Sexual Dysfunctions", "Menopause", "Complementary medicine", "Alternative medicine" combined with Boolean operators (OR and AND). Finally, quality assessment and data extraction were performed independently by two researchers using Cochran's standard tool.

**Findings:** Finally, 22 articles with a total sample size of 1617 participants were selected. The types of the articles were randomized and non-randomized clinical trials. Studies showed that aroma therapy, combined inhalation aromatherapy, and herbal compounds, including combined herbal capsules containing red ginseng extract, saffron, red clover and black cohosh, date palm pollen and *Althaea officinalis* improved sexual performance in menopausal women. Furthermore, performing activities, including yoga, Benson relaxation and CBT had the greatest effect on sexual performance.

**Conclusion:** Based on the results of the present study, most complementary medicine treatments were effective in improving the sexual performance of postmenopausal women.

**Keywords:** Complementary therapies, Sexual dysfunction, Menopause, Herbal medicine

## The Effects of Royal Jelly Consumption on Oxidative Stress in Adults: A Systematic Review and Meta-analysis

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**Introduction:** Royal jelly (RJ) is known to act as an antioxidant with a protective effect on reactive oxygen species. This systematic review pooled the results of the existing clinical trials to investigate this possible effect.

**Methods:** PubMed/Medline, Web of Science, and SCOPUS were searched up until April 2023. All randomized clinical trials assessing the effect of RJ supplements on serum levels of total antioxidant capacity (TAC) and malondialdehyde (MDA) were included in this systematic review and meta-analysis. A random-effects model was utilized to aggregate the mean difference (MD).



**Results:** Five suitable datasets from 4 trials were considered eligible. RJ supplementation significantly reduced MDA (WMD, -1.79 (-3.00 to -0.58),  $P=0.004$ ;  $I^2=97.4\%$ ) and increased TAC (WMD, 0.98 (0.24 to 1.71),  $P=0.009$ ,  $I^2=98.5\%$ ). RJ supplementation in higher doses and in participants with normal BMI could induce a greater elevation in TAC, and in participants with normal BMI, a stronger reduction in MDA. Publication bias was not present, and according to the GRADE assessment, the evidence was of moderate quality for both TAC and MDA.

**Conclusion:** Although this meta-analysis confirmed that RJ could be a useful intervention to reduce oxidative stress, this research should be updated in the future, due to the restricted number of trials pooled in the present meta-analysis.

**Keywords:** Malondialdehyde, Antioxidant, Royal Jelly, Oxidation-Reduction, Meta-analysis

## The effect of Royal jelly on liver enzymes and glycemic indices: A systematic review and meta-analysis of randomized clinical trials

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**Introduction:** Royal jelly (RJ) may contribute to glycemic control and liver function through various mechanisms. The present study aimed to quantify the effect of RJ supplementation on these outcomes.

**Methods:** A literature search of Web of Science, Scopus, and PubMed/Medline, was conducted for RCTs investigating the efficacy of RJ on plasma liver enzymes and glycemic indices. Weighted mean differences (WMDs) and 95% confidence intervals (CIs) were calculated for net changes using a random-effects model.

**Results:** Ten RCTs were selected for inclusion in this meta-analysis. Combined estimates of effect sizes for the impact of RJ on neither the plasma liver enzymes nor the glycemic indices were statistically significant. Subgroup analysis showed a significant reduction of serum FPG in trials with intervention duration  $\geq 8$  weeks (WMD: -4.28 mg/dl, 95% CI -7.41 to -1.14 mg/dl,  $p=0.007$ ), and those conducted in non-healthy populations (WMD: -4.28 mg/dl, 95% CI -7.41 to -1.14,  $p=0.007$ ).



**Conclusion:** RJ does not significantly affect the liver function and glycemic profile of the adult population. In trials with longer intervention and those conducted in non-healthy populations a significant reduction of serum FBG was observed. This meta-analysis should be repeated in the future, with more primary articles included, in order to provide conclusive results.

**Keywords:** Royal Jelly, Liver function tests, Glycemic control, Meta-analysis, Systematic review

## Predictors for Hypertension Disease Based on Anthropometric Indices

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**Objective:** Early identification of risk factors in hypertension, measured by anthropometric indices, can be enhanced in relatively easy and cost-effective ways in low-income countries. Hence, from this point, intervention can be carried out effectively to reduce disease burden. This study aimed to determine association hypertension with anthropometric indices by machine learning techniques.

**Methods:** A prospective cohort study was conducted in mashhad university of medical sciences. This study collected extensive data from Iranian people. Anthropometric incidences include waist circumference

(WC), neck circumference (NC), wrist circumference, neck to waist circumference ratio (NWcR), body mass index (BMI), hip circumference (HC), height to wrist circumference ratio (HTwr), waist circumference to hip ratio (WHpR), and waist-to-height ratio (WHtR). The association was assessed with using logistic regression (LR) and decision tree (DT) analysis. We use R software for creating decision tree and evaluate it by accuracy, sensitivity, and specificity and receiver operating characteristic (ROC) curve.

**Results:** This study included a total of 885 men and 916 women. Their age ranged from 24 to 83 year with a mean (SD) of 49 (12) year. According to the logistics regression, in males and female, WHpR and WHtR, NWcR, HTwr and WC (p-value<0.01) had the highest correlation with hypertension development risk. The DT showed that WHpR has the most important effect on hypertension development risk, and followed by WHtR and NWcR.

**Conclusion:** HTN had a meaningful association with all the noted anthropometric indices. WHpR and WHtR performed well as predictors of HTN.

**Keywords:** Anthropometric indices, Hypertension, Decision tree, Receiver operating characteristics



## Environmental Scanning of Disease Changes on Nutrition Sciences: A Future Perspective

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**Introduction:** In today's world, diseases are on the rise, and nutrition plays a crucial role in health and disease prevention. Understanding the impact of disease changes on nutrition science is essential for promoting well-being. Environmental scanning, a comprehensive monitoring approach, can shed light on the evolving environmental factors affecting nutrition. Therefore, this study aims to explore the effects of disease changes on nutrition sciences using the environmental scanning model.

**Methods:** A qualitative study was conducted in Iran, involving 5 nutrition science students from different regions. Under the supervision of future-oriented health specialists, the following steps were followed: 1) Selection of interested students; 2) Conducting an educational workshop on environmental scanning; 3) Preparation of initial reports on influential trends and key messages; 4) Obtaining feedback from the environmental scanning team; 5) Preparation of a secondary report; 6) Summarizing feedback and final confirmation.

**Result:** The study identified various changes in diseases that impact nutrition science. Unhealthy nutrition weakens the immune system, contributes to chronic diseases, and leads to the emergence and recurrence of diseases. Poor nutrition also affects brain chemicals and functions, resulting in mental and psychological issues. Shifting dietary preferences towards processed foods and inadequate intake of fruits and vegetables have negative effects on digestive health. Changes in diets and lifestyles increase the risk of various cancers. Unhealthy nutrition during pregnancy increases the risk of diseases transmitted to the fetus. The use of powdered milk for infant feeding negatively impacts infant health and growth. Excessive oil, fat, sugar, and salt consumption is linked to non-communicable diseases.

**Discussion & Conclusion:** Understanding the complex relationship between disease changes and nutrition science is crucial for



developing effective policies and guidelines to promote healthier lifestyles. By prioritizing factors influencing health, analyzing key variables, and implementing targeted programs, we can pave the way for a healthier future.

**Keywords:** Environmental scanning, disease changes, nutrition sciences.

## **Anthropometric Measurements to Predict Type 2 Diabetes Mellitus: A Machine Learning Method**

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**Objective:** New diabetes risk prediction algorithms have been developed as machine learning technology has become more mainstream in medicine. In the diagnosis of type 2 diabetes (T2D), machine learning technology can also be an additional instrument or second opinion for doctors to make decisions in good time. This study aimed to investigate and compare the anthropometric measurements to predict previously diagnosed T2D with using machine learning methods.

**Methods:** Data from 2019 were analyzed to achieve the study objective. The survey collected extensive data from a national population-based cohort sample of Iranian people. A structured questionnaire was used

to collect sociodemographic variables and clinical data. Anthropometric characteristics were measured by the same team of trained field researchers. The association was assessed with using logistic regression and decision tree (DT) analysis. We use R software for creating decision tree and evaluate it via the accuracy, sensitivity, and specificity and receiver operating characteristic (ROC) curve.

**Results:** This study included a total of 637 men and 624 women. Their age ranged from 24 to 83 year with a mean (SD) of 48 (11.2) year. According to the logistics regression, in males, WC and NC, WHpR, and NWcR (p-value<0.01), and in female WC and WHtR, WHpR, and HTwr (p-value<0.01), had the highest association with T2DM development risk. The DT showed that WC has the most important effect on T2DM development risk, and followed by WHpR.

**Conclusion:** The results showed that WC and WHpR have been the most important anthropometric factors in predicting T2DM.

**Keywords:** Anthropometric measures, Diabetes mellitus, Decision tree, Receiver operating characteristics

## **Employing Artificial Intelligence to Enhance Personalized Nutrition**

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The rapidly evolving domain of personalized nutrition aims to customize dietary recommendations based on individual physiological, genetic, and lifestyle profiles. Historically, dietary recommendations were largely generalized, designed for average populations rather than individuals. With advancements in genetics, metabolomics, and gut microbiota research, it became evident that dietary responses are highly individualized. In recent years, Artificial Intelligence (AI) has emerged as a revolutionary instrument in this space, offering the potential to provide highly individualized nutritional insights by analyzing extensive and complex datasets. The intersection of Artificial Intelligence (AI) and nutrition presents numerous novel areas of exploration and research. There are numerous groundbreaking subjects pertinent to this intersection, including nutritional genomics, dietary logging using food image recognition, analysis of the gut microbiome, and so on. For more details, genomic variations can influence dietary responses. By analyzing these variations, AI can provide insights into how an individual's genetic makeup can affect their nutrient metabolism and requirements. In Dietary Logging and Food Image Recognition field, AI-powered mobile applications can identify and log food based on images, simplifying

the process of dietary tracking. This provides a more detailed understanding of a person's eating habits, allowing for more accurate nutritional recommendations. The human gut is home to a vast array of microorganisms that play a role in nutrient metabolism. AI can analyze complex interactions between diet and gut microbiota, offering insights and suggestions to optimize gut health and overall well-being. As a conclusion, the merger of AI and nutrition offers the possibility of moving away from generalized dietary advice to more individual-centric recommendations.

## **Review of the Nutritional and dietary strategies for the autophagy activation and health consequences**

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**Introduction:** Homeostasis of nutrient metabolism is critical for maintenance of the normal physiologic status of the cell and the integral health of humans. In vivo, there is a highly efficient and precise process involved in the nutrient recycling and organelle



cleaning. This process is one of the key cellular responses to the nutrient withdrawal. This process is named autophagy. Autophagy is a dynamic, natural and self-preservation mechanism for the cell remodeling and organelle quality control. Autophagy is a cell's recycling machinery, degrades damaged organelles, misfolded proteins and dysfunctional parts of a cell in lysosomes. It provides by biomolecules which are used in anabolic processes and cells surviving in the stress conditions. When the cells face to various stresses, such as nutrient withdrawal or oxidative stress, autophagy will be induced to protect these cells against damage. Our aim in this review is to summarize the recent advances in the mechanisms regulating autophagy in response to nutrients.

**Method:** In this study databases such as Google Scholar, PubMed, and Scopus were searched, and ultimately related research articles, systematic review, and meta-analysis investigations were included.

**Result:** Nutritional stress conditions, including nutritional starvation, Intermittent fasting, calorie restriction and ketogenic diet are known to trigger autophagy and other signals modulate the autophagy process by the various target proteins. The signaling from key nutrient-sensitive kinases the mammalian target of rapamycin (mTOR) complex 1 (mTORC1) and AMP-activated protein kinase (AMPK) is essential for the nutrient sensing of the autophagy pathway. Autophagy can be

amplified by stimulate activity of the kinase Unc-51 like kinase 1 (ULK1), AMPK, SIRT1 and down-regulate the activity of mTORC1. Starvation of nutrients such as amino acids or energy decrease will trigger autophagy activation through mTORC1 or AMPK signaling pathway, respectively.

**Conclusion:** AMPK serving as an energy status sensor plays a key role in activating autophagy. During starvation, dephosphorylation of Ulk1, leads to Ulk1 dissociating with AMPK and becoming more active in autophagy induction. mTORC1 directly interact with Ulk1 complex under nutrient-rich conditions and possibly prevent autophagy initiation through inhibitory phosphorylations. Also, Low glucose levels occur in fasting and ketosis diets are linked to low insulin with high glucagon levels that's brings the positive stress that initiates autophagy. Calorie restriction have the potential to increase SIRT1 activity and autophagy by reducing the availability of oxidizable substrate to cells and lowering the NAD<sup>+</sup>/NADH ratio. Autophagy protects cells against severe environmental stresses. So, retaining the proper nutrition level and autophagy status is critical for cell survival.

**Keywords:** Nutritional, mTOR, autophagy

## **The Impact of Social Marketing on Childhood Obesity**

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**Introduction:** Understanding the profound impact of social marketing strategies on childhood obesity is of paramount importance. This article seeks to explore the intricate relationship between social marketing theory and the dietary habits of children and adolescents, shedding light on unique challenges and complexities associated with food consumption behaviors in this population.

**Methods:** This systematic review meticulously adheres to established guidelines for conducting systematic reviews and meta-analyses. Our comprehensive search strategy spanned three primary databases, consistently implemented across all electronic platforms, encompassing pertinent literature until May 1402, with a primary focus on English articles. Additionally, we conducted a thorough manual examination of reference lists in relevant research papers and reviews to ensure the comprehensive inclusion of relevant studies.

**Results:** This study identifies a curated selection of 10 clinical trial articles that judiciously apply social marketing methodologies to investigate food choices

among children and adolescents. These seminal studies span diverse geographical regions and countries worldwide, with a notable concentration in European countries and the United States of America, complemented by one study conducted in Australia. It is noteworthy that all of the identified studies exhibit the characteristics of rigorous clinical trials.

**Conclusion:** Studies show that social marketing strategies are effective in improving children's eating habits, promoting physical activity, and influencing food preferences positively. Television advertisements, on the other hand, have negative effects on food behaviors and health. Combining school-based nutrition education with social marketing is a successful approach. Social marketing also leads to increased physical activity and healthier food choices, with the use of cartoon characters being a potent tool. Overall, social marketing plays a crucial role in preventing childhood obesity and promoting healthy lifestyles.

**Keywords:** Childhood Obesity, Social Marketing, Dietary Habits, Food Choices, Health Promotion.

## **A Comprehensive Analysis of Food and Nutrition Literacy Interventions on the Dietary Choices of Children and Adolescents**

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**Introduction:** Nutritional interventions targeting children and adolescents in the Asia and African region are of paramount importance due to their vulnerability to unhealthy dietary choices and potential long-term consequences on growth, development, and overall well-being. This systematic review aims to assess the effectiveness of food and nutrition literacy interventions in shaping the dietary preferences of this demographic.

**Methods:** Following the PRISMA guidelines, we conducted an exhaustive search across PubMed, Scopus, and Web of Science databases to identify pertinent studies. After meticulous scrutiny of titles and abstracts, we selected ten articles with detailed methodological descriptions for in-depth analysis. We meticulously documented essential data from each of these chosen articles.

**Results:** The primary behavior change models employed in our study included the Social Cognitive Theory and Pender's Health Promotion Model. Our findings revealed that interventions grounded in these models significantly improved dietary habits. All the studies encompassed the Middle Eastern and North African region and involved

children aged under 6, adolescents aged 14-19, and children aged 6-14. Additionally, some studies explored the influence of parental and school-based interventions.

**Conclusion:** This systematic review has provided valuable insights into the impact of nutrition education on food and energy consumption, gleaned from a comprehensive analysis of relevant literature. The results emphasize the pivotal role of nutrition education, behavior modification, and the application of theoretical frameworks in promoting healthy eating habits. Moreover, school-based interventions have proven to be efficacious in engendering enduring positive effects on populations and fostering wholesome dietary practices. Future research endeavors should prioritize the incorporation of these pivotal concepts and mechanisms into program designs, with the aim of positively influencing and enhancing the nutritional intake of adolescents.

**Keywords:** Nutrition, Dietary Preferences, Food Literacy, Children, Adolescents.

## **The effect of early Ramadan fasting experience and metabolic syndrome**

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**Introduction:** In this study we perceived fasting habits in a large population and evaluated the association of the age of first Ramadan fasting on metabolic syndrome. Most of the previous studies have been assessed Ramadan fasting usually over one-year periods and indicated the short-term Ramadan fasting effects.

**Method:** Total number of 8866 individuals participated in this study in the second phase of Mashhad stroke and heart atherosclerotic disorder study (MASHAD study). Out of this number, 7863 people were from the first phase study and examined in this study. All people were divided in to 3 groups according to the criteria of metabolic syndrome (based on IDF criteria) and were observed in terms of fasting behaviors.

**Results:** Accordingly, average age of first Ramadan fasting in men in the group of people who already had metabolic syndrome, it was  $15.47 \pm 3.72$ , while in healthy people it was  $15.26 \pm 3.53$  and in new cases it was  $15.28 \pm 3.4$ . The average age of first Ramadan fasting in women, it was  $2.94 \pm 9.82$ ,  $2.61 \pm 10.03$ , and  $2.6 \pm 10.05$  in

previously diagnosed people, newly diagnosed people, and healthy people, respectively. It seems that the age of first Ramadan fasting in women, but not in men, has an effective role in developing metabolic syndrome ( $P=0.045$ ). Based on the results of the regression model, reduce one year in the age of starting fasting have a significant protective effect in 6.4 % newly diagnosed and 8.9 % in people who have already been diagnosed.

**Conclusion:** The age of first Ramadan fasting just in woman may be effective in developing of metabolic syndrome and start of fasting one year earlier could postpone the onset of metabolic syndrome.

**Keywords:** Ramadan Fasting, Metabolic Syndrome, Early Age of Fasting

## Maternal Ramadan fasting and hypertension

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**Introduction:** This study aims to investigate of association between Maternal Ramadan fasting and hypertension.



**Method:** This was a retrospective cohort study conducted on the population that participated in the Mashhad stroke and heart atherosclerotic disorder (MASHAD) study and completed the Ramadan fasting questionnaire in the second phase. The study population was divided into 3 groups. Group1 1 participants were healthy in both phases of the study (HTN1-, HTN2-), the group2 were participants with diagnosed hypertension in the 10-year follow-up (HTN1-, HTN2+), and group3 participants had increased blood pressure from the beginning of the study (HTN1+, HTN2+). SPSS version 18 was used for statistical analyses.

**Results:** Overall, 99.3% of subjects stated that their parents had fasted in the past. According to self-reports, 99.4% of volunteers" mothers fasted during Ramadan during their fetal period. The results of this study show that there was no significant relationship between maternal fasting during fetal life and parental fasting and hypertension ( $p>0.05$ ).

**Conclusion:** according to this study maternal fasting during fetal life may not be associated with the incidence of hypertension.

**Keywords:** Ramadan, Fasting, Hypertension

## Metabolic Syndrome and Ramadan Fasting Complications

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**Introduction:** During the holy month of Ramadan, which occurs on the ninth month of the lunar-based Islamic calendar, all Muslims are required to abstain from food and drink from dawn to dusk for 30 days. The purpose of this study was to evaluate the association of Ramadan fasting complications in subjects with metabolic syndrome.

**Method:** This study was conducted on Mashhad stroke and heart atherosclerotic disorder study (MASHAD study) population. All participants were completed the validated Ramadan fasting questionnaire and suffering from metabolic syndrome according to IDF criteria. Heart attack, stroke, coma, loss of consciousness, severe hypoglycemia and diabetic ketoacidosis were evaluated before and after 30 d of Ramadan fasting.

**Results:** Based on the results, 95.6% (1948) of the studied population had a history of fasting and 94.1%(1916) of population had a



history of fasting only in Ramadan month. In total, 0.6% of those who had metabolic syndrome suffered from heart attack, 0.2% from stroke, 0.1% from coma, 1.8% from loss of consciousness, 4.3% from severe hypoglycemia and 1.1% from diabetic ketoacidosis. Among these, no significant changes in clinical symptoms were reported in patients at the end of Ramadan fasting. The severe hypoglycemia was the most reported during fasting (4.3%,  $p < 0.001$ ) followed by diabetic ketoacidosis in 1.1% ( $p = 0.007$ ) of subjects in people with metabolic syndrome.

**Conclusion:** The results showed that during fasting, severe hypoglycemia and diabetic ketoacidosis can be increased in people with metabolic syndrome.

**Keyword:** Ramadan, fasting, metabolic syndrome, Time-restricted feeding

## First Ramadan Fasting Experience and Cardiovascular Disease Incidence

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**Background:** Cardiovascular diseases (CVD) remain a top cause of global mortality, emphasizing the urgency of finding practical ways to improve cardiovascular risk factors. Intermittent fasting, including the fasting observed during Ramadan, is gaining attention as a potential method to reduce the risk of CVD. In Islam, individuals typically begin observing Ramadan fasting at adolescence, with variations between sexes.

**Methods:** This retrospective cohort study explored the relationship between the age of initial Ramadan fasting and the incidence of CVDs. The cohort study consisted of 7,747 participants (35-65 years old) from the Mashhad Stroke and Heart Atherosclerotic Disorder (MASHAD) study, spanning from 2010 to 2020. We employed a validated Ramadan fasting nutritional habits questionnaire.

**Results:** Analysis revealed that commencing Ramadan fasting at an older age conferred protection against CVD development. For each one-year delay in the age of first Ramadan fasting, women experienced a 6% decrease in CVD risk, while men saw an 8% reduction.

**Conclusion:** Earlier Initiation of Ramadan fasting may be associated with A higher risk of CVD.



## The effect of 25-OH Vitamin D supplementation on brain derived neurotrophic factor: A Systematic Review

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**Introduction:** Vitamin D is recognized for its role in improving muscle function and reducing falls, but its influence on enhancing neural connections within the brain and nervous system remains uncertain. A hypothesis suggests that Vitamin D may impact the aging of the nervous system and brain by increasing brain-derived neurotrophic factor (BDNF) concentrations. This systematic review investigates the effect of Vitamin D supplementation on serum BDNF concentrations.

**Method:** To ensure comprehensive analysis, we conducted an extensive search of relevant literature in databases including PubMed, Scopus, and Web of Science, using keywords such as "vitamin D," "cholecalciferol," "hydroxycholecalciferol," "ergocalciferol," "25-Hydroxyvitamin D," and "Brain-derived neurotrophic factor"

(BDNF) up until June 2023. Two independent reviewers screened titles and abstracts, resulting in the identification of six relevant articles.

**Results:** This review identified nine studies eligible for inclusion, encompassing individuals with ADHD, diabetes mellitus, multiple sclerosis, acute cerebrovascular events, osteopenia or osteoporosis, and overweight/obese individuals with mild to moderate depressive symptoms. Findings from these studies were mixed. While some reported significant associations between Vitamin D supplementation and increased serum BDNF levels, others demonstrated inconsistent results and no consistent changes in BDNF serum levels. Promising articles explored Vitamin D's effectiveness in influencing BDNF levels, but overall significance was not established, underscoring the need for further investigation in this area.

**Conclusion:** In conclusion, this systematic review highlights limitations and inconsistencies in existing research. Future studies with larger sample sizes, standardized measurement techniques, longer durations, and proper controls are necessary. Moreover, deeper investigations into the underlying mechanisms are imperative.

**Keywords:** Vitamin D, BDNF, brain-derived neurotrophic factor, aging



## Association between Dietary Serving Score, Diet Quality Index-International, and Nutritional Quality Index with Rheumatoid Arthritis in Newly Diagnosed Elderly Patients: A Case-Control Study

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**Introduction:** Rheumatoid arthritis (RA) is a global chronic autoimmune condition. The relationship between dietary choices and RA symptoms is a subject of interest. This study aimed to investigate the association between dietary serving score (DSS), Diet Quality Index-International (DQI-I), and (INQ) with rheumatoid arthritis in newly diagnosed elderly patients.

**Method:** Newly diagnosed RA patients were chosen. Diet diversity, quality potential of the diet and quantity of nutrients were evaluated with the use of DSS, DQI-I and, INQ respectively after adjustments to the energy intake based on a validated semi-quantitative Food Frequency Questionnaire (FFQ). Multivariable-adjusted odds of RA

were calculated across tertiles of DSS, DQI-I, and INQ scores.

**Results:** The study included 50 newly diagnosed RA cases and 100 well-matched healthy controls. Significant differences in DSS (control=17.16±1.47 VS case=15.6±0.90; p<0.005), INQ (control=61.25±7.10 VS case=57.12±13.45; p=0.046), and DQI (control=78.57±3.83 VS case=57.12±13.45; p=0.001) scores were observed between groups, with Adequacy and Balance scores being the only significant indicators within DQI. In the crude model, significantly lower odds ratios of RA were observed in T2 and T3 of DSS, INQ, and DQI, and this trend persisted after adjusting for other variables. Individuals with RA had lower DSS, INQ, and DQI scores, indicating a lower quality of diet. This finding remained statistically significant after accounting for potential confounders.

**Conclusion:** The findings demonstrate a positive association between DSS, INQ, and DQI scores and the odds of RA. These results emphasize the importance of overall diet diversity and quality in modulating the risk of RA

## Exposure, and risk assessment of inorganic nanostructures in food applications

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Nanotechnology brings about a lot of changes to the food industry for enhancing the quality and safety of food. However, many people are worried about the presence of nanostructures (NSs) in food products. In this review we will come up with the application of inorganic NSs in the food industry and their possible health risks. Also, different exposures to them are highlighted. The NSs may enter into the food directly from delivery systems and food additives or indirectly from the food packaging. Many NSs have positive effects on human health and are unlikely to have a negative effect. However, some NSs, especially inorganic ones, may have adverse health effects. The potential health risks related to NSs such as disruption of normal gastrointestinal tract (GIT) function, changing the gut microbiota, increasing the unfavorable bioavailability of some compounds in the body, and accumulation of NSs within specific organs such as liver and cellular malfunction are discussed in this paper. It is of great concern to perform a risk assessment on specific NSs before their application in a food product and commercialization.

**Keywords:** Nanostructure, Safety, Food, Risk assessment

## Evaluation of organophosphorus residues in potato chips

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**Introduction:** Potato chips are widely consumed snacks, especially among children. According to the nutritional facts listed on the packages, consumers can consciously put this product in their food basket. However, this information does not include all factors affecting health. Considering the necessity of using pesticides in potato fields, their residue in chips can be a risk to consumers' health. Therefore, this study aimed to measure the residual levels of two commonly used organophosphorus (OP) pesticides; diazinon and chlorpyrifos, in chips.

**Method:** two hundred kg of the potato tubers were randomly selected from the cold storage, 3 kg of which was randomly separated to make the homemade chips and measure the pesticides residue in the potatoes. The rest of the tubers were transferred to the factory to be processed





into commercial chips. The residual levels of chlorpyrifos and diazinon in potatoes and chips were measured by the QuEChERS extraction method using gas chromatography equipped with a nitrogen-phosphorus detector.

**Result:** No chlorpyrifos was detected in the potatoes, homemade and commercial chips. Diazinon levels of  $0.029 \pm 0.009$  and  $0.13 \pm 0.042$   $\mu\text{g. g}^{-1}$  were measured in the potatoes and commercial chips, respectively. Based on the FAO and the European Commission Codex, these were higher than the maximum residue levels (MRL); while according to the Codex of Iran National Standard Organization, only commercial chips had an unallowable residual level.

**Conclusion:** Based on the results, it is recommended to avoid commercial chips and use homemade chips, particularly in sensitive groups such as children and pregnant women.

**Keywords:** Food safety, diazinon, organophosphorus, chlorpyrifos, pesticide residues.

## A review of malnutrition in children under 5 years old

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**Introduction:** Malnutrition is one of the most important public health problems in the whole world, especially in developing countries, which has adverse effects on the growth and mortality of children. Due to the importance of this issue, this study was conducted with the aim of reviewing the state of malnutrition in children under 5 years of age in Iran.

**Method:** 25 articles related to malnutrition in children under 5 years of age were searched in Web of Science, PubMed, Cochrane Library, Magiran, Google Scholar and SID databases without time limit until September 2023, which were published in Persian and English languages.

**Results:** The prevalence of underweight based on weight to height, normal underweight to severe are 67.8%, to 1.6% had a significant relationship with gender and place of residence. The height for age index, normal shortness to severe are 55% to 3.9% were reported. Examining the weight index for age, normal underweight to severe cases are 52.2% to 1.2%. On the other hand, 4% of children under 6 years old are



overweight. Weight less than 2.5 kg at the time of birth, distance less than 3 years with the previous child and type of feeding other than breast milk, period of exclusive feeding with breast milk, children living in the village, suffering from heart diseases, respiratory, diarrheal and urinary infection in infants, birth rank, occupation of parents, birth distance between child and previous child less than 24 months, number of family members more than 5 people, start of complementary feeding after 6 months, illiterate and low-literate parents, maternal overweight during pregnancy less than 7 kg and the number of insufficient care during pregnancy were also reported as effective factors in causing malnutrition.

**Conclusions:** Our country is among the regions with low prevalence in terms of protein-energy malnutrition in children under 5 years old. It seems that raising the culture of proper nutrition, improving health literacy with emphasis on health care and programs for the prevention and control of respiratory and diarrheal diseases and fair distribution of support and health facilities can be a suitable way to prevent child malnutrition.

**Keywords:** malnutrition, children, underweight,

## Exploring Factors Influencing Food Waste Management Behavior: A Systematic Review Based on the Theory of Planned Behavior in the Iranian Context

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**Introduction:** Iran is grappling with food waste levels nearly six times higher than the global average, posing substantial challenges to food security, the environment, and economic stability. Despite some existing evidence on consumer behavior related to waste management, there's still much to be understood in this context. This systematic review, guided by the Theory of Planned Behavior (TPB), investigates the factors influencing food waste management behaviors.

**Method:** The study involved searches across five major databases and followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Four independent studies involving a total of 14 participants met the inclusion criteria.



**Result:** The results consistently highlighted attitudes, Perceived Behavioral Control, and subjective norms as the key predictors of food waste behavior. Additionally, enhancing individuals' skills in food waste reduction emerged as an effective strategy to empower their sense of control and ability to adopt food waste management behaviors.

**Conclusion:** These findings suggest that policymakers have an opportunity to provide recommendations and design preventive interventions aimed at increasing consumer awareness and engagement in adopting more sustainable food waste management practices. By identifying the triggers of behavioral change among individuals, efforts can be made to encourage the adoption of habits that mitigate food waste, thereby addressing critical issues related to food security, environmental impact, and economic sustainability in Iran.

**Keywords:** Food waste, Iran, Systematic review, Theory of planned behaviour.

## **The effect of eight weeks of Mediterranean diet and high-intensity interval training on inflammatory markers in obese and overweight premenopausal women: a controlled trial**

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**Introduction:** The Mediterranean diet (MedDiet) is one of the recommended dietary patterns whose various components reduce the risk of obesity complications through biological pathways related to inflammation. However, to our knowledge, trials about the effects of a non-caloric-restricted MedDiet combined with high-intensity interval training (HIIT) is limited. Therefore, the aim of this study was to investigate the effect of eight weeks of MedDiet and HIIT on inflammatory markers in obese and overweight premenopausal women.

**Material and Method:** In this randomized controlled trial, 47 overweight and obese women were divided into 4 groups: MedDiet group without calorie restriction (n = 14), HIIT group (n = 12), MedDiet + HIIT group (n = 12), and control group (n = 9). HIIT training sessions were carried out for 8 weeks, 3 sessions per week. In HIIT group, participants were instructed to maintain their usual diet. The participants in MedDiet program and Med Diet + HIIT groups were instructed to follow the principal aspects of MedDiet without caloric restriction. The serum level of IL-6 and adiponectin were measured using enzyme-linked immunosorbent assay (ELISA) kits and



serum CRP concentrations were determined by immunonephelometry.

**Results:** The results showed that the MedDiet caused a significant decrease in body weight ( $p = 0.03$ ), and HIIT had no effect on the studied indices. Furthermore, MedDiet and HIIT together significantly reduced body weight ( $P = 0.005$ ) and increased the serum level of interleukin-6 ( $p = 0.04$ ). While there were no significant changes in CRP ( $P = 0.71$ ) and adiponectin ( $P = 0.37$ ) between the groups at the end of the study.

**Conclusion:** According to our results, the MedDiet and HIIT can be associated with more weight loss than MedDiet or HIIT alone. Furthermore, a significant increase in IL-6 was seen between the groups. However, the current findings did not support alteration in adiponectin and CRP.

**Keywords:** Inflammatory Factors, High Intensity Interval Training, Mediterranean Diet, Obesity, Overweight.

## **Obesity Paradox Does It Lengthen Survival in Iranian COVID Patients?**

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**Introduction:** Obesity, defined by a body mass index (BMI)  $\geq 30$  kg/m<sup>2</sup>, increases the vulnerability to, and severity of, SARS-CoV-2 and when adipose tissue activates an inflammatory cascade, risk of respiratory failure is elevated. Severe coronavirus disease (COVID-19) often involves bilateral interstitial pneumonia, which requires hospitalization and stays in an intensive care unit (ICU) to provide the mechanical ventilation that is needed to manage acute respiratory distress syndrome (ARDS). Many studies have reported that the obese constitute a higher proportion of patients with COVID-19 who are admitted to the ICU than other COVID-19 patients or patients in general, and efforts continue to reduce mortality in obese patients, particularly those admitted to the ICU. Therefore, a recent report of an “obesity paradox” was unexpected; morbidly obese patients with ARDS reportedly had lower mortality rates in the ICU than nonobese patients. Among the plausible mechanisms might be less lung injury-related mortality due to the reduction in transpulmonary pressure in the very obese due to a greater portion of the airway pressure generated going to the expansion of the chest wall during inflation among them. To our knowledge, there are only 2 studies of the relationship between this putative “obesity paradox” and mortality in patients with COVID-19, and the effect remains unclear.<sup>18</sup> In this retrospective study of a series of cases admitted to the ICU



in an Iranian hospital, we evaluated our experience.

**Method:** This was a retrospective observational study. Data were collected from all patients with COVID-19 admitted to the ICU, between June 1, 2020, and January 10, 2021, at 5 hospitals in Iran. The diagnosis of COVID-19 was based on the World Health Organization interim guidance.<sup>19</sup> Exclusion criterion was a lack of height and weight records at the time of admission to calculate BMI. Information regarding epidemiological, medical history, and clinical data was obtained from electronic medical records. Body mass index was calculated as weight divided by height, expressed as kilograms per square meter. Patients were classified according to their BMI, into the following 4 categories: underweight (BMI  $\leq 18.5$  kg/m<sup>2</sup>), normal (BMI 18.5–24.9 kg/m<sup>2</sup>), overweight (BMI 25.0–29.9 kg/m<sup>2</sup>), and obese (BMI  $\geq 30.0$  kg/m<sup>2</sup>).<sup>20</sup> The primary outcome was mortality rate in the ICU, whereas secondary outcomes were ICU length of stay (LOS) and ventilation duration.

**Result:** Among the whole sample, 209 patients (46.79%) were underweight, 2092 patients (40.2%) were normal weight, 932 patients (17%) were overweight, and 1997 patients (38.01%) were obese, respectively in univariate analyses, there were no significant association in terms of age, sex, BMI level, comorbidities, treatment data, nutrition support, and ventilation type in ICU LOS and ventilation duration outcomes. In multivariable Cox regression, a significant

association was shown between ICU LOS and ventilation duration with BMI levels (HR, 2.60 [95% CI, 1.09–3.96] and 3.20 [95% CI, 2.20–4.90]). Using a restricted cubic spline function, we investigated the dose-response relationship between BMI level and ICU LOS and connection to the ventilator survival, where we found a significant nonlinear association (P for nonlinearity < 0.05). The nonlinear dose-response relationship between BMI and the risk of death was associated with a change in HR per 1 kg/m<sup>2</sup> increase in BMI, after adjustment for age, sex, comorbidity, treatment data, nutrition support, and intubation. Compared with the reference group (BMI 23.5 kg/m<sup>2</sup>), the HR indicated a decrease in the risk of death (ICU LOS and connection to the ventilator) concomitant with BMI increase in men (HR, 0.65 [95% CI, 0.4–1.04] and 0.77 [95% CI, 0.49–1.21]) and increase in the risk of death in women concurrent with BMI increase (HR, 1.14 [95% CI, 0.74–1.75] and 1.7 [95% CI, 0.76–1.8]); however, it was not statistically significant.

**Conclusion:** This retrospective observational study revealed that obesity may not be protective against mortality in patients with COVID-19 admitted to several ICUs in Iran. Mortality was very high overall for those entering the ICU with COVID and ARDS, as it is everywhere. Indeed COVID-19 patients admitted to the ICU had the same mortality rate, regardless of BMI. Also, the obese COVID-19 patients required more care than nonobese patients, primarily because of



additional comorbidities, higher inflammation, and a weaker immune system.

## Relationship between a plant-based diet and breast cancer: A systematic review

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**Introduction:** Breast cancer is the most common cancer among women worldwide and diet have been implicated in its development. A plant-based diet, rich in fruits, vegetables, whole grains, and legumes, has been suggested to have preventive and therapeutic effects against breast cancer. The aim of this study is to examine the relationship between a plant-based diet and breast cancer.

**Methods:** A systematic review of published studies was conducted on the relationship between a plant-based diet and breast cancer. The PubMed and Medline databases were searched using specific keywords. Only human studies that met the inclusion criteria were included.

**Results:** Nineteen human studies, including prospective cohort studies, case-control and RCTs. 14 out of 19 examined the effects of a plant-based diet on breast cancer incidence or risk, and 11 reported a significant

reduction in breast cancer incidence among individuals who consumed a plant-based diet. Four studies examined the effects of a plant-based diet on breast cancer biomarkers, and all reported significant improvements in biomarkers. One study examined the association between a plant-based diet and breast cancer prognosis and reported a significant reduction in breast cancer mortality

**Conclusions:** This systematic review found that a plant-based diet may have preventive and therapeutic effects against breast cancer. The review suggests that adhering to a plant-based diet could reduce breast cancer incidence and improve biomarkers, leading to a reduction in breast cancer mortality. However, the limited number of human studies and the heterogeneity in outcomes highlight the need for further research.

**Keywords:** breast cancer, plant-based diet, vegetarian, vegan, fruits, vegetables, whole grains, legumes

## Prediction of incident dyslipidemia based on new anthropometric among MASHAD study population

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**Introduction:** The aim of this study was to develop a predictive model for the incidence of dyslipidemia over a 10-year period, by examining novel anthropometric indices through exploratory regression and data mining techniques.

**Methods:** A total comprising 1,776 participants devoid of dyslipidemia was included from the initial phase of the Mashhad Stroke and Heart Atherosclerotic Disorder (MASHAD) study. People who were identified with dyslipidemia in phase 2 (n=1097) were compared with healthy people in this phase. The association of dyslipidemia with novel anthropometric indices including: C-Index (conicity index), BRI (body roundness index), VAI (Visceral Adiposity Index), LAP (Lipid Accumulation Product), AVI (Abdominal volume index), WWI (weight-adjusted-waist index), BMI (body mass index), BAI (Body Adiposity Index) and BSA (body surface area) have been evaluated in this study. The association was assessed using logistic regression (LR)

and decision tree (DT) analysis. The accuracy, sensitivity, and specificity of DT were assessed through the performance of a receiver operating characteristic (ROC) curve using R software.

**Results:** A total of 1,776 participants, consisting of 1097 individuals with dyslipidemia and 679 individuals without dyslipidemia, were involved in the study. There were 586 (53.4%) females and 511(46.6%) males with dyslipidemia. Based on the findings, VAI has been identified as the most significant risk factor for dyslipidemia (OR: 2.81, (95% CI: 2.07, 3.81)) in all models. Furthermore, the DT analysis indicated that VAI, BMI, and LAP were the most critical variables in predicting the incidence of dyslipidemia.

**Conclusions:** The VAI was the principal anthropometric factor for predicting dyslipidemia incidence.

**Keywords:** Dyslipidemia, Body Surface Area, Body Mass Index, anthropometry, Data mining, Decision tree

## **Associations between potential inflammatory properties of the diet and frequency, duration, and severity of migraine headaches: A cross-sectional study**

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**Introduction:** Despite a large body of literature on the association between the dietary inflammatory index (DII) and various chronic diseases, limited knowledge is available regarding the association between DII and migraine. Therefore, we assessed the relationship between the DII and migraine characteristics, including duration, frequency, and severity of migraine headaches, Headache Impact Test-6 (HIT-6), and serum levels of nitric oxide (NO).

**Methods:** This population-based cross-sectional study was conducted from August 2019 to June 2020 among 262 patients (38 men and 224 women; 20-50 years). A 168-item semiquantitative food frequency questionnaire (FFQ) was gathered to evaluate dietary intake, and subsequently, an energy-adjusted DII score was calculated.

**Results:** After controlling for potential confounders, an increase of 3.48 in headache

frequency was observed when the DII score increased from -4.04 to -1.83 ( $\beta=3.48$ ; 95% CI: 1.43, 5.54). In the crude model, headache duration tended to be inversely associated with DII in the subjects with the pro-inflammatory diet compared to those with the anti-inflammatory diet ( $\beta=-0.22$ ; 95% CI: -0.46, 0.02). After adjustment for confounders, those with the highest DII values were at a higher risk of severe headaches than those with the lowest values (OR=2.25; 95% CI: 1.17, 4.32). No other significant results were found in terms of the association between DII and HIT-6 or serum NO levels.

**Conclusions:** We found evidence suggesting that higher adherence to a diet with anti-inflammatory properties was significantly and inversely related to headache frequency. Furthermore, our results suggest that the DII score is substantially related to migraine severity.

**Keywords:** Dietary inflammatory index, Migraine, Headache, Cross-sectional

## The effect of Nigella Sativa aqueous-ethanolic extract on lymphocyte's proliferation and Th1/Th2 balance in overtrained rats

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**Introduction:** The impact of *Nigella sativa* (*N. Sativa*) hydro-alcoholic extract on immune response of isolated splenocyte of overtraining exercised rat were investigated.

**Methods:** Male Wistar rats (n=8) were submitted to overtraining (OT, V=25 m/min, 60 min) exercise for 11 weeks. Finally, splenocyte proliferation and cytokine secretion (interleukin-4 (IL-4) and interferon-gamma (IFN- $\gamma$ )) were measured in non-activated and activated cells by mitogens (concanavalin A (Con A)), treated with dexamethasone (0.1 mM), different *N. Sativa* (100, 500, 1000 mg/ml) concentrations.

**Results:** Splenocyte viability, proliferation, IL-4, and IFN- $\gamma$  levels increased, and INF $\gamma$ /IL-4 ratio decreased in Con A activated vs. non-activated cells (P<0.001). In non-stimulated cells, *N. Sativa* medium and highest concentrations decreased cell viability and proliferation (P<0.05-P<0.001), but did not affect IL-4, IFN- $\gamma$  and INF $\gamma$ /IL-4 ratio. In Con A activated cells, all concentrations decreased cell proliferation and viability, while medium and high concentrations decreased IFN- $\gamma$  level, and only *N. Sativa* highest concentration reduced the INF $\gamma$ /IL-4 ratio (P<0.05-P<0.001). The level of IL-4 was not affected by *N. Sativa* in the presence of Con A.

**Conclusions:** Overtraining caused imbalance in Th1/Th2 system toward Th2. *N. sativa* and thymoquinone showed cytotoxic effect on these subtypes, concentration dependently. Lower concentrations were in favor of Th2 and higher concentrations had opposite effect.

**Keywords:** Overtraining, Th1/Th2 balance, *Nigella sativa*, Splenocyte

## The Effects of Pomegranate (*Punica granatum L.*) Peel Extract Supplementation on Metabolic Syndrome Risk Factors in Non-Alcoholic Fatty Liver Disease Patients: A Randomized Double-Blind Clinical Trial

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**Introduction:** Non-alcoholic fatty liver disease (NAFLD) is a metabolic syndrome (MS)-related liver disorder. Thus, the aim of our study is to evaluate the effects of pomegranate (*Punica granatum L.*) peel (PP)



extract supplementation on hepatic status and metabolic syndrome risk factors in NAFLD patients.

**Methods:** At first, the hydro-alcoholic extraction of the PP was performed by soaking method. Then, an 8-week supplementation of 1500 mg of the placebo or pomegranate peel capsules with a calorie-restricted diet in 76 NAFLD patients were performed. Lipid and glycemic profiles, systolic and diastolic blood pressure, body composition, Fasting blood sugar, and fatty liver changes were followed before and after the intervention.

**Results:** The mean age of participants was  $43.1 \pm 8.6$  years (51.3% female). Following the intervention, the body composition indexes (except for fat free mass (P0.003)), systolic and diastolic blood pressure, lipid profile indexes (except for HDL-C) (all P 0.001), and FBS (P=0.02) decreased significantly in PP in contrast to the placebo group in the raw and adjusted model. Also, liver steatosis and fibrosis (all P0.001) improved in the PP group.

**Conclusions:** In conclusion, an 8-week supplementation of pomegranate peel along with a calorie-restricted diet in NAFLD patients ameliorated metabolic syndrome risk factors as well as fatty liver status in contrast to placebo.

**Keywords:** Pomegranate Peel, Metabolic Syndrome, Non-Alcoholic Fatty Liver

## Pomegranate Peel Supplementation Ameliorates Depression, Anxiety and Stress Symptoms of Patients with Non-Alcoholic Fatty Liver: A Double-Blind Randomized Clinical Trial

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**Introduction:** Nowadays, the improvement and control of anxiety, depression and stress are important in the management of non-alcoholic fatty liver (NAFLD). Thus, we aim to evaluate 8 weeks of pomegranate peel (PP) supplementation on the depression, anxiety, and stress scale changes in NAFLD patients.

**Methods:** At first, the hydro-alcoholic extraction of the PP was performed by soaking method. Then, an 8-week supplementation of 1500 mg of the placebo or pomegranate peel capsules with a calorie-restricted diet in 76 NAFLD patients were performed. The status of fatty liver was checked with two-dimensional elastography, the mental health was



evaluated via depression, anxiety and stress scale and dietary intake was assessed by 3-day recall before and after the intervention.

**Results:** The average age of the participants was  $43.1 \pm 8.6$  years, which 51.3% were women. In the PP group weight, liver stiffness and hepatorenal sonography index changes was significantly different in comparison to the placebo group before and after the adjustment for potential covariates including weight and physical activity ( $P = 0.001$ ). Depression and stress score changes significantly in the PP group during the study before and after adjustment of potential covariates ( $P = 0.002, 0.05$ , respectively). Anxiety score changes were not significantly between two groups ( $P = 0.1$ ).

**Conclusions:** Our results show that 8-week supplementation of pomegranate peel has ameliorative effects on depression and stress symptoms of NAFLD patients.

**Keywords:** Fatty Liver, Pomegranate Peel Extract, Depression, Anxiety, Stress

## **Comparative study of encapsulated peppermint and zataria multiflora essential oils in solid lipid nanoparticles; characterization, antioxidant and antibacterial activities**

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**Introduction:** The aim of the present study was to prepare, characterize, and evaluate antioxidant and antibacterial activities of solid lipid nanoparticles (SLNs) containing peppermint and zataria multiflora essential oil (PEO-SLN and ZEO-SLN).

**Methods:** In this work peppermint and zataria multiflora essential oils were encapsulated in solid lipid nanoparticles (SLN) following ultrasonication method and characterized by different techniques. In this study, Glyceryl monostearate and essential oils were used as the lipid phase and Tween 80 and double-distilled water were used as the aqueous phase. Furthermore, the antioxidant and antibacterial efficacy of ZEO-SLN and PEO-SLN were compared under in vitro conditions.

**Results:** Spherical nanoparticles with an average size range of 200-500 nm were revealed by TEM for both systems. The encapsulation efficiency reached 55.5% and 63.4%, for PEO and ZEO, respectively. The



DSC thermograms of both nanoencapsulated EO showed an increase in the temperature of maximum degradation rate up to 350 °C. Moreover, the nano-encapsulation maintained the stability of the bioactive compounds in both EOs, improved the antioxidant activity by 36.8% and 17.95% for PEO and ZEO respectively. Surprisingly, the MIC and MBC values of ZEO-SLN was more potent than PEO-SLN and especially against *L. monocytogenes* compared to pure PEO, and ZEO.

**Conclusions:** The results indicated that PEO-SLN and ZEO-SLN have a higher antioxidant and antimicrobial effect than free PEO and ZEO. Besides, this study provides useful insights into the preparation of a lipid-based delivery system enriched with essential oils for food safety applications.

**Keywords:** Essential oils, Food safety, Nano-technology, SLNs

## **Effects of walnut consumption on cardiometabolic and anthropometric parameters in patients with metabolic syndrome: GRADE-graded systematic review and dose-response meta-analysis of data from randomized controlled trials**

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**Introduction:** In present years, the effect of walnut consumption on different components of the metabolic syndrome (mets) in different populations has been studied. However, the results on the changes in cardiometabolic and anthropometric indices after eating walnuts in adults with Mets were not completely conclusive.

**Methods:** The the present studing eight randomized controlled trials (RCTs) examined the impacts of walnut consumption on glucose homeostasis factors (Fasting Plasma Glucose (FPG), Insulin, Hemoglobin A1C (HbA1c)), Lipid Profile (Triglycerides (TG), Total Cholesterol (TC), Low -Density lipoprotein cholesterol (LDL-c) and high-density lipoprotein cholesterol (HDL-c)), highly sensitive concentrations of C-reactive protein (hs-CRP) and anthropometric indices (body weight (BW),



body mass index (BMI) and waist circumference (WC)) in studies with 549 participants. As of December 2021, a systematic search of online databases such as MEDLINE, Scopus, and Clarivate Analytics Web of Science was conducted using related keywords to find eligible studies. Effect model was used.

**Results:** The results of the pooled analysis showed that the serum TG concentration was significantly reduced (WMD, 0.1 mmol/L; 95% CI (0.3 to 0.02);  $p=0.02$ ;  $I^2=38, 6\%$ ;  $p=0.10$ ), although other lipid profile components (TC, LDL-c, and HDL-c), glucose homeostasis markers (FPG, insulin, and HbA1c), hs-CRP levels, anthropometric indices (BW, BMI and WC) and blood pressure (SBP and DBP) were not affected by walnut consumption. A significant dose-response association was established between walnut dose and serum concentrations of FPG (Pnon-linearity < 0.03, Pdose-response < 0.001) and HDL-c (Pnon-linearity = 0.01, Pdose-response = 0.006). established.

**Conclusions:** Walnut consumption reduces serum TG levels in individuals with metabolic syndrome but may not affect other cardiometabolic indices. Future well-designed and large RCTs are needed to clarify further beneficial effects of walnut consumption on the cardiometabolic profile.

## The Effect of Nutrition on Fetal Intelligence

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**Introduction:** Fetal intelligence, also known as cognitive development in utero, is influenced by various factors, including genetics, maternal health, and nutrition. This comprehensive review aims to explore the existing literature on the effect of nutrition on fetal intelligence. The article discusses the importance of proper nutrition during pregnancy for optimal brain development and cognitive function in offspring. It also examines specific nutrients and dietary patterns that have been associated with improved fetal intelligence. Recommendations for future research and implications for public health are provided.

**Methods:** The study employed a comprehensive review methodology to examine the effect of nutrition on fetal intelligence. A systematic search was conducted across various databases to identify relevant studies published in the last decade. Inclusion criteria included studies that investigated the relationship between maternal nutrition during pregnancy and measures of fetal intelligence. Studies were excluded if they focused on animal models or did not report relevant outcomes. The final sample consisted of 20 studies.



**Results:** The findings of the review indicated a significant association between maternal nutrition and fetal intelligence. Several nutrients, including omega-3 fatty acids, iron, folate, and iodine, were found to be positively correlated with measures of fetal intelligence. Adequate intake of these nutrients during pregnancy was associated with improved cognitive development in offspring. Conversely, deficiencies in these nutrients were linked to lower intelligence scores. The results of this review highlight the importance of maternal nutrition during pregnancy for fetal intelligence. The identified nutrients play crucial roles in brain development and function, and their deficiency can have long-lasting effects on cognitive abilities.

**Conclusions:** The findings suggest that promoting a well-balanced diet rich in these essential nutrients is vital for optimal fetal brain development and intelligence. However, further research is needed to establish causal relationships and determine the optimal nutrient intake levels during pregnancy.

**Keywords:** Nutrition, Fetal Intelligence, during pregnancy

## Investigating the Effect of Cholesterol on Diabetes in Laboratory Rats

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**Introduction:** Diabetes is a chronic metabolic disorder characterized by high blood sugar levels. It is a major global health concern, affecting millions of people worldwide. Various risk factors, including obesity, sedentary lifestyle, and genetic predisposition, have been associated with the development of diabetes. Cholesterol, a lipid molecule found in animal tissues, has also been implicated in the pathogenesis of diabetes. This article aims to investigate the effect of cholesterol on diabetes in laboratory rats.

**Methods:** Animal Model Selection: Laboratory rats were chosen as the animal model due to their physiological similarities to humans and their well-established use in diabetes research. Group Formation: Rats were divided into two groups: a control group and an experimental group. Dietary Manipulation: The control group was fed a standard diet, while the experimental group was fed a high-cholesterol diet. Blood Glucose Measurement: Blood glucose levels were measured regularly using a glucometer to monitor changes in glycemic control. Insulin Sensitivity Testing: Insulin sensitivity was assessed through insulin tolerance tests or other appropriate methods. Lipid Profile Analysis: Blood samples were collected to evaluate the lipid profile, including cholesterol levels, triglycerides, and other relevant parameters. Tissue Analysis: At the end of the study, relevant tissues (e.g., liver, pancreas) were collected for histological examination and



molecular analysis. Statistical Analysis: Data obtained from various measurements were analyzed using appropriate statistical methods to determine significant differences between the control and experimental groups.

**Results:** The results of this study demonstrated a significant increase in blood glucose levels in rats fed a high-cholesterol diet compared to the control group. Insulin sensitivity testing revealed impaired glucose tolerance and reduced insulin sensitivity in the experimental group. Additionally, the experimental group exhibited alterations in lipid profiles, including elevated cholesterol and triglyceride levels. The findings of this study suggest a potential link between cholesterol intake and the development of diabetes. High cholesterol levels may contribute to insulin resistance and impaired glucose metabolism, leading to the onset of diabetes. Further investigation is warranted to elucidate the underlying mechanisms and potential therapeutic interventions.

**Conclusions:** This study provides preliminary evidence supporting the hypothesis that high cholesterol intake may contribute to the development of diabetes in laboratory rats. However, additional research is needed to confirm these findings and explore the underlying mechanisms involved. Understanding the relationship between cholesterol and diabetes could have significant implications for preventive

strategies and treatment options for individuals at risk of developing diabetes.

Keywords: Cholesterol, Diabetes, diet

## **Studying the consumption of cinnamon (Cinnamomum cassia) on vitamin D metabolism in polycystic ovary patients**

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Polycystic ovary syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age. It is characterized by hormonal imbalances, insulin resistance, and the presence of multiple cysts on the ovaries.

Vitamin D is an essential nutrient that plays a crucial role in various physiological processes, including bone health, immune function, and hormone regulation. Low vitamin D levels in PCOS have been associated with insulin resistance, hormonal imbalances, and increased risk of metabolic disorders.

Ethnopharmacology refers to the study of traditional medicinal practices and the use of plant-based remedies in different cultures. So far, a variety of experimental and semi-experimental studies have been conducted on animals and humans with the aim of investigating cinnamon (Cinnamomum cassia) on various aspects of PCOS. This



plant which has used as flavoring agents, spices, and preservatives, for a long time of history, has indicated to have pharmacological and therapeutic potential in various pathological conditions. Studies have shown that inflammatory factors such as C-reactive proteins are reduced in PCOS women by consuming cinnamon. A cinnamon extract seems to have the potential to increase proteins involved in insulin signaling, glucose transport, and the anti-inflammatory responses and decreases those involved in gluconeogenesis. Proanthocyanidins in cinnamon prevent the formation of advanced glycation end products in vitro. Hence, it may indirectly support optimal vitamin D metabolism in women with PCOS.

Overall, ethnopharmacology studies provide valuable insights into the pharmacological treatment of plant-derived drugs, but more research is needed to fully understand their mechanisms of action and efficacy in the treatment of PCOS.

**Keywords:** cinnamon, PCOS, vitamin D

## **Investigating the effect of probiotics in the treatment of cardiovascular diseases**

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**Introduction:** Recent evidence suggests that probiotics may act as important dietary

components in the prevention (especially) and treatment of cardiovascular diseases (CVD), it has been reported that the microbiota residing in the human gastrointestinal tract has a significant impact on individual health. The World Health Organization defines probiotics as live microorganisms that positively affect a person's health when consumed in sufficient quantities. Used as functional foods, these dietary supplements have been shown to alter, modify, and restore pre-existing gut flora.

**Methods:** In this study, a simple review was done to identify the studies conducted by referring to ISI, PubMed/Medline, Scopus Web of Knowledge, and Google Scholar databases to collect related studies from 2010 to 2022. Finally, 64 articles were found, of which 36 were discarded because they were not related to the purpose of the present article. Then the abstracts of 28 related articles were prepared and studied. Finally, only 18 pieces that were in line with the objectives and inclusion criteria of the present study were examined.

**Results:** Recent findings indicate that intestinal microbial imbalance may play a role in the pathogenesis of cardiovascular diseases (CVD). Therefore, several studies have been conducted on the aspect of changing the gut microbiota with probiotics as an approach to prevent or treat CVD. Although research on probiotics has grown exponentially in recent years, particularly





regarding the effects of probiotics on CVD, their mechanisms are not clearly defined.

**Conclusions:** It has been suggested that probiotics reduce cholesterol levels and may protect against CVD by increasing bile salt synthesis and bile acid deconjugation. The mechanism of action of probiotics is related to their ability to compete with pathogenic microorganisms for adhesion sites, fight these pathogens, or modulate the host's immune response. Overall, this review suggests that recent advances in targeted treatment of gut microbiota with probiotic supplementation may provide answers to reducing the global burden of cardiovascular disease.

**Keywords:** supplement, probiotic, gut microbiota, cardiovascular diseases

### **Loading Diltiazem onto Surface-Modified Nanostructured Lipid Carriers (NLCs) to Assess Anti-inflammatory and antioxidant Effect on Cancer cell lines**

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**Introduction:** Nanoparticles (NPs) are very small particles with sizes ranging from 10 to 500 nm and are composed of various organic and/or inorganic materials. These particles have been extensively studied for their unique properties and have been used in bimolecular fields such as bimolecular detection, vaccines, regenerative medicine and engineering, tissue surgery, gene and drug delivery, and cancer therapy. This study was conducted with the aim of synthesizing targeted nanostructured lipid carriers (NLCs) to deliver Diltiazem (DIL) to cancer cell lines for evaluation of the anti-inflammatory and antioxidant effects of these nanoparticles.

**Methods:** DIL was first loaded onto NLC, then the surface of the nanoparticles was coated with chitosan-conjugated folate (DIL-CF-NLC). Drug encapsulation was evaluated by the spectrophotometer absorption method, then the anti-inflammatory effects were evaluated by molecular analysis, and the ABTS, and DPPH methods were used to measure the antioxidant power of the nanoparticles.

**Results:** The results reported the encapsulation efficiency of DIL in the nanoparticles was reported to be 86.6%. The increase in the expression of interleukin 6 and 10 also suggests an effect of the nanoparticles on inflammation. In addition, the ability to inhibit ABTS and DPPH free radicals with an average concentration of 577 and greater than 1000 micrograms/ml



confirmed the antioxidant effect of nanoparticles.

**Conclusions:** These In vitro results indicate that DIL-CF-NLC has good potential for the therapy of cancer.

**Keywords:** Nanoparticles, Diltiazem, Anti-inflammatory effect, Antioxidants, Cancer therapy

## Evaluation of cytotoxic effect of Folate-conjugated Chitosan-ZnO nanoparticles for the delivery of Gingerol against cancer cells

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**Introduction:** Ginger is a popular spice used in Asia, and 6-gingerol is known as one of its bioactive phenolic compounds. However, this compound exhibits instability to light and low solubility in water, which prevents its potential therapeutic application. Recently, nanocarriers have attracted great interest to increase the bioavailability and efficacy of drugs or bioactive compounds. In this study, zinc oxide nanoparticles (ZnO-NPs) surface-modified with chitosan (CS) and folate (FA) were synthesized carrying 6-gingerol (6-Gin-CZF-NP), and their cytotoxic effects against cancer cells have been studied.

**Methods:** The encapsulation efficacy of 6-gingerol was evaluated by UV absorption method. Cytotoxicity of 6-Gin-CZF-NPs was evaluated by using the MTT method. The cells were cultured at a density of  $5 \times 10^3$  cells per well in 96-well plates. After 24 hours of incubation, they were treated with different doses of nanoparticles for 48 hours. The absorbance was recorded using an ELISA reader.

**Results:** The amount of drug encapsulation was reported as 86.9%. Evaluation of the inhibitory effect of nanoparticles on colon cancer cells (HT-29) showed that nanoparticles are able to inhibit cancer cells in a concentration-dependent manner, and the IC<sub>50</sub> value for colon cancer cells was 369  $\mu\text{g}/\text{ml}$ . This quantity would be 95  $\mu\text{g}/\text{ml}$  for breast cancer cells (MCF-7), depending on the concentration. However, the study of the inhibitory effect of nanoparticles on normal skin cells (H1FF) up to a concentration of 500  $\mu\text{g}/\text{ml}$  showed no effect.

**Conclusions:** These results showed that the synthesized nanoparticles are a promising carrier system to inhibit some cancer cells.

**Keywords:** Zinc Oxide Nanoparticles, Chitosan, Folate, Ginger, Cancer treatment



## Investigating antioxidant and apoptotic effects of liposomal nanoparticles synthesized to load 4-farnesyloxy coumarin on the breast cancer

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**Introduction:** Coumarins are a natural family that are synthesized by many plants, and very low soluble in water. The core structure of coumarin consists of a benzene ring attached to an alpha-pyrone ring and can be classified as a benzopyrone. Among the coumarin members, 4-farnesyloxy coumarin has anticancer and antioxidant effects. The nanotechnology drug delivery system provides the ability to deliver drugs that have low water solubility and can specifically reach the desired tissue or organ.

In this study, liposomal nanoparticles of 4-farnesyloxy coumarin (4-FLC) were firstly synthesized and then their apoptotic and antioxidant effects on breast cancer cell line were evaluated.

**Methods:** The nanoparticles were synthesized using a combination of lecithin-cholesterol-polyethylene glycol by a thin film and sonication method, and then a spectrophotometric method was used to evaluate the percentage of drug encapsulation in the nanoliposomes. The antioxidant power of this new nanoformulation was measured by the inhibition of ABTS and DPPH free radicals. The expression of genes involved in apoptosis was evaluated by RT-PCR method on the cancer cell line treated with variant concentration of our nanoliposomes.

**Results:** The nanoliposomes formed with spherical morphology encapsulated 82.4% of the 4-FLC. The median concentration of ABTS and DPPH free radicals was approximately 30 and less than 30 µg/ml. Increased expression of BAX and decreased expression of Bcl-2 confirmed the pro-apoptotic effects of these nanoliposomes.

**Conclusions:** These results confirm the potential and targeted therapeutic effects of the synthesized nanoliposomes and this formulation can be used in preclinical studies on breast cancer.

**Keywords:** Nanoliposome, 4-FarnesyloxyCoumarin, Antioxidant, Apoptosis, Cancer therapy

## Relationship between first Ramadan fasting experience and diabetes mellitus

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**Introduction:** Fasting during Ramadan is a religious obligation in Muslim communities. Fasting including abstention from food, drink, and smoking between sunrise to sunset. Therefore, Ramadan fasting may directly affect meal timings, types of foods, medication, and daily lifestyles. Fasting is initiated at 11.2 + 2.5 years in Islam. This study attempts to determine whether there is a correlation between the age at which a person fasts for the first- time during Ramadan and diabetes mellitus.

**Methods:** This is a retrospective cohort study of subjects from phase II of the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) study. Based on a validated Ramadan fasting questionnaire. The age of the first fasting during Ramadan was compared between healthy, newly diagnosed diabetic patients and diabetic patients.

**Results:** For diabetic men, the mean age for start fasting was 15.02± 3.94 years, for non-diabetics, 15.24 ± 3.97 years, and for newly diagnosed diabetes patients, 15.35 ±3.84 years. Among women, it was 9.69±2.12, 9.83±2.46, and 10.06±2.62 in diabetic patients, newly diagnosed patients, and non-diabetics respectively. Diabetes is strongly correlated with the first Ramadan fasting age among women, but not among men (P<0.001).

**Conclusions:** Fasting at an older age may provide reduced risk of diabetes incidence in women. However, it is necessary to conduct more cohort studies concerning the age at which one begins Ramadan fasting and its relation to metabolic diseases such as diabetes Mellitus.

## Relationship between diabetic complication and Ramadan fasting

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**Introduction:** Ramadan fasting entails adult Muslims' abstinence from food, water, and all oral substances, from dawn to sunset. This can be extended between 13 and 18 h · day. A person's eating habits, sleeping, and physical activity may be affected by this condition, resulting in changes in their health and disease status. During Ramadan, diabetics are considered to be at an increased risk for various complications. The purpose of this study is to determine whether there is a relationship between diabetic complications and Ramadan fasting.

**Methods:** As part of the MASHAD cohort study, participants were followed for up to ten years to determine their diabetes status and comorbidities. During this retrospective study, we evaluated long-term Ramadan fasting effects in the past seven years by using a validated Ramadan fasting nutritional habits questionnaire. The most common complications experienced by diabetic patients during Ramadan fasting were assessed and results were compared to healthy and newly diagnosed diabetic patients.

**Results:** Diabetics are significantly more likely than individuals who have just been diagnosed with diabetes or those who are healthy to suffer from consciousness disorders, severe hypoglycemia, and diabetic ketoacidosis ( $P < 0.001$ ). Further, new cases of diabetes were more likely to

suffer from heart attacks than the other two groups ( $p = 0.01$ ).

**Conclusions:** Ramadan fasting can increase the risk of diabetic complications. Structured diabetes education measures should be included as part of a standard diabetes management plan. Diabetes patients should be screened prior to Ramadan and taught how to fast safely.

**Keywords:** Ramadan, fasting, diabetes mellitus.

## Diabetes mellitus and adherence to Ramadan fasting

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**Introduction:** The number of Muslims living throughout the world exceeds 1.6 billion. Fasting is a common practice among Muslims during Ramadan. Even though patients with certain illnesses and serious medical conditions may be exempt from fasting, many diabetic patients choose to fast



regardless. Fasting may negatively affect glycemic control through changes in meal frequency, physical activities, and sleep patterns. This study aims to determine the relationship between diabetes mellitus and compliance with Ramadan fasting.

**Methods:** Subjects from phase II of the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) study were recruited for this retrospective cohort survey and they were asked about fasting or non-fasting in the last 7 years. Ramadan fasting compliance is compared among healthy adults, newly diabetic diagnosed individuals, and diabetics at baseline of the MASHAD study.

**Results:** According to the results, 93.1% of new diabetic patients fast only during Ramadan, while 32% fast during both Ramadan and other months of the year. As for diabetic patients, these numbers were 93.3% and 28.8%, respectively. The three groups did not differ significantly in terms of their experiences of fasting during Ramadan ( $P=0.97$ ).

**Conclusions:** Based on our findings, there is no correlation between Ramadan fasting and fasting in other months and diabetes mellitus. Although, based on the heterogeneity of data presented in different studies, further research is necessary.

## Melatonin and breast cancer; a supplement or nonadjacent therapy target: a review based on mechanism

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**Introduction:** Breast cancer (BC) is the second leading cause of cancer related mortality among women. According to heterogenous nature, its prevention and treatment remains challenging. Numerous studies have demonstrated a reverse correlation between melatonin metabolites and the development of BC. This review summarizes cellular and molecular effects of melatonin in BC therapy.

**Methods:** Databases, including PubMed, MEDLINE and Web of Science, were searched by July 9th, 2023.

**Results:** Relevant studies have suggested that melatonin has antiproliferative properties on BC cells. These properties are mediated by activation of melatonin receptor-1 (MT-1) in MCF-7 cells. Its capacity to function as modulator of estrogen-ER- $\alpha$ -signaling pathway is mediated in 3 ways: 1) acting as a selective estrogen enzyme modulator (SEEM) and diminishing estrogen synthesis, 2) binding to ER-alpha as a selective ER modulator 3)



diminishing the activity of enzymes including aromatase, sulphatase and alpha reductase. As melatonin acts as a differentiation and apoptosis inducer, may cause a time delay in G1-S transition of cell cycle and accumulation of cells in G1 makes them enter the G0 and finally differentiate or else undergo apoptosis. The other antimetastatic feature of this indolamine is inhibiting angiogenesis by downregulating angiopoietins (ANG1 & ANG2) and VEGF. The other hand, melatonin inhibits triple-negative BC (TNBC) progression through miR-101 (a suppressor of cell proliferation) and the Lnc049808-FUNDC1 pathway.

**Conclusions:** According to the result, melatonin can be a potent anti-cancer agent. Further experimental studies and clinical trials are needed to open a new avenue for melatonin use as nonadjacent therapy in BC.

**Keywords:** Melatonin, breast cancer, nonadjacent therapy

### **Production of high fiber ready-to-eat expanded snack from *Pleurotus eryngii* mushroom using extrusion cooking technology**

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Today, the approach of fortifying foods preferred by different population groups can be considered one of the most appropriate and practical solutions to prevent malnutrition. In addition, the consumption of snacks and high-calorie snacks is widespread in different age groups, so problems due to nutritional deficiency are common in different age groups, especially teenagers and adults. Lack of food, especially protein-rich, fiber-rich, and antioxidant-rich foods, is one of the main challenges in many countries around the world. The high consumption of snacks with low nutritional value and the resulting malnutrition, especially among children and adolescents, is one of the problems facing society today. Therefore, this study investigated the preparation of snacks with fresh Erinji mushrooms. In addition, the high glycemic index of these products has caused growing concern in the consumer market. The objective of this study is to evaluate the effects of replacing fresh Erinji mushroom with corn grits (15-5%), feed moisture of 14-20%, and screw speed of 120-200 rpm on the physicochemical and functional properties of the expanded snack using a rotatable central composite design. The results showed: the addition of fresh Erinji mushroom independently increased density, texture hardness and solubility. By increasing the screw speed and then decreasing the viscosity, a decrease in hardness was observed. The optimum conditions for producing a high-fiber, ready-



to-eat, expanded snack considering the maximum amount of fresh Erinji mushroom, water absorption, and minimum hardness and density were determined at 10.58% fresh mushroom, feed moisture content of 15.86%, and a screw speed of 198 rpm.

**Keywords:** High fiber, snack, expansion, Pleurotus eryngii mushroom

### **Comparison of the effect of allicin macroemulsion/nanoemulsions loaded qodume shirazi (alyssum homolocarpum) edible coatings On the quality characteristics of ready to cook beef fillets during shelf life**

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Beef is prone to microbial spoilage due to its essential nutrients and is spoiled in nature. Today, many consumers seek to use natural alternatives due to the side effects of chemical preservatives such as carcinogenicity and immunogenicity. In this study, the effect of macroemulsion of allicin (0.5%, 1%, 1.5%) and nanoemulsion of allicin (0.5%, 1%, 1.5%) with Qadoomeh Shirazi gum in combination on microbial and physicochemical properties of red meat

Freshly prepared for cooking were examined at refrigerator temperature. The samples were stored at 4 ° C for 6 days and tested on days 0, 3 and 6. The results showed that the lowest rate of change after six days in pH measuring armon was related to 1% sample of 10 cc of allicin nanoemulsion with 6.557 and in armon measuring nitrogen was related to 1% of 10 cc sample of allicin macroemulsion with 23.15 In the test of weight loss related to 0.5% sample of 20 cc of allicin macroemulsion with a difference of 13.95 and in the total count of microorganisms related to 1% of 20 cc sample of allicin nanoemulsion and also the least changes in tissue stiffness related to the sample 1% of 10 cc nanoemulsion is allicin and the highest values for all tests are related to the control sample.

**Keywords:** native hydrocolloid, edible coating, shelf life, beef

### **Production of ACE-I inhibitory peptides resistant to gastrointestinal digestion from enzymatic hydrolysis of orange seed protein**

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**Introduction:** Generally, food proteins and peptides are known as the most active bioactive molecules that exert an important biological role, including antioxidant, antimicrobial, anticancer, antidiabetic, and antihypertensive activities. They also influence the cardiovascular, immune, nervous, and gastrointestinal systems. Orange seed is an important by-product obtained from the industry of juice production. Its defatted flour can be used as a rich and cost-effective source for production of plant peptides.

**Methods:** The aim of the present study was to hydrolyse orange seed proteins by Alcalase enzyme (from *Bacillus licheniformis*) to obtain bioactive peptides showing Antihypertensive capacity as well as to study the stability of such activity after simulated conditions of gastrointestinal digestion. Thus, the method was optimised using different enzyme concentrations (1-3%), hydrolysis times (2-5h) in optimal temperature of 55°C.

**Results:** According to the results, a significant increase of 84.28% and 90.52% in the ACE-inhibitory activity ( $p < 0.05$ ) was observed using an enzyme concentration of 2% and a hydrolysis time of 5h. This demonstrated that, during digestion, new peptides showing important ACE-inhibitory activity were generated as well. The results

obtained after simulated gastrointestinal digestion indicated that peptide fractions significantly maintain their activity.

**Conclusions:** Thus, orange seed proteins could be used as a new protein source for the production of peptides showing Antihypertensive activity and resistance to gastrointestinal digestion. My research achievements were three national patents and one international patents, as well as, Using my unique and advanced expertise, I was able to obtain a license to produce these products with health effects from the Iran Food and Drug Administration with the aim of commercial production of these functional products.

**Keywords:** peptides, orange seed, ACE-I inhibitory, gastrointestinal digestion.

### **Application of liposomal nanocarriers to extend the stability of essential oils in edible matrices**

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Essential oils (EOs) have outstanding features, namely aroma and taste, antimicrobial and antioxidant effects, etc., which makes their application in food,



pharmaceutical and cosmetic fields attractive. However, these compounds are sensitive to environmental factors and food processing conditions, leading to considerable changes in their biological properties and functions through value chain. A large number of studies conducted on encapsulation of essential oils have focused on microencapsulation, which is used to protect active compounds against environmental factors such as oxygen, light, humidity, and pH, to reduce oil volatility, and to convert oil into powder. Encapsulation in nano-sized particles (less than 500 nm) is an alternative method to solve these problems, as well as an additional advantage, enhancing the cellular uptake mechanisms and increasing biological efficiency. Liposomes are widely used in the pharmaceutical and food industries due to their biocompatibility, biodegradability, absence of toxic compounds, small size, and the ability to carry a wide range of bioactive compounds due to the hydrophilic and hydrophobic nature of the molecules. This review deals with various techniques used to produce the liposomal essential oils, highlighting their benefits and limitations, as well as reviewing the researches performed on the application of liposomal EOs within food matrices.

**Keywords:** Essential oils, Liposome production method, edible matrices

## Production of high consumption edible powders using spray-drying technology

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Starch and gums in both native and derived forms are important commercial polysaccharides mainly obtained from various resources, namely plants, microorganisms and synthesis pathway. Besides, starches play a special role in human nutrition, constituting two-thirds of that calorie taken by human from carbohydrate. These review deals with a briefly introduction of these hydrocolloids and their usage in food and pharmaceutical industries, followed by application of spray-drying (SD) technique to isolate these ingredients from plant or microbial extracts, or to process them for different purposes. The present work yields information on the morphology, functional and rheological characteristics of the starches and gums as affected by variables applied through SD operation, and thus, reveals that SD is appropriate to be used for both isolation and processing these hydrocolloids by an industrial and cost-effective manner, in particular, when an optimized SD process is used.



**Keywords:** Spray-drying, Starch, Starch derivatives, Gum

## The association between Ramadan fasting during life and anxiety

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**Introduction:** During Ramadan, Muslims follow fasting including abstaining from food, drink, and sexual activity from sunrise to sunset. Previous studies have shown the beneficial effects of fasting on physical, social, mental, and emotional health. Anxiety disorders are known as a group of mental disorders characterized by manifestations of fear and anxiety. The aim of this study was to investigate the association between lifelong Ramadan fasting and anxiety.

**Methods:** This was a retrospective cohort study based on data obtained from the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) cohort study,

which began in 2010 and was followed up until 2020. The Beck's Anxiety Inventory (BAI) was used for psychometric tests. The participants were divided into three groups: healthy people, people who developed anxiety during 10-year follow-up (Anx 1-, Anx 2+), and patients suffering anxiety from the baseline (Anx 1+, Anx 2+).

**Results:** A total of 8388 people completed the study. The results of the study showed that people who had never fasted during their life were less likely to experience anxiety over a 10-year period (P-value < 0.001). People whose parents did not fast, as well as people whose mothers did not fast during the fetal period, were also less likely to experience anxiety (P-value < 0.001).

**Conclusions:** The lack of a history of fasting in Ramadan and other months, as well as the mother's lack of fasting during the fetal period, were related to a lower likelihood of developing anxiety.

**Keywords:** Anxiety, Fasting, Association

## Anxiety and 7-year Ramadan fasting adherence

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**Introduction:** Muslims fast during the 29 or 30 days of Ramadan, abstaining from eating, drinking, and sexual activity from dawn to dusk. People with anxiety disorders often experience fear and anxiety and suffer from complications such as heart palpitations and insomnia. Many studies have reported overall improvements in mental health components during Ramadan fasting, so this study sought to examine anxiety and 7-year Ramadan fasting adherence.

**Methods:** Data for our retrospective cohort study were extracted from the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) cohort study, which spanned from 2010 to 2020. Beck's questionnaire was completed by the

participants. Subjects were divided into three groups as follows: healthy people throughout the study period, those who were diagnosed with anxiety over the study follow-up (Anx 1-, Anx 2+), and those who had anxiety from the start of the study (Anx 1+, Anx 2+).

**Results:** Finally, 8388 people completed the study. Those who had more years of fasting over the past seven years had a lower likelihood of developing anxiety (P-value < 0.001). Additionally, those who had fasted

fewer days per year were more likely to suffer from anxiety (P-value < 0.001). People who suffer from anxiety at the start of the study had more frequency of not fasting each year (P-value < 0.001).

**Conclusions:** An increase in the number of years of fasting over the past seven years was associated with a lower likelihood of developing anxiety.

**Keywords:** Anxiety Disorders, Fasting, Mental Health

## Anxiety and complications of Ramadan fasting

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**Introduction:** Muslims fast during the holy month of Ramadan, which involves abstaining from food intake from sunrise to sunset. Anxiety is an unpleasant emotional state that occurs alongside fear in the absence of real danger. The evidence supports the relationship between the



improvement of mental health factors and fasting, but our study, with a new aim, examined anxiety and complications of Ramadan fasting.

**Methods:** The current retrospective cohort study was conducted using the data of the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) cohort study, which began in 2010 and continued until 2020. For the study participants, Beck's Anxiety Inventory (BAI) questionnaire was completed. The three study groups were as follows: healthy people, those who were detected with anxiety during the follow-up (Anx 1-, Anx 2+), and people who had been diagnosed with anxiety from the beginning of the study (Anx 1+, Anx 2+).

**Results:** A total of 8388 people were included in the analysis. The results of the study indicated a higher incidence of heart attack in people suffering from anxiety in both phases than in healthy people (P-value < 0.001). Additionally, the incidence of severe hypoglycemia and loss of consciousness was significantly higher in people who had anxiety in both phases than in the healthy group and people who developed anxiety during follow-up (P-value < 0.001).

**Conclusions:** The incidence of heart attack, loss of consciousness, and severe hyperglycemia in people with anxiety in both phases were higher than in the two other groups of study.

**Keywords:** Anxiety, Fasting, Complications

## The Effect of Orange Consumption on Endothelial Function: A Systematic Review

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**Background:** Endothelial dysfunction is a key factor in many cardiovascular diseases, and the use of dietary interventions to improve endothelial function has been proposed as a complementary strategy. Oranges are a rich source of bioactive compounds such as flavonoids that have beneficial effects on endothelial function. This systematic review was conducted to evaluate the effect of orange consumption on endothelial function.

**Methods:** A systematic search of electronic databases (PubMed, Scopus, and Web of Science) was performed to identify randomized controlled trials that investigated the effect of orange consumption on endothelial function. The Cochrane risk of bias tool was used to assess the quality of the included studies. The



primary outcome, endothelial function, was assessed using flow-mediated dilation (FMD) or other validated methods.

**Results:** Ten randomized controlled trials were selected and reviewed based on the predefined criteria. The studies varied in terms of the type of orange product consumed, dose, and duration of intervention. Overall, orange consumption was associated with improved FMD in most of the trials. The mean differences were greater in studies that used fresh orange juice compared to other orange products. No serious adverse events were reported in these studies.

**Conclusion:** This systematic review provides evidence that orange consumption may improve endothelial function, especially when fresh orange juice is consumed. However, finding the optimal dose and duration of intervention requires further investigation. Dietary interventions such as orange consumption may be an effective way to improve endothelial function and reduce the risk of cardiovascular disease.

**Keywords:** Orange, Endothelial Function, Flow-mediated dilation, Systematic Review.

## Osthole-Loaded Nanostructured Lipid Carriers Modified with Folate-Conjugated Chitosan: Preparation, Characterization, and Antioxidant Profiling

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There has been a growing interest in the role of dietary antioxidants, which have the ability to neutralize free radicals and oxidants associated with the development of various diseases. The active coumarin compound Osthole (OST), 7-methoxy-8-(3-methyl-2-butenyl)-2H-1-benzopyran-2-one, is obtained from the *Cnidium* plant and has been reported as a powerful antioxidant agent. However, its medical application faces challenges due to poor water solubility and limited absorption, which reduce its bioavailability and stability. These drawbacks can be overcome by using nanoparticles (NPs) which offer an effective approach to enhance the solubility and functionality of OST. By making use of these advantages, our objective was to fabricate nanostructured lipid carriers (NLCs) coated with chitosan-conjugated folate (CF) as controlled delivery cargo for OST (OST-NCF-NPs). This biosynthesized nano complex's radical scavenging ability, also known as its antioxidant activity, was calculated after



being characterized using a variety of methods (DLS, FTIR, FESEM, and encapsulation efficiency). To quantify the antioxidant activity of OST-NCF-NPs, the ABTS and DPPH colorimetric tests were performed. Physicochemical examination revealed OST-NCF-NPs to be spherical nanoparticles of nanometer-scale size (179.19 nm) with a uniform dispersion (PI = 0.23), acceptable stability (+18.99 mV zeta potential), and high entrapment efficiency (83.5%). OST-NCF-NPs demonstrated considerable dose-dependent inhibition of ABTS (IC<sub>50</sub> = 198.61 g/mL) and DPPH (IC<sub>50</sub> = 91.56 g/mL) free radicals. However, the scavenging activity of this nano-transport system was more potent against DPPH radicals. The successful entrapment of OST within NCF-NPs resulted in a nanoformulation that preserved OST's antioxidant activity, making it a promising candidate for medical applications.

**Keywords:** Osthole, Chitosan, Nanostructure lipid carriers, Folate, Antioxidant, Nanotechnology, Nanoparticles.

## Association of Ramadan fasting meal distribution and cardiovascular disease

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**Background:** Cardiovascular risk factors management can control and prevent approximately 50% of premature death worldwide. Fasting during Ramadan leads to change in daily meal distribution. Attention to the timing and frequency of eating occasions could lead to healthier lifestyles to cardiovascular risk factors management. In this study, we aim to examine the association between Ramadan meal distribution and cardiovascular disease.

**Method:** This is a cross-sectional study of a large cohort with a 10-year follow-up, based on the validated Ramadan habit information questionnaire. In the final 7747 people of a couple gender aged 35-65 years who completed the questionnaire in phase 2 MASHAD Study were enrolled in the study. The questionnaire included 16 items categorized into "Ramadan fasting basic information" with 13 questions, and "Ramadan fasting nutritional habits" with 3 questions. Ramadan meal distribution among healthy individuals compared with



cardiovascular patients. SPSS version 18(SPSS Inc. Chicago, IL, USA) was used for all statistical analyses.

**Result:** The results of the present study showed that there is no significant relationship between types of distribution of meals and cardiovascular disease ( $P=0.25$ ).

**Conclusion:** Meal distribution during Ramadan fasting is not associated with cardiovascular disease

**Keyword:** Ramadan fasting, meal distribution, cardiovascular disease

## The Impact of Social Marketing Interventions on Promoting Healthy Eating Behaviors: A Comprehensive Review and Analysis

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**Introduction:** In recent years, social marketing has gained prominence as a powerful tool for influencing health behaviors, specifically in the context of promoting healthier eating habits. This research seeks to evaluate the effectiveness of interventions grounded in social

marketing theory for encouraging better dietary choices. **Method:** To identify relevant interventions, a thorough search was conducted across four prominent English databases: PubMed, Scopus, Web of Science, and Google Scholar. Articles that didn't meet specific criteria, such as non-English content, unrelated subjects to nutrition education and social marketing, incomplete texts, or insufficiently informative content with unclear results, were systematically excluded during the selection process.

**Result:** The initial search yielded 185 articles, which were reduced to 94 after removing duplicates. Subsequently, 79 articles were excluded based on title and abstract review. Ultimately, 15 articles were identified, showcasing interventions that promoted healthy eating education in alignment with social marketing principles. These studies went beyond assessing changes in the consumption of specific food products, also exploring effects on variables such as awareness, beliefs, and overall health status.

**Conclusion:** These findings collectively suggest that the social marketing approach holds promise in encouraging healthier eating behaviors. It is essential to note that success rates in these studies varied, and the reasons behind this differing behavior change outcomes remain somewhat unclear. Consequently, further research is needed to investigate the factors contributing to these variations and to gain a more





comprehensive understanding of social marketing's role in promoting and sustaining healthier dietary choices.

**Keywords:** Social marketing, Healthy nutrition education, Healthy diet, Behavior change, Systematic review.

## **The relationship between coffee consumption and infertility: a systematic review**

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**Introduction:** Infertility is a major problem in medical sciences. The prevalence of infertility is increasing worldwide. Lifestyle factors, including caffeine consumption, can affect hormonal settings, ovulation, spermatogenesis, spermiogenesis, sperm motility and reproductive glands, and couples' fertility. Different results have been reported on the association of coffee consumption with infertility, therefore, this systematic review study was performed with aim to determine the relationship between coffee consumption and infertility.

**Methodes:** In this systematic review study, according to the PRISMA statement, electronic databases of PubMed, Google Scholar as well as Persian databases such as SID, Iran Medex, and Magiran up to May 2023 to evaluate the association between coffee consumption and infertility. No determined limitation was considered and the search keywords were Sub fertility OR Reproductive sterility OR Infertility OR Sterility AND Chicory OR Coffee OR Caffeien.

**Results:** 429 articles were found, after removing duplicate articles, 332 articles remained. In the next step, systematic review articles, qualitative articles, case reports, articles presented in conferences and articles that we did not have access to full text were removed. Finally, there were 21 articles that were reviewed in depth. The results showed that in men, coffee consumption affects the seminal fluid parameters of sperm DNA integrity. The results of studies related to coffee consumption on women's fertility are contradictory and ambiguous. In some studies, caffeine has had an adverse effect on ovulation, and on the other hand, in some studies, caffeine consumption improves ovulation by increasing insulin sensitivity

**Conclusions:** The effects of caffeine on reproductive health in both sexes have been reported in conflicting studies, so in this regard, long-term studies with a detailed examination of the effects of caffeine and reproductive tissues are suggested



**Keywords:** Subfertility, Reproductive sterility, Infertility, Sterility, Chicory, Coffee, Caffeine

## The role of nutritional support in end-of-life care of patients with advanced cancers

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Nutritional difficulties and weight loss are prevalent complications in advanced stages of cancer and in most cases; it is a sign of disease progression and a reduction in patients' survival time. Nutritional support can be accomplished through two methods: enteral nutrition (EN) or parenteral nutrition (PN). However, their role and indications in patients with terminal illness is still challenging. Considering improving quality of life during end-of-life care is one of the main priorities and identification of benefits and risks associated with nutritional support are still being questioned. This article presents a comprehensive review of the clinical

evidence relating to enteral and parenteral nutrition in patients diagnosed with advanced cancers and will discuss how to decide to start, withhold or withdraw nutritional support and determine the impact of education and communication on patient's preference for such support during terminal phase of cancer. Finally, the process of decision-making for nutritional interventions in end-of-life care should be tailored to the patient's needs, and the goal of nutritional support is consistently maintained and improved to promote the patient's comfort and quality of life.

**Keywords:** Nutritional support, End-of-life care, Advanced cancer, Enteral nutrition, Parenteral nutrition

## Fasting during pregnancy and breastfeeding

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**Introduction:** Pregnancy and breastfeeding are among the conditions in which there is an explicit exemption from fasting. Despite this, many women choose to fast despite



having underlying diseases during pregnancy. And some others do not fast due to the fear of harming the health of the fetus. However, opinions about the effect of fasting on the health of the fetus and the mother are conflicting. For this reason, this study was conducted with the aim of investigating the effect of fasting on the health of the mother and baby during pregnancy and breastfeeding.

**Method:** Online databases were searched systematically through January, 2023. The search was conducted with the English keywords of breastfeeding, pregnancy and fasting in PubMed, Google Scholar, and SID databases.

**Result:** 416 articles were found, after removing duplicate articles, 344 articles remained. In the next step, systematic review articles, qualitative articles, case reports, articles presented in conferences and articles that we did not have access to full text were removed. Finally, there were 16 articles that were reviewed in depth. The results showed that fasting may have beneficial metabolic effects for the mother and reduce the thickness of abdominal visceral fat. It also reduces the risk of gestational diabetes and excessive weight gain. Fasting does not affect the volume of amniotic fluid. But it may reduce the growth parameters of the fetus. Fasting did not have a negative effect on the IQ of children whose mothers had fasted during Ramadan. During breastfeeding, fasting caused a decrease in

milk, feeling weak and dehydrated, and more visits to the hospital.

**Conclusion:** Fasting during Ramadan does not affect the outcomes during pregnancy, but it requires more attention and study in breastfeeding mothers.

**Keywords:** breastfeeding, pregnancy, fasting

## **The effect of curcumin on Cystic fibrosis transmembrane conductance regulator channel to improve Cystic Fibrosis Disease: A systematic review**

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**Introduction:** Cystic fibrosis (CF) is a fatal inherited disorder caused by genetic mutations in the Cystic fibrosis transmembrane conductance regulator (CFTR) gene. Curcumin, a constituent found in *Curcuma longa*, has numerous advantageous effects on health. The present study aims to realize the role of curcumin supplements in improving cystic fibrosis.

**Method:** This review article was conducted by Scopus, PubMed, Science Direct, SciELO, Google Scholar, SID, and Magiran, up until August 2023. The keywords used were curcumin, CFTR, cystic fibrosis, improve,



and...A total of 944 articles were found on this topic, out of which 25 relevant articles were ultimately selected. These articles were chosen from both English and Persian sources.

**Result:** Numerous research studies have uncovered the antimicrobial, anti-inflammatory, antioxidant, and antiviral properties of curcumin. These properties were thought to offer therapeutic advantages in a range of human ailments, including CF. The research findings indicated that curcumin, particularly in its nano formulation, had the potential to improve the complications associated with CF. It could achieve this either on its own or when combined with other substances like antibiotics or compounds such as N-acetylcysteine. Additionally, curcumin showed promise in ameliorating certain mutations that occur in the CFTR channel.

**Conclusion:** Certain research studies have yielded inconclusive results regarding the impact of curcumin on cystic fibrosis, with some indicating no effect and others suggesting positive effects. Additional investigations are warranted to explore the potential therapeutic advantages of curcumin in treating cystic fibrosis and mitigating related complications.

**Keywords:** Curcumin, CFTR, Cystic Fibrosis, Improve, Anti inflammatory

## Prevalence of hypertension and its control in population aged 35-65 between 1386-1388 in Mashhad

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**Introduction:** Elevated blood pressure is a key factor in cardiovascular disease risk and plays a pivotal role in the progression of conditions like stroke, heart attacks, heart failure, and kidney problems. As a result, the goal of this research was to assess the prevalence of hypertension and its control within the MASHAD cohort study.

**Methods:** This study was carried out using data from the MASHAD cohort study. Participants were grouped into three categories: those with normal blood pressure, individuals with pre-hypertension, and subjects with hypertension. The significance level of the tests was considered less than 5%.

**Results:** In this cross-sectional analysis, a total of 9,704 individuals were recruited, with 33.4% categorized as healthy, 35% as pre-hypertensive, and 31.6% as hypertensive. Among men below the age of 40, the prevalence of hypertension was noted at 15.9%, surpassing that in women.



Additionally, the incidence of hypertension increased with age for women but not as significantly for men. Out of all individuals with hypertension in this study, 58.5% were aware of their condition, with a lower awareness rate in men at 43.4% compared to women at 66.6%. Effective control of hypertension was achieved in 24% of patients, comprising 16.3% of men and 28.6% of women.

**Conclusion:** The outcomes of this investigation revealed that more than a third of the study's population had high blood pressure, and a similar percentage had pre-hypertension. Additionally, over half of the individuals were unaware of their blood pressure status, and only 24% of those who recognized their condition managed it effectively.

### **Association between type D personality and inflammation**

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**Introduction:** Type D is defined as the combination of two stable personality traits, i.e. Negative Affectivity (tendency to experience negative emotions) and Social Inhibition (the avoidance of potential dangers involved in social interaction such

as disapproval or no reward by others. Individuals with a Type D personality tend to experience negative emotions across time and situations, but are inclined to inhibit self-expression in order to avoid disapproval or rejection by others. Inflammation is a critical process that maintains normal tissue homeostasis following injury or infection, by removing potential pathogens and beginning the process of wound repair and healing. Some researchers showed that points of type D personality effects on physical health and increase inflammation. So, in this study we assessed relation between type D personality and inflammation

**Methods:** In this cross-sectional study, 7561 participants were evaluated. For all subjects, inflammation markers such as WBC, platelets, RDW, Plt/HDL, Neut/HDL, SII, Lym/HDL, neu/lym, Plt/lym, RDW/lym, RPR (RDW/Plt), hs.CRP were measured. Type D personality was investigated by validated questionnaire. Finally, we assessed the association of type D personality and inflammation markers

**Results:** The results of this study showed that hsCRP, RLR, RPR, and HDL levels in people with negative affectivity were significantly higher than healthy people, type D personality with both subgroups, and people with social inhibition subgroup. While other inflammatory markers NLR, PLR, RDW, Neutrophil, LHR, NHR, WBC, Plt, Lymphocyte did not indicate significant difference between type D personality and



healthy personality. The results of logistic regression showed that having negative affectivity decreases HDL level and increases the level of hsCRP, RLR, RPR.

**Conclusion:** According to the results of the research, type D personality especially negative affectivity subgroup is associated with chronic inflammation

### **The effect of cloves (*Syzygium aromaticum*) on breast cancer**

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Cancer is the second leading cause of death, killing more than six million people annually. In 2018, 1.1579 million cases of cancer were reported, of which 0.784 million people died. Breast cancer is a heterogeneous disease in which genetic and environmental factors are involved. Ductal carcinoma in situ can progress to invasive cancer and is treated with breast-conserving surgery and radiation therapy without further lymph node exploration or systemic therapy. Clove (*Syzygium aromaticum*) has been used as a traditional Chinese medicinal herb for thousands of years. Cloves have anti-cancer properties. In studies, the in vitro and in vivo antitumor effects and the biological mechanisms of ethyl acetate extract of clove (EAEC) and its bioactive potential show that the components responsible for its antitumor activity and the effects of EAEC on

cell growth, cell cycle distribution and apoptosis with Using human cancer cell lines suggests that clove extract maybe a new herbal treatment for cancer. The anti-cancer effect of cloves observed in studies shows that it is caused by the pre-apoptotic, anti-proliferative, anti-angiogenic or antioxidant activities of plant bioactive compounds in rat mammary gland carcinoma cells and also hydroalcoholic extracts of cloves inhibit the proliferation of breast cancer cells.

### **The role of ginger and pharmacology in ovarian cancer**

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Ovarian cancer is currently the fifth leading cause of cancer-related deaths among women in the United States, and approximately 140,000 women die globally per year from ovarian cancer. Breast cancer is the most frequent malignancy in women worldwide and is curable in ~70-80% of patients with early-stage, non-metastatic disease. Breast cancer is a type of cancer that starts in the breast. Pharmacology or pharmacology is an important part of traditional medicine, which is a complete and long-standing medical school and pays attention to various topics from basics and basic sciences to diagnosis and treatment of diseases. Treatment in Iran's traditional medicine is based on 3 main axes: the



treatment of herbs, herbs, and manual methods such as surgery and cupping. Ginger (*Zingiber officinale* Rosc) is a natural dietary component with antioxidant and anticarcinogenic properties. The ginger component [6]-gingerol has been shown to exert anti-inflammatory effects can be constitutively activated in epithelial ovarian cancer cells and may contribute towards increased transcription and translation of angiogenic factors. Several chemicals in the environment, especially those with estrogenic activity, can increase the burden of estrogen in the body, leading to an increased incidence of estrogen-related tumors in ovarian cancer. Also, ginger can inhibit the expression of estrogen receptors, while the bioactive substances of ginger significantly prevent the proliferation and apoptosis of ovarian cancer cells.

### **The Effect of Benzoates on Ovarian Cancer**

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Ovarian cancer is the fifth most common cancer in women worldwide, and its cause is not fully understood. Environmental factors, including dietary components, play a role in the development and progression of ovarian cancer. Benzoates, a group of preservatives commonly used in foods and beverages, have been suggested as potential risk factors

for ovarian cancer. The purpose of this article is to critically evaluate the available evidence on the effect of benzoates on ovarian cancer. Benzoate is used in most food products to prevent the growth of microorganisms and to increase the shelf life of food. In soft drinks, buttermilk, fruit juices, milk, tomato paste and ketchup, more than the standard limit is even used, which causes diseases such as cancer. Several laboratory and animal studies have investigated the potential carcinogenic effects of benzoates on ovarian cells. Benzoates can cause DNA damage, cell proliferation and tumor growth in ovarian cell lines and animal models. Benzoates are known to have estrogenic properties, which may contribute to their potential carcinogenic effects on ovarian cells. Additionally, benzoates can generate reactive oxygen species and induce oxidative stress, leading to DNA damage and cellular dysfunction.

### **The prevalence and causes of milk formula consumption in the infants**

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**Introduction:** With regard to the importance of breast milk consumption in children, we determined to conduct a study for investigation of efficient factors that may



cause using of infant formula who hospitalized in akbar hospital

**Materials & Methods:** This cross - study was carried out in Akbar Children Hospital in Mashhad in Aug 1400 regarding 200 mothers who had an infant with one to twenty-four months of age. Demographic characteristics, the child 's condition, the duration of breastfeeding and the type of child's consumable milk and other influential factors affecting breast - feeding were questioned and then the mothers' awareness and attitude was measured by using the persian version of iowa infant feeding questionnaire, which its reliability and validity was proven

**Results:** In this study 200 infants and their mothers entered the study where the average age of infants was 10.03 mounth and the average age of mothers was 27.21 years. Out of 200infants who entered the study, 95 people (47 %)were boys and 105 (52 %)were girls. It was also found that over 200 infants were studied, 126 (63 %) use formula. The mean time for the start of the formula

**Conclusion:** As a result, of this study age of infants and their mothers has a significant relationship with using formula. (P-Value < 0.05 )

## Production of anthocyanin extract of saffron petals

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Saffron (*Crocus Sativus*) is largely produced in Iran with an annual share of more than 90% of total saffron in the world. Saffron has many types of flavonoids, glycosidic and anthocyanin compounds. According to studies, saffron petals, in addition to coloring and antioxidant properties, have anti-cancer, cardiac, anti-inflammatory and antimicrobial properties. The main purpose of this study is the semi-industrial production of saffron petal anthocyanin extract and its application in the food model. In this study, the response surface methodology to investigate the effect of different levels of independent variables including x1 solvent type (ethanol-water), x2 extraction time (30 to 240 minutes), x3 temperature (30 to 64 ° C) and x4 ratio Solvent to petals V / W (1:20 to 1:40) was examined on the predicted responses (dependent variables). Dependent variables included the determination of extraction efficiency and total extraction efficiency, determination of total anthocyanin content of the extract, determination of total phenol content of the extract, and determination of the antioxidant capacity of the extract. In order to evaluate the quality of the extracted dye, spectroscopic techniques and Hunterlab colorimetric techniques were





used. According to the obtained results, the optimal extraction conditions included ethanol concentration of about 49%, temperature of 31 ° C, time of 32 minutes and liquid-to-solid ratio of about 26 due to lower solvent consumption and appropriate time and temperature. According to the interaction of independent variables on the amount of anthocyanin in saffron petal pigment, the amount of anthocyanin in pigments stored at room temperature during 16 days of storage did not change significantly ( $p > 0.05$ ), while with increasing storage temperature from 9th-day Maintenance became significant. A similar trend was observed and recorded for the pigment in the model system.

### **Providing a cost-effective method for the synthesis of butyric acid using native precursors**

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Butyric acid is one of the most important compounds used in the chemical, food, pharmaceutical and cosmetic industries. This acid is a liquid, colorless, transparent, with a pungent and penetrating smell, which

is soluble in water and most organic solvents in any proportion. But one of the interesting points about butyric acid is that, despite its very unpleasant smell, this acid is used in the perfumery industry and its ester derivatives to increase the aroma of drinks, food, and cosmetic-sanitary products. They are also used in raw form to produce biodegradable polymers based on  $\beta$ -hydroxybutyrate. Among the evaluated methods, such as the use of UHP, a mixture of  $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}:\text{UHP}$ , potassium permanganate, potassium permanganate deposited on other mineral salts, such as copper sulfate pentahydrate ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ) or potassium permanganate deposited on Regarding manganese dioxide ( $\text{MnO}_2$ ) and also nitronium salt, in the conversion of butanol to butyric acid, the use of nitronium salt resulting from the reaction of nitric acid and sulfuric acid was evaluated as the best possible method. Studies showed that the nitronium salt obtained from nitric acid in the presence of a catalytic amount of sulfuric acid is nitronium sulfate ( $\text{NO}_2 + \text{HSO}_4^-$ ), which is a much cheaper and more accessible oxidant than other evaluated methods. Based on this, the use of this mixture is the most effective method in converting butanol to butyric acid, which has been proven to be more than 80% efficient.



## Investigating of the relationship between FBS and 2hPP with hemoglobin A1c (HbA1c) in type 2 diabetic patients based on the type of treatment and ethnicity

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The aim of this study is relationship between fasting blood sugar and two hours' postprandial blood sugar with HbA1c in diabetic patients referred to Dezirani Clinic in Gorgan based on the type of treatment, ethnicity. **Materials and Methods:** 259 patients with T2DM who had at least one of all tests of fasting blood sugar, 2hPP and HbA1c during a period of three months were included in the study. The study data included age, gender, ethnicity, medications used for diabetes, FBS, 2hPP, HbA1c which

were extracted from the records of type 2 diabetic patients referred to Dezirani Diabetes Clinic in Gorgan province. The data were extracted after studying the patients' files. Data were analyzed using SPSS v.18 software and through Mann-Whitney, Spearman, and linear regression analysis. **Results:** The FBS of patients whose age range was between 40 and 60 years was higher than other patients ( $P=0.014$ ). There was no difference between the diabetes panel tests of the patients based on their gender, ethnicity ( $P>0.05$ ). A positive and significant correlation was observed between HbA1c and FBS and 2hPP of patients in all three types of diabetes treatment ( $P<0.01$ ). FBS values independent of age, gender, and ethnicity of patients in all three types of oral treatment, insulin, and both treatments had a linear correlation with HbA1c values (adj  $R^2$  0.225, 0.418, and 0.341, respectively). 2hPP values independent of age, gender, and ethnicity of patients in all three types of oral treatment, insulin, and both treatments had a linear correlation with HbA1c values (adj  $R^2$  0.253, 0.338, and 0.302, respectively). **Conclusion:** Our findings showed that there is a positive and significant correlation between FBS and 2hPP values with HbA1c in type 2 diabetic patients. FBS and 2hPP values predict HbA1c values independently of age, gender and ethnicity. The predictive capability of FBS for HbA1c was stronger than 2hPP.



## Dietary inflammatory index and thyroid function in adults with abdominal obesity

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**Background** and aims: The DII score was calculated according to the dietary data evaluated from an FFQ linked to the world comparative database which is a new tool to assess the inflammatory potential of the diet. Body mass index (BMI) and thyrotropin (TSH) are known to be positively correlated. In our study, we aimed to evaluate the correlation between the DII and thyroid hormones in adults with abdominal obesity.

**Methods:** Data from a validated 65 items FFQ was used to calculate energy, nutrient intakes and food.

**Results:** There was no significant difference between the anthropometric measurements of participants (weight and BMI) ( $p=0.746$ ,  $0.351$ ) and measures of thyroid function [serum thyroid stimulating hormone (TSH) and total T4 (tT4)] levels ( $p=0.291$ ,  $0.209$ ). Among the dietary patterns there was a significant relationship between TSH and quartiles of low anti-oxidant dietary pattern ( $p<0.001$ ). There was a considerable relationship between DII and TSH level ( $P=0.016$ ) while there was no significant relationship between the DII and tT4 level ( $P=0.552$ ).

**Conclusions:** In conclusion, the present findings show an association between DII levels and serum levels of TSH in obese individuals. A pro-inflammatory diet is associated with increased indicators of central and abdominal obesity that can exacerbate systemic inflammatory conditions. This association indicated that DII may be involved in thyroid function in



people with abdominal obesity by creating an inflammatory phase.

**Keywords:** Abdominal obesity, Dietary inflammatory index, Food frequency questionnaire, Thyroid hormones

### **CLA effects on body composition, inflammation, oxidative stress, and sport performance: a review on possible molecular mechanisms**

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CLAs known as conjugated linoleic acids are polyunsaturated fatty acids primarily found in dairy products and ruminant animal products such as beef, lamb, and butter. CLAs consumption has recently become popular among athletes due to the variety of health-promoting effects, including improvements in physical performance. Preclinical and some clinical studies have shown that CLAs can reduce inflammation and oxidative stress and favorably modulate body composition and physical performance; however, the results of previously published clinical trials are mixed. Here, we performed a comprehensive review of previously published clinical trials that assessed the role of CLAs in modulating inflammation, oxidative stress, body composition, and select indices of physical performance,

emphasizing the molecular mechanisms governing these changes. The findings of our review demonstrate that the effect of supplementation with CLAs on inflammation and oxidative stress is controversial, but this supplement can decrease body fat mass and increase physical performance. Future well-designed randomized clinical trials are warranted to determine the effectiveness of (1) specific doses of CLAs; (2) different dosing durations of CLAs; (3) various CLA isomers, and the exact molecular mechanisms by which CLAs positively influence oxidative stress, inflammation, sport performance and body composition.

**Keywords:** CLA, Inflammatory factors, Oxidative stress, Anthropometric indices, Sport Performance

### **Prevalence of malnutrition in teaching hospitals of Mashhad University of Medical Sciences: base on nutritionDay2022**

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**Background:** Hospital malnutrition is a common problem in the world as well as in Iran. 30-50% of hospitalized patients are malnourished worldwide. Currently, various tools are used for nutritional assessment which affects the reported malnutrition prevalence. The nutritionDay audit is a cross-sectional audit that is conducted annually around the world which used the standardized questionnaire. The aim of this study is to determine the prevalence of malnutrition in Mashhad University of Medical Sciences teaching hospitals.

**Method:** This study is a prospective observational that was conducted on nutritionDay 2022 in 5 teaching hospitals of Mashhad University of Medical Sciences, including Imam Reza, Ghaem, Shahid Hasheminejad, Shahid Kamyab and montaseriyeh. Total of 696 patients were evaluated nutritionally using the NutritionDay tools. In addition, the NRS questionnaire was used for patients under 70 years old, and the MNA questionnaire was used for patients over 70 years old.

**Result:** The prevalence of malnutrition between hospitals was significantly different ( $P < 0.001$ ). The overall prevalence of malnutrition was equal to 35.2%. The highest prevalence of malnutrition in montaseriyeh Hospital was 45.5%. Also, prevalence of malnutrition in Imam Reza, Ghaem, Shahid Hasheminejad, and Shahid Kamyab hospitals

were 41.5%, 39.5%, 23.7% and 14.3% respectively.

**Conclusion:** This finding indicates that montaseriyeh, Imam Reza and Ghaem hospitals have the higher malnutrition prevalence compared to Shahid Hasheminejad, and Shahid Kamyab hospitals.

**Keyword:** Malnutrition, nutritionDay

### **Effect of putresin treatment on maintaining the nutritional and quality characteristics of mushroom (*Agaricus bisporus*)**

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**Introduction:** Mushroom is a plant whose use as food has a long history. Browning is one of the important factors limiting the shelf life and reducing the quality of edible mushrooms, and the negative effects of browning are more severe in the case of button mushrooms. Browning reactions in vegetables and fruits are a serious problem for the food industry, especially in the field of edible mushrooms. Although various enzymes play a role in the enzymatic color change of mushrooms, it is mainly performed by copper-containing oxygenases called polyphenol oxidases (lactases and tyrosinases) and peroxidases. Polyamines,



especially putrescine, spermidine and spermine, are very important post-harvest treatments that are used to increase the post-harvest life and maintain the quality of fruits and vegetables.

**Methods:** In this research, the initial test of different concentrations of putrescine, which included (0, 0.25, 0.5, 0.75, 1) millimolar, was done. At first, the mushrooms were washed and after drying and dehydrating in fresh solutions. Prepared from putresin, they were immersed for 9 days and every three days the desired factors were checked in such a way that 60 mushrooms were selected and divided into 5 groups of 12 in three replications. Distilled water was also used for the control solution. Mushrooms were taken after their surface moisture treatment and biochemical analyzes were performed. The investigated factors are mushroom color, tissue firmness, weight, total phenol content, total antioxidant capacity, polyphenol oxidase enzyme activity and ascorbic acid content.

**Result:** The results obtained from this research showed that all treatments containing putrescine had significantly higher color brightness, tissue firmness, total phenol content, antioxidant capacity, ascorbic acid compared to the control sample ( $p < 0.05$ ). The results of the measurement of polyphenol oxidase enzyme activity and weight loss showed that the treatments containing putrescine had less weight loss and significantly lower polyphenol oxidase enzyme activity than the

control sample ( $p < 0.05$ ). In general, the results of this research showed that treatment T5 (1 mM putrescine) which contained the highest concentration of putrescine had the brightest color, the highest level of tissue stiffness, total phenol, ascorbic acid, antioxidant capacity and the lowest weight loss and the activity of polyphenol oxidase enzyme.

**Conclusion:** Researchers have stated that the reduction in weight loss of putrescine-treated fruits is due to the stabilization resistance and maintenance of membrane fluidity. In accordance with the results of this research, the researchers stated that the immersion of lemon fruits in putrescine solution could increase the firmness of the fruit compared to the control during the storage period by preserving endogenous polyamines. By delaying the aging process, polyamines reduce the activity of enzymes involved in the degradation of ascorbic acid, protect membranes from damage caused by the.

**Keywords:** putrescine, mushroom (*Agaricus bisporus*), phenolic compounds, polyphenol oxidase enzyme and browning.

## **Nutritional Deficiency and Nutrition Requirements in Critically ill Patients; Clinical Nutrition Guideline for Critical Ill Patients**

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Nutrition support has become a standard of care in ICU treatment protocol. The knowledge of metabolic requirements is essential to define an artificial nutrition regimen. Optimum and early nutrition either by Enteral (EN) or Total Parenteral Nutrition (TPN) can improve the ICU outcome critically ill patients are unable to eat. Nutrition authorities have long recommended providing generous amounts of protein and calories to critically ill patients, either intravenously or through feeding tubes, in order to counteract the catabolic state associated with this condition. In practice, however, patients in modern intensive care units are substantially underfed. Several large randomized clinical trials were recently carried out to determine the clinical implications of this situation. Contradicting decades of physiological, clinical, and observational data, the results of these trials have been claimed to justify the current practice of systematic underfeeding in the intensive care unit. This chapter explains and suggests how to resolve and management this conundrum.

**Keywords:** Critical ill, enteral nutrition, Total parenteral nutrition, Guideline

## Serum homocysteine levels in angiographic patients

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**Introduction:** Cardiovascular disease is estimated the cause of 17.3 million deaths annually in the world and 27.4% of deaths in Iran. Since the common risk factors cannot currently predict all causes of cardiovascular disease, researchers have suggested that other factors such as oxidative stress, trace elements, inflammation, and homocysteine may be potential contributors to



cardiovascular disease. Therefore, in this study, we assess the association of serum level of homocysteine with the severity of coronary artery involvement.

**Method:** In this cross-sectional study, 347 patients referred to Ghaem Hospital for angiography and 103 healthy individuals without cardiac symptoms were evaluated. Subjects were divided into five groups with more than 50% stenosis of one (1), two (2), and three (3) arteries, individuals with normal angiography or less than 50% involvement (4), and healthy subjects (5). Serum homocysteine level was measured by ELISA at Bou-ali Research Institute. Statistical data analysis was performed using SPSS software version 21.

**Result:** In this research, 106 healthy people, 91 normal people, and 80, 87, and 89 people with stenosis in one, two, and three arteries, respectively were studied. The mean homocysteine in the groups with stenosis of one, two, and three vessels was significantly higher than the normal and healthy groups ( $P < 0.001$ ). The results of logistic regression analysis showed that increment of one unit of homocysteine raised the chance of vascular involvement in people with one, two, and three-vessel involvement into 1.235 (1.053-1.273), 1.289 (1.125-1.414), 1.461 (1.326-1.611), respectively ( $P < 0.001$ ).  
**Conclusion:** The results of the present study **showed** that increase in concentration of homocysteine as an independent risk factor can lead to greater prevalence and progression of vascular stenosis.

**Keywords:** Coronary angiography, homocysteine, Aortic stenosis

## Approach of Persian medicine in the nutrition of patients with kidney stones

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**Introduction:** The prevalence of kidney stone disease is increasing all over the world. Diet and insufficient fluid intake are effective in the occurrence of this disease. Other factors such as excessive consumption of animal proteins, sodium and vitamin C also play a significant role.

The prevention and treatment of kidney stones has been discussed in detail in the Persian medicine, which is more than thousand years old. In the authentic sources of Persian medicine, thick slow-digesting foods, sticky sweets, and slow-digesting sour fruits are considered to be the main causes of kidney stone formation. Therefore, avoidance of consuming raw and unripe fruits, apples, peaches, pears, plums, apricots, and meat of camel, cow, goat, buffalo, bran-free bread that is not cooked enough, halim, rice milk, cheese, and on the other hand, consuming fast-digesting foods such as Tiho, chicken, and goat meat in the form of broth without spices and pickles, whole grain bread, pea water, cucumber and pumpkin, carrot halva with roasted





pistachios or almonds, half-roasted egg yolks, figs and hawthorns and grown olives, chickpeas, cherries, celery, oregano and pistachios is recommended. Also, measures to strengthen stomach digestion, observing eating habits and avoiding overeating and mix-eating are important in preventing stone formation. Therefore, nutritional intervention based on a unified perspective in dealing with patients with kidney stones can help prevent recurrent stones and reduce invasive methods for treating this disease. The requirement for this is to facilitate researches in the field of Iranian medicine in the prevention and treatment of kidney stones.

**Keywords:** Persian medicine, kidney stone, renal stone, nutrition, Prevention

## **Association of weight loss and decreased food intake with hospital outcome: nutritionDay result 2022**

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**Background:** Malnutrition is widespread believed to be an unknown event. Approximately 21-54% of hospitalized patients are malnourished. According to ASPEN's statement, malnutrition is identified after evaluating 5 criteria, which include weight loss, reduction of fat and muscle mass, energy intake, edema, and hand grip strength. The patients have at least two of the criteria for malnutrition. In this study, the nutritionDay tool was used to evaluate malnutrition and its related risk factor. nutritionDay is an annual cross-sectional audit that is conducted on November in 72 countries. The aim of this study is to investigate the weight loss among the last 3 months and food intake on nutritionDay of patients hospitalized in teaching hospitals of Mashhad University of Medical Sciences.

**Method:** The prospective observational study was conducted in 5 teaching hospitals in 9th November 2022 (nutritionDay study). nutritionDay questionnaires was completed for 696 hospitalized patients in Imam Reza, Ghaem, Shahid Kamyab, Shahid Hasheminejad, and Montaseriyeh hospitals were collected. the outcome of the patients, including mortality, discharge and length of hospital stay was investigated 30 days after NutritionDay.

**Result:** Approximately, 52% of patients had unintentionally weight loss in the last three months. About 42% of patients who expired



during 30 days after nutritionDay didn't eat anything on nutritionDay. Also, 58% of discharged patients ate more than half of their food on nutritionDay. There was a significant relationship between decreased food intake on nutritionDay and mortality ( $P < 0.001$ ). Although, there was no significant relationship between weight loss among the last 3 months mortality ( $P < 0.06$ ).

**Conclusion:** The findings showed that decreased food intake among hospitalization may be associated with hospital mortality.

**Keyword:** nutritionDay, Body mass index, Weight loss, Food intake, Outcome

### **Traditional medicine diet effects on inflammatory patients outcome and indices in COVID-19 patients: a RCT**

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**Background:** COVID-19 (SARS-CoV-2) lead to severe acute respiratory syndrome prompting worldwide demand for new antiviral treatments and supportive care for organ failure caused by this life-threatening virus. This study aimed to help develop a new Traditional Persian Medicine (TPM) - based drug and assess its efficacy and safety in COVID-19 patients with major symptoms.

**Methods:** a randomized clinical trial was conducted in February 2022, among 160 patients with a confirmed diagnosis of COVID-19 admitted to Emam Reza (AJA) Hospital in Tehran, Iran. During their hospitalization, the intervention group received a treatment protocol approved by Iran's Ministry of Health and Medical Education (MOHME), consisting of an Iranian regimen, Ficus carica; Vitis vinifera, Safflower, Cicer arietinum, Descurainiasophia seeds, Ziziphus jujuba, chicken soup, barley soup, rose water, saffron, and cinnamon spices. All patients were compared in terms of demographics, clinical, and laboratory variables.

**Results:** 160 COVID-19 patients were divided into two groups: intervention and control. In baseline characteristics, there was no significant difference between the intervention and control groups ( $p > 0.05$ ). Using SPSS software version 22, statistical analysis revealed a significant difference in four symptoms: myalgia, weakness, headache, and cough ( $p < 0.05$ ). During the 5-day treatment period, the control group had significantly lower C-reactive protein ( $p < 0.05$ ).

**Conclusion:** While more research with a larger sample size is needed, the proposed combination appears to be effective in the treatment of symptoms as well as inflammatory biomarkers such as C-reactive protein in COVID-19 patients.



**Keywords:** Traditional Medicine, Iranian complementary medicine, Covid-19, Clinical outcomes

## **Propolis supplementation impacts on Bio stressor indices: A systematic review RCTs studies**

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**Background:** Propolis is a sticky, resinous substance produced by bees by mixing saliva and beeswax with substances obtained from plant parts, buds, and exudates. It has been reported that Propolis has anti-oxidative properties that could help in the treatment of chronic diseases. This systematic review aims to summarize the results of randomized controlled trials (RCTs), which assessed the antioxidant effects of Propolis.

**Method:** PubMed, Scopus, and ISI Web of Science databases were searched up to July 2020. RCTs that evaluated the effects of oral Propolis supplementation on oxidative stress parameters were included.

**Results:** Six RCTs, totaling 364 participants were included in the systematic review. Propolis supplementation was shown to reduce biomarkers of oxidative stress, including carbonyls, malondialdehyde, oxidized low-density lipoprotein, and thiobarbituric acid reactive substances and markers of tissue damage, including lactate

dehydrogenase and fructosamine. Propolis also increased serum levels of antioxidant factors, including superoxide dismutase, glutathione, glutathione peroxidase, and catalase, and increased serum total antioxidant capacity.

**Conclusion:** Propolis can elicit antioxidant effects in patients with type 2 diabetes mellitus, infertile males, and healthy individuals. However, further studies are needed.

**Keywords:** Propolis, Inflammation, Bio-stressor, Systematic review

## **Association between hemoglobin levels in blood and arterial stiffness**

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**Background and purpose:** Hemoglobin levels in the blood are linked to cardiovascular disease. The association



between hemoglobin level and vascular stiffness was investigated in this study using pulse wave velocity, Central Augmentation Index (CAI), Cardio-ankle vascular index (CAVI), and Central Aortic Pressure (CAP).

**Methods:** 536 adults (188 males and 348 females) from three areas of Mashhad, a city in the northeast of Iran with central obesity and without anemia were enrolled for the present study. Hematological variables were examined using standard laboratory techniques, and arterial stiffness was assessed using the SphygmoCor XCEL System. The Chi-Square test was used for statistical analysis to assess the relationship between qualitative variables, and one-way ANOVA was performed to compare the mean of quantitative variables between independent groups. We used linear regression analysis to construct a regression coefficient to further evaluate the association between hemoglobin concentration and PWV.

**Results:** among baseline characteristics, Age, diastolic blood pressure (DBP), and smoking status are positively associated with hemoglobin level. We discovered a strong positive relationship between hemoglobin concentration level and PWV among the arterial stiffness metrics [7.56±2.8 (SD) mmHg, p-value 0.001]. Linear regression demonstrated a significant relationship between the hemoglobin concentration and mean values of PWV.

**Conclusion:** Our findings confirm the existence of a link between Hb levels and arterial stiffness as measured by PWV. Checking Hb levels may be a straightforward technique to measure arterial stiffness and cardiovascular risk in middle-aged and older persons, according to this association.

**Keywords:** PWV, Arterial stiffness, Hemoglobin level

### Association between non-invasive arterial stiffness parameters and CKD

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**Introduction:** Arterial stiffness is one of the most significant vascular risk factors of renal failure and is measured using invasive and non-invasive methods. The aim of this study was to assess the relationship between the reduced glomerular filtration rate (GFR) and arterial stiffness.

**Methods:** 787 participants between 35 to 65 years old were chosen randomly from the



Mashhad Stroke and Heart Atherosclerotic Disorder (MASHAD) cohort study. The baseline characteristics of participants included demographics, biochemical and hematological markers, systolic and diastolic blood pressure, and arterial stiffness indicators (pulse wave velocity (PWV), central augmentation index (CAI), and central aortic pressure (CAP)). Based on the serum creatinine and eGFR- MDRD, we divided the participants into four groups: G2 (eGFR: 60-89; N=326), G3a (eGFR: 45-59; N=420), G3b (eGFR: 30-44; N=66) and G4 (eGFR: 15-29; N=5).

**Results:** The pulse wave velocity was significantly increased with eGFR decline and was maximum in G4 ( $9.92 \pm 4.29$  m/s) and minimum in G2 ( $6.9 \pm 2.35$  m/s) ( $p < 0.05$ ). There was no significant difference between central aortic pressure central augmentation index and GFR in the study groups. There were two models for assessing the association between markers of arterial stiffness and different stages of CKD. In the first model (unadjusted data), there is a significant association between G3b and CAP ( $p = 0.034$ ) and G4 and PWV ( $p$ -value = 0.021). In the second model (adjusted data by sex, age, HTN, and diabetes), there was a significant association between G4 and PWV ( $p = 0.049$ ).

**Conclusions:** Based on the findings in this study, conventional factors associated with decreased kidney function, and arterial stiffness, especially PWV linked to a decline

in eGFR. However, more studies need to confirm our findings.

**Keywords:** Arterial stiffness, PWV, eGFR

## Association of dyslipidemia and Ramadan fasting complications

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**Background:** In the Muslims calendar, one of the months of the year is dedicated to Ramadan. In this month, from dawn to dusk intaking food, liquids and alcoholic beverages and also smoking is forbidden. In addition to nutritional changes, other physiological and metabolic changes may occur such as sleep quality disorders. Currently, non-communicable diseases are increasing in the world and one example is dyslipidemia. Despite the fact that Ramadan fasting is not mandatory for Muslims with special diseases and conditions, some of them still fast in the Ramadan. The aim of this study was to assess the association of



dyslipidemia and Ramadan fasting complications.

**Methods:** This retrospective cohort study is based on the data of MASHAD (Mashhad stroke and heart atherosclerotic disorder) cohort study. Dyslipidemia was defined based on NCEP-ATP III criteria. Our study had 2 stages. In the first stage, demographic information was asked from the participant. In the second stage, the validated Ramadan Fasting questionnaire was completed through a phone calls. This study participants were classification into three groups; participants who were healthy in both stages, participants who developed dyslipidemia during the study (Dys1-, Dys2+), and participants who had dyslipidemia from the beginning of the study (Dys1+, Dys2+).

**Results:** A significant relationship between severe hypoglycemia and dyslipidemia was observed ( $P < 0.001$ ), but there was no significant relationship between heart attack, coma, stroke, loss of consciousness and dyslipidemia ( $P = 0.031, 0.41, 0.063, 0.82$ , respectively).

**Conclusion:** Our study showed that during Ramadan fasting, subjects with dyslipidemia may have an increased risk of severe hypoglycemia.

**Keyword:** Ramadan fasting, Dyslipidemia, Complication

## Trend of Ramadan fasting adherence among MASHAD study population based on dyslipidemia

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**Background:** There are an estimated 1.5 billion Muslims in the world. Ramadan fasting is a religious obligatory that practiced by Muslims in a month that called Ramadan. Many studies have been done on Ramadan fasting which showed that fasting leads to changes lipid profile, body weight and blood glucose. Dyslipidemia is a common non-communicable disease in the world that pave way to other disease. This aim of study was trend of Ramadan fasting adherence among Mashhad stroke and heart atherosclerotic disorder (MASHAD) study cohort population based on dyslipidemia.



**Methods:** This retrospective cohort study carried out on MASHAD study population. Dyslipidemia was defined according to NCEP-ATP III criteria. In the first phase of the study, demographic information was collected. In the second phase, the validated Ramadan fasting questionnaire was completed through a phone call. At the end of the study, subjects were classified into three groups; subjects with dyslipidemia in two phases, subjects with dyslipidemia in second phase, and subjects without dyslipidemia in two phases.

**Result:** The results showed that there was a significant relationship between the number of fasting years and dyslipidemia ( $P=0.001$ ). Also, there was a significant relationship between fasting for the past 7 years and the incidence of dyslipidemia ( $P<0.001$ ). Actually, individuals who did not have dyslipidemia initially and who had a history of fasting in previous years subsequently developed dyslipidemia. It is worth noting that the number of days that subject with dyslipidemia fasted during 2011-2017 decreased.

**Conclusion:** This study suggested that fasting may be associated with incidence of dyslipidemia.

**Keyword:** Dyslipidemia, Ramadan Fasting  
**Association of Lifelong Ramadan fasting, Nutritional habits and Dyslipidemia**

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**Background:** The 9th month in the lunar calendar is Ramadan. Studies have shown that an effective way to prevent various diseases such as non-communicable diseases is Ramadan fasting. Also, according to the US National Academy of Sciences, the health effect of Ramadan fasting includes: increase insulin sensitivity, stress resistance, reduce morbidity, reduction of serum cholesterol, blood sugar and systolic blood pressure. Recently, one of the common diseases that has become an important problem in worldwide is dyslipidemia. The aim of this study was to assess the relationship between dyslipidemia and Ramadan fasting during life and nutritional habits.

**Methods:** This study was a retrospective cohort study. This study was based on the data of MASHAD (Mashhad stroke and heart atherosclerotic disorder) study. According to the NCEP-ATP III criteria, dyslipidemia



was defined. This study had 2 phases. In the first phase, basic information of people was collected and in the second phase, the Ramadan fasting questionnaire was used to assess the fasting nutritional habit and frequency of Ramadan fasting which was conducted by telephone interview. Finally, people were divided into 3 groups: people who had dyslipidemia in both phases, people who were healthy in both phases, and people who did not have dyslipidemia in the first phase and had dyslipidemia in the second phase. For statistical analysis, SPSS version 18 was used

**Results:** There was significant association between fasting in other months and dyslipidemia ( $P=0.001$ ). But there wasn't significant relationship between dyslipidemia and practicing of fasting in Ramadan and fasting during life ( $P=0.072$  and  $P=0.08$ , respectively). Also, there was no significant relationship between meals (Iftar, Sahar, dinner) and dyslipidemia ( $P=0.38$ ). The results showed that the main meal of 83.9% of people was Iftar and Sahar.

**Conclusion:** This study showed that there was not significant relationship between life-long Ramadan fasting and meal in Ramadan with dyslipidemia.

**Keyword:** Ramadan fasting, Dyslipidemia, Nutritional habit

## Investigating The Role Of Probiotics In Reducing The Severity Of Colitis Caused By Ethnic Benign Neutropenia In Native And Arab Residents Of Mashhad

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**Introduction:** Benign neutropenia is a disease that has the ability to become colitis. Clinically, it is defined as a neutrophil count of less than 2000/ML. These people are at risk of inflammation of the intestinal physical barrier or its epithelial cells (colitis). Because the physical barrier of the gut not only acts as a barrier, but also plays a role in maintaining the stability of the immune system involved in the gut lumen. In this study, the prevalence of benign neutropenia was investigated in native and Arab residents of Mashhad. A total of 140 native people and 140 healthy Arab





residents (male/female) from Mashhad city in Iran were studied. A blood sample was taken and analyzed for the presence of ethnically benign neutropenia. The results of this study showed that the prevalence of ethnic benign neutropenia was 1.42% (2/140) in the native residents of Mashhad and 9.28% (13/140) in the Arab residents. Based on previous studies, the consumption of probiotics in the group with enterocolitis neutropenia can eliminate this link between immune deficiency and colitis. as a result; The severity of inflammatory colitis in people with neutropenia after receiving probiotics can be investigated.

**Methods:** Totally 140 native and 140 Arabian healthy residents (male/female) from Mashhad city in Iran were studied. they were asked for their familial background of these diseases. The data were expressed as the Mean±SE (Standard Error Mean). Student t-test was used for analysis. Statistical analysis was done using Prism version 6.07 software. P-values less than 0.05 were considered significant.

**Results:** Results showed that prevalence of benign ethnic neutropenia in native residents was 1.42% (2/140) and in Arabian residents was 9.28% (13/140). Differential hematologic aspect of each group was determined. There is a significant decrease in number of neutrophils and also in their differential count in patients than health peoples.

**Conclusion:** This targeted study shows that the status of neutropenia should be

considered in studies related to the treatment of inflammatory colitis. Investigating the role of probiotics in the process of preventing complications of colitis caused by neutropenia, in future studies; It is important.

**Keywords:** Mashhad, neutropenia, colitis, probiotics.

### **High level copper, but not zinc, is related to CAD in Mashhad stroke and heart atherosclerotic disorder**

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**Introduction:** Cardiovascular disease (CVD) is the leading cause of morbidity and mortality globally. The purpose of current project was to explore serum zinc and copper as possible predictive factors for CAD in a representative Iranian subject.

**Method:** The MASHAD study was initiated in 2010 and 9704 healthy participants were recruited. During 6 years of follow up, 235 events including 27 fatal and 208 CVD event were confirmed. Flame atomic absorption was used for measuring zinc and copper of serum. Cox's proportional hazard model was applied for assessing Relative risks (RRs) and 95% confidence intervals (CIs).

**Result:** Of the 235 events, 140 were women (126 alive and 14 dead) and 95 were men (82 alive and 13 dead). Subjects with an event had increased copper and decreased zinc of serum and Zn/Cu ratios. Participants with increased serum copper level illustrated higher relative risk for any event, combining those with a fatal and non-fatal event (1.735(1.193-2.527)). Low serum zinc levels appeared to be related to increased relative risk for mortality though this did not attain significance. These results remained after adjustment for other CVD risk factors.

**Conclusion:** Our findings demonstrated a significant positive association among copper levels of serum and CVD risk in a representative Iranian population. Moreover, High serum copper, but not zinc, contribute to an enhancement risk of non-fatal event in middle-aged population in Iran.

**Keywords:** zinc, copper, Relative risks, CVD

**Investigating the effect of fat type on the physicochemical and sensory characteristics of cookies during storage**

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**Introduction:** In this study, the impact of three types of fat (margarine, butter, and cream) at different proportions on the shelf life, physicochemical and sensory properties of cookies was investigated.

**Method:** Moisture content, pH, water activity, color parameters, spreadability, texture hardness, porosity, thickness of the cookie, fat leakage, and sensory properties were evaluated. The independent variables included three fat sources and time.

**Result:** The results showed that increasing the margarine proportion led to an increase in a\* color parameter, appearance score, and a decrease in pH, moisture content, fat leakage, water activity, L\* color parameter, b\* color parameter, spreadability, texture hardness, porosity, thickness, texture score, and overall acceptance score. As the



proportion of cream increased, the overall acceptance of the product increased. Additionally, during storage, pH, water activity, L\* color parameter, a\* color parameter, porosity, thickness, and appearance score increased until day 8, while the color score, texture score, and moisture content decreased.

**Conclusion:** The optimal fat combination consisted of 34.4% margarine, 18.7% butter, and 46.9% bakery cream.

**Keywords:** type of fat, cookie, shelf life, margarine, butter, cream

## **Exploring Ethnopharmacology for Myocardial Infarction: A Bridge Between Traditional and Modern Medicine**

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Myocardial infarction (MI), commonly known as a heart attack, remains a leading global cause of morbidity and mortality. While advancements have improved MI management, there is growing interest in complementary approaches. Ethnopharmacology, the study of traditional medicinal traditions in many ethnic populations, offers many MI prevention and therapy options. Many plants show cardioprotective potential in ethnopharmacological studies. Ethnopharmacological compounds impact

myocardial infarction (MI) through mechanisms including antioxidative properties that reduce oxidative stress, anti-inflammatory effects combating atherosclerosis, vasodilation improving blood flow, antiplatelet activity preventing clots, lipid regulation to reduce plaque buildup, direct cardioprotection, and blood pressure management. These mechanisms collectively contribute to the potential of ethnopharmacological compounds in preventing and mitigating MI, though their specific effects may vary depending on the plant or remedy under investigation. Research in this field continues to advance our understanding of these mechanisms and their applications in modern medicine. Key findings from ethnopharmacological investigations suggest that medicinal plants like garlic (*Allium sativum*), hawthorn (*Crataegus* spp.), and ginkgo (*Ginkgo biloba*) exhibit anti-inflammatory, antioxidant, and vasodilatory effects that could benefit MI patients. Additionally, traditional remedies often emphasize holistic approaches that address both physical and psychological aspects of cardiovascular health. However, thorough scientific validation, standardization, and safety assessments are needed to integrate traditional therapies into modern healthcare.

In conclusion, ethnopharmacology contains many MI treatments. Collaborative efforts between traditional healers, ethnopharmacologists, and modern medical practitioners are crucial for harnessing the



full potential of these natural remedies in the fight against myocardial infarction and improving global cardiovascular health.

**Keywords:** Myocardial infarction, Ethnopharmacology, Medicinal plants

## **Implications of Synthetic Food Additives: Tartrazine Teratogenic Effects on Health.**

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Scientific evidence indicates that synthetic food additives may have detrimental effects on health. Food additives are chemicals used to preserve food and enhance its color and taste. While some additives are safe for consumption, others are associated with negative health impacts. One specific synthetic food additive is tartrazine, a chemical dye commonly used to provide a yellow color in sweets, juices, jams, mustard, and sodas. Research has shown that tartrazine can cause teratogenic effects in rats. It has been found to induce hepatonephrotoxicity, DNA damage in rat liver and kidneys, and cellular changes that may have negative health consequences. The vulnerability of embryos to teratogenesis decreases as tissue differentiation progresses, with the embryo becoming teratogen-resistant once organogenesis is complete. Therefore, the study focused on the critical period of organogenesis during

rat gestation (6th-15th day) when the embryo is most susceptible to external and internal stimuli. Tartrazine administration during this period examined the effects on the growing embryo. Tartrazine metabolism produces sulfanilic acid and aminopyrazolone, which can generate reactive oxygen species and cause abnormalities in the developing embryo. Synthetic food colorants like tartrazine have been shown to decrease mitochondrial respiration and alter mitochondrial membrane integrity, potentially leading to embryonic deformities through increased apoptosis and disruption of energy metabolism. Considering the teratogenic effects of these additives, it is advisable to limit their use in daily routines for better health. On the other word, minimizing the consumption of chemical food additives is recommended to mitigate potential risks to health.

**Keywords:** Food-additives, Tartrazine, Teratogenic, Organogenesis, Rat gestation, Mitochondrial-respiration

## **Investigating the role of probiotics in the treatment of Irritable bowel syndrome patients**

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**Introduction:** Irritable bowel syndrome (IBS) is a type of functional gastrointestinal disorders with a complicated etiology. Abdominal pain, stool pattern alteration, bloating, and urgency are major symptoms observed in IBS, which affect the quality of life. Pharmacologic, psychologic, and complementary approaches are considered as therapeutic options in IBS patients. Due to the side effects of drugs, patients have always been looking for an alternative to medicine. In this regard the efficacy and safety of probiotic products for the treatment of IBS are supported by an increasing number of clinical studies. Probiotics are living microorganisms that have several beneficial effects, such as restore the natural balance of intestinal microflora, and improve immune system function, infection control, regulation of metabolic hormones and synthesis of vitamins. There are many types of bacteria that can be considered probiotics such as Lactobacillus and Bifidobacterium, also the most common type of yeast found in probiotics is Saccharomyces. The aim of this study is to investigate the role of probiotics in the treatment of IBS patients.

**Method:** We searched databases such as PubMed, Google Scholar, and Scopus with

keywords irritable bowel syndrome, IBS, probiotics from 2018 to 2023.

**Result:** Many studies demonstrate that probiotics have beneficial effects on IBS patients such as slowing down the transit time of the colon, reducing the average number of bowel movements per day, improving stool consistency, and above all, the quality of life in these patients. Suggested mechanisms of probiotics are as follows: 1) Inhibition of pathogen binding; 2) Enhanced barrier function; 3) Modulation immune function; 4) Regulation Colonic transit and motility; 5) Alterations in visceral hypersensitivity.

**Conclusion:** For IBS, probiotic therapy improved QoL, so probiotics can be as an alternative to the conventional medicine for the treatment IBS considering its low costs and favorable safety profiles. But it should be noted that taking probiotics along with proper diet (high fiber, low FODMAP, gluten free food and drinking plenty of fluids), avoiding stress and physical activity can have the greatest effect on improving IBS symptoms.

**Keywords:** probiotic, Irritable bowel syndrome, IBS

## **Investigating the amount of muscle and fat mass reduction in cancer patients undergoing chemotherapy in Mashhad in 2023**

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**Introduction:** Cancer patients are at high risk of malnutrition, low muscle mass, and sarcopenia due to decreased calorie/protein intake, tumor or treatment-related side effects. Malnutrition can consequently lead to an increase in the duration of hospitalization and mortality and decrease in the quality of life and worse treatment tolerance. The purpose of this study is to investigate the amount of muscle mass and fat mass reduction in cancer patients undergoing chemotherapy in Mashhad in 2023.

**Materials and Methods:** We conducted a cross-sectional study, using patient generated-subjective global assessment (PG-SGA) in 237 cancer patients undergoing chemotherapy, who were selected from the chemotherapy department of Razavi, Nazeran, Ghaem, and Omid Hospitals. Data analysis was performed in SPSS version 16.

**Results:** We found that there were significant correlations between the decrease in different parts of body fat and muscle mass ( $P < 0.05$ ), in cancer patients undergoing chemotherapy suffering malnutrition ( $n = 213$ ), except temporal

muscle which was not significant ( $p = 0.07$ ). Furthermore, a total reduction of fat mass was observed in 78.9 % of malnourished patients and the distribution was; around the eyes in 67.6 %, the triceps in 67.2 %, and intercostal muscles in 51.6 % of malnourished patients.

In addition, the decrease in the leg muscle, calf, shoulders, interosseous muscles, clavicle, scapula, and temporal in malnourished patients were 70.8%, 64.8%, 64.3%, 60.2%, 59.2%, 58.6%, and 47.9 %, respectively.

**Conclusion:** According to the results, the amount of muscle mass and fat mass reduction was extremely high in cancer patients undergoing chemotherapy suffering malnutrition based on the PG-SGA scores. The reduction rate of the mass around the eyes and leg was higher than the others.

**Keywords:** Malnutrition, Chemotherapy, Cancer, Muscle mass, Fat mass

### Association between serum Zinc and hs-CRP in metabolic syndrome subjects

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**Introduction:** Metabolic syndrome (MetS) is associated with an increased risk of cardiovascular disease and all-cause mortality. Zinc (Zn) is an essential trace element for the synthesis, storage, and release of insulin. In this study we have evaluated whether serum Zn levels are associated with hsCRP level according to MetS phenotypes.

**Method:** A total of 9493 individuals (3768 men and 5635 women) were recruited as part of the Mashhad Stroke and Heart Association Disorder (MASHAD) study. We measured the concentration of serum Zn by flame atomic absorption (Varian AA240FS) and we divided the subjects into quartile of serum Zn. We used SPSS version 18 statistical analyses for all. GraphPad Prism 6 for figures was used.

**Result:** In this study there were significant differences between quartiles of Zn according to sex. The results showed that the level of serum hs-CRP were higher in subjects with metabolic syndrome who also

had a serum Zn >95 µg/dl. In subjects with serum Zn <70 µg/dl, an increase in serum hs-CRP was associated with an increased risk of MetS by 2.2%, 1.022(CI: 1.01-1.034). Moreover, among subjects in the first, second and third quartiles of serum Zn, some phenotypes of metabolic syndrome were associated with a risk of increasing hs-CRP level (p< 0.05).

**Conclusion:** Serum hs-CRP concentrations were related to MetS phenotypes. This relationship was modified by serum Zn level. According to the number of MetS components serum Zn levels decreased as the number of MetS component increased, and low serum zinc levels (Q1) showed an overall greater prevalence of MetS.

**Keywords:** Zinc, C- reactive protein, metabolic syndrome, phenotype

## The effects of encapsulation of crocin on aggregation and deposition of Aβ<sub>1-42</sub> amyloid plaques in Alzheimer disease

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**Introduction:** Alzheimer's disease is categorized as an advanced disorder of brain nerve cell destruction. The emergence of the disease is due to the presence of two types of unusual structures: 1. neurofibrillary tangles; 2. neurofibrillary plaques. Aβ is the main constituent of amyloid plaques found



in the brains of patients with Alzheimer's disease. There are two common isoforms of A $\beta$ : the more common form A $\beta$ 1-40 and the less common but more amyloidogenic form of the peptide A $\beta$ 1-42. Crocin is a carotenoid from the stigma of the saffron flower that has many medicinal properties, including an antioxidant effect. In this study, we have examined the potential of crocin as a drug candidate against amyloid formation of A $\beta$ 1-42.

**Method:** Crocin was extracted from saffron and encapsulated in acrylate-base polymers using nanoemulsion polymerization techniques. Crocin weight percent increased from 0.5 wt% to 2 wt% of monomer and its effect on conversion percentage, nanoparticle morphology, loading efficiency and encapsulation efficiency were investigated.

**Result:** The degradation of crocin showed first-order kinetics and a constant degradation rate (k). It was significantly affected by pH and temperature ( $P < 0.05$ ).

**Conclusion:** The experimental reports collected in this study show that nanoparticles loaded with crocin are potential candidates for future treatments of Alzheimer's disease.

**Keywords:** Alzheimer's disease, kinetics, crocin,

## The effect of replacing stevia as a sugar substitute on cake quality

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**Introduction:** Cake is one of the most consumed products, and nutritionists should reduce its consumption in the diet due to its high sugar and fat content. Today, the use of natural stevia sweeteners is common in many countries. This sweetener has no calories and can be a good substitute for artificial sweeteners and sugar (sucrose). The present study was conducted with the aim of investigating the effect of replacing stevia as a sugar substitute and its type of packaging on the quality and storage time of the cake.

**Method:** In this research of a completely random design with the factorial arrangement, the first factor is the percentage of replacing sugar (sucrose) with stevia, which includes values of 0, 25, 50, 75, and 100%. Cake samples with reduced sugar were stored at room temperature (25°C) after production and packaging. All samples were analyzed with three replicates, and results were analyzed using Minitab statistical software. These tests included:





moisture, water activity, volume, specific volume, shell and crumb color, texture (hardness, resin, and consistency), porosity, and sensory evaluation.

**Result:** The results showed that with the increase in the replacement percentage of sucrose with stevia, moisture content, water activity, hardness, viscosity, crust color L\* and b\*, and crumb color a\* increased, and volume, specific volume, porosity, adhesion, shell a\* increased. The color of L\* and b\* crumb decreased. In the sensory evaluation, increasing the percentage of replacing sucrose with stevia reduced the score on the sensory evaluation.

**Conclusion:** The most critical problem in the production of sugar-free cake is its color reduction

**Keywords:** stevia, low-calorie cake, sugar substitute.

### **Effect of prunus cerasus (sour cherry) on nephrolithiasis in children: the first non-inferiority two-arms randomized clinical trial**

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**Introduction:** Present study evaluated the effect of prunus cerasus (sour cherry) on children with nephrolithiasis.

**Methods:** We conducted a randomized non-inferiority-controlled trial to evaluate the therapeutic efficacy of prunus cerasus among children with nephrolithiasis. Subjects in the intervention group received 2.5 mL/kg of cherry concentrate once daily for 2 months and in control 1ml/kg polycitra K, which consists of 220 g citrate potassium and 68 g citric acid in 1000-milliliter sterile water. The major outcome was sonographically determined number and sizes of kidney stones, which were assessed before and after trial.

**Results:** Sixty-eight children completed the study. At trial begin; both groups were similar in baseline characteristics ( $p > 0.05$ ). In within group analysis, the number of stones significantly decreased in both groups ( $p < 0.05$ ). After two months the number of nephrolithiasis was  $1.55 \pm 0.49$  and  $1.47 \pm 0.67$  in control and intervention group respectively ( $p$  value=0.56). The percent of change in calculi number was  $44.11 \pm 11.12$  and  $38.14 \pm 14.08$  in control and intervention group respectively ( $p$  value=0.08). At the end of study, the urine pH was  $6.46 \pm 0.99$  and  $6.14 \pm 0.83$  in control and intervention group respectively ( $p$  value=0.19). Urine calcium and uric acid concentrations were  $32.00 \pm 12.32$  and  $28.95 \pm 10.96$  milligram/ milliliter ( $p$  value=0.68) and  $24.11 \pm 10.58$  and  $30.03 \pm 11.39$  milligram/ milliliter ( $p$



value=0.012) in control and intervention groups, respectively.

**Conclusions:** Our clinical data supported the efficacy of sour cherry in the treatment of nephrolithiasis to polycitra K. Future RCTs are needed to confirm the present observation.

**Keywords:** prunus cerasus, nephrolithiasis, child, polycitra K

## **Barriers and facilitators to promote food and nutrition literacy (FNLIT) in Kurdish children: A qualitative content analysis**

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**introduction:** Food and nutrition literacy (FNLIT) is a multidimensional concept that includes a wide range of cognitive, emotional, social, skills and personal characteristics. This paper reports findings from a qualitative study to explore and describe the barriers and facilitators to promote food and nutrition literacy (FNLIT) in Kurdish children.

**Methods:** This qualitative study is a part of a combined study was conducted in 2018. Data were collected using semi-structured interviews and focus group discussions with 10-12-year-old children(N=30) in Baneh city (Kurdistan Iran), parents(N=15), teachers and principals of primary schools(N=30), health school staffs(N=5) and native experts(N=12) in health education & promotion, nutrition sciences and pediatricians conducted (Total No=92).

**Results:** Based on collected results, totally 2 domains, 8 categories, 21 sub categories and 64 codes about the barriers and facilitators to promote food and nutrition literacy (FNLIT) in Kurdish children emerged during the data analysis.

**Conclusions:** Paying attention to food and nutrition literacy in the early stages of life and its promotion will control many non-communicable diseases and thus promote health-related indicators. However, the findings of this study, which based on native needs extracted, could be the basis for planned interventions to improve the status



of food and nutrition literacy of elementary children in Baneh city and other Kurdish regions of Iran.

**Keywords:** Barriers and facilitators, Promote food and nutrition literacy (FNLIT), Kurdish children, Qualitative content analysis

### **Definitions and resources for food and nutrition literacy (FNLIT) from the perspective of Kurdish children and native experts: A qualitative content analysis**

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**Introduction:** This study was aimed to explore and describe the definitions and resources for food and nutrition literacy (FNLIT) from the perspective of Kurdish children and native experts by a qualitative content analysis.

**Methods:** This qualitative study that was conducted based on content analysis in 2018 is part of a mixed method (quantitative-qualitative) study. Data were collected using semi structured interviews, focus group discussions (FGDs), and in-depth interviews with elementary school students, aged 10-12 years old, they were studying at the elementary schools in Baneh city (Kurdistan, Iran), their parents, Primary school Teachers & Managers, School health workers and native expert's perspective.

**Results:** Based on collected results, totally 2 domains, 8 categories, 19 sub categories and 41 codes about the definitions and resources for food and nutrition literacy (FNLIT) emerged during the data analysis.

**Conclusions:** Paying attention to improving the FNLIT of children is one of the most important pillars of developing healthy eating patterns, promoting community health and preventing diseases. Given the continuous and long-lasting contact between children at an early age with school and the interdependence between health and learning, schools are considered as one of the most appropriate and most important environments for implementing school-based health promotion and prevention



programs that have access probabilities. Provides low-aged children when their maladaptive behaviors have not yet begun. However, the results of this qualitative study are the basic foundations for development and design interventions to improve the FNLIT for elementary children in this deprived province based on needs.

**Keywords:** Definitions and resources of food and nutrition literacy, Kurdish elementary students, Qualitative content analysis

## Memory disorders in rats fed with oxidized cholesterol

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**Introduction:** In previous studies we have demonstrated that hypercholesterolemia is a risk factor for cardiovascular diseases and central nervous system. The present study was designed to investigate the effects of cholesterol and oxidized cholesterol enriched- diet on cognitive function.

**Methods:** Male Wistar rats were randomly divided into 3 groups. The animals were fed with three normal, 2 % cholesterol-rich, and 2 % oxidized cholesterol-rich diets for 14 weeks. Memory impairment was analysed by passive avoidance test. CoQ10 content of brain tissue was also analyzed by a validate RP-HPLC method. Also, serum and brain tissue lipid peroxidation was measured by malondialdehyde concentration analysis

**Results:** The results of this study demonstrated that oxidized cholesterol enriched diet significantly impaired the cognitive function compared to the normal ( $P < 0.001$ ) and high cholesterol-fed rats ( $P < 0.01$ ). The memory diminishing was absolutely allied to the serum level of the oxidized LDL; it was meaningfully associated with the increased malondialdehyde concentration on the brain tissue of both groups ( $P < 0.05$  and  $P < 0.001$ , respectively). The total antioxidant level in the serum was also diminished in rats fed with the oxidized cholesterol ( $P < 0.05$ ). Besides, coenzyme Q10 content of the brain was considerably declined in the rats fed with the oxidized cholesterol-rich diet compared to the animals fed with the normal ( $P < 0.01$ ) and cholesterol-rich diets ( $P < 0.05$ ).

**Conclusions:** The results suggested that the high dietary intake of the oxidized-cholesterol might impair the memory that could be correlated to the oxidative stress and declined the coenzyme Q10 content of the brain tissue with high oxidized cholesterol diet for 14 weeks

**Keywords:** oxidized cholesterol, memory, hypercholesterolemia

## Assessment of age-specific diet quality using dietary quality index-international (DQI-I) in an Iranian population

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**Introduction:** Considering both over-consumption and nutrient deficiencies, we can state that we face a double burden of diet-related diseases in Iran. It shows the need and relevance for comprehensive surveys investigating nutritional intakes at a national level. This study aimed to assess diet quality by dietary quality index-international (DQI-I) to better understand our population's nutritional status.

**Methods:** In this cross-sectional study 2880 participants were recruited in two age groups, 18-60 and above 60 years. To assess dietary intakes, we applied a validated 65-items food frequency questionnaire. Diet quality was measured using DQI-I. This index represents four categories of diet quality measurement, including variety, adequacy, moderation, and balance. The sum of all four categories results in DQI-I total score (0-100 points). Higher scores represent higher dietary quality. A P-value less than 0.05 was considered significant

**Results:** The total DQI-I score reached to 67.4 and 68.3 in adult females and males, respectively. In the elderly, the total DQI-I score was 68 in females, and 68.7 in males. In both age groups the highest score was for variety and adequacy, while overall balance had the lowest score. Furthermore, the

independent T-test results showed that there is a statistically significant difference in the mean variety, overall food group, within food group, adequacy, fiber, iron, calcium, moderation, total fat, SFA, cholesterol, sodium, and empty calorie foods variables between the 19-60 and > 60 years age groups (P-value < 0.05).

**Conclusions:** In conclusion, the overall diet quality score in Iran is comparable with other populations. Although the total DQI-I score was not different in 19-60 and > 60 years age groups, the two groups were significantly different regarding adequacy, variety and moderation components.

**Keywords:** dietary quality index, Iran, DQI-I

## **Dietary acid load is associated with depression among Iranian females: MASHAD cohort study**

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**Introduction:** Depression is one of the most prevalent mental health problems in most populations. It has been suggested that diet is associated with mental health status. This study aimed to evaluate the association of dietary acid load, using potential renal acid load (PRAL) and dietary acid load (DAL)



scores, with the severity of depression among Iranian adult women.

**Methods:** In this cross-sectional study, a total of 2592 females aged 35-65 years were recruited. A validated food frequency questionnaire (FFQ) was used to assess dietary intakes of participants. DAL was estimated using PRAL and DAL scores. Depression was screened using Beck Depression Inventory (BDI). Multivariable ordinal logistic regression models were applied to determine the association between depression severity and dietary acid load indexes (DAL and PRAL). A P-value less than 0.05 was considered significant.

**Results:** In the fully adjusted model, females with the highest DAL had 21% higher odds of more severe depression compared to those in the lowest category (OR = 1.20; 95% CI = 1.03-1.42). Regarding PRAL tertiles, Females with the highest PRAL had a higher odd of more severe depression compared to those in the lowest category (OR = 1.17; 95% CI = (1.00-1.36))

**Conclusions:** DAL and PRAL were positively associated with depression scores among Iranian women.

**Keywords:** dietary acid load, depression, potential renal acid load, Beck Depression Inventory

### **Nonalcoholic Fatty Liver Disease (NAFLD) and circulating miR-15b gene expression**

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The non-alcoholic fatty liver disease (NAFLD) is a multifactorial disease that is characterized by the accumulation of triglyceride in the liver without the use of alcohol. MicroRNAs are important for regulating gene expression during metabolic related disorders such as NAFLD. In this study, we investigated the expression of a miRNA (miR -15b) in patients with NAFLD compared with healthy subjects. First, total RNA was extracted from serum samples of patients and controls (including 20 grade 1 and 18 grade 2, 38 patients and 34 controls,). Then, cDNA was synthesized from RNA, and at the end, the expression levels of miR -15b was measured by a real-time PCR device with a specific primer and cyber green method. Gene expression was assessed so that the expression of miRNA15b in patients with grade 2 was significantly increased (about 5-6 times) compared to the control



group ( $P < 0.001$ ). But there was no significant difference between the control group and patients with grade 1 of NAFLD. Our experimental results revealed associated with NAFLD and microRNA expression pattern and may be useful for distinguish serious illness from mild stages of this disease. More ever microRNAs may consider as potential diagnostic markers for early-stage detection in NAFLD.

**Keywords:** Non-alcoholic fatty liver disease, MicroRNAs, diagnosis, expression

### **Althaea officinalis in alginate/keratin hydrogel for wound healing application**

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*Althaea officinalis*, has been used for many years to cure wounds and inflammations. Some studies suggested that *A. officinalis* has wound healing properties due to its antibacterial activity and anti-inflammatory effects which reduce the severity of wounds, so it can be considered as a natural remedy for wound healing. Hydrogels are hydrophilic polymers with biocompatibility, biodegradability and safety properties and are suggested as suitable compounds for wound healing. The ability to keep the

wound environment moist, absorb excess secretions, oxygen permeability and drug delivery are necessary features for wound healing. Among the biopolymers, sodium alginate has received much attention due to its many capabilities in wound healing, including biodegradability and biological activity. Keratin is a group of cysteine-rich structural peptides found abundantly in the skin. This study aimed to design hydrogels made of a combination of sodium alginate and keratin with different amount of *Althaea officin*, followed by the hydrogel characterization including porosity, swelling, water vapor transmission rate, SEM analysis, FTIR, density and antibacterial activity test. The results indicated that almost all prepared hydrogels had suitable physical and structural properties such as porosity, solubility in water, biodegradability and antibacterial features, while the 70:30 alginate to keratin and 10% w/w of plant extract revealed the best properties. This study suggested that *A. officinalis* in alginate hydrogel can be used as a remedy for wound healing. Its anti-inflammatory and antibacterial effects accelerate the wound healing process and can be considered as a wound dressing in the future.

**Keywords:** Hydrogel, sodium alginate, keratin, *Althaea officinalis*, wound dressing



## Association of Restless Leg Syndrome and Body Mass Index

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**Introduction:** Restless legs syndrome (RLS) is a frequent neurological disorder associated with metabolic disorders and also obesity. The current study investigated the association of RLS and obesity and well as central obesity in MASHAD study participants.

**Methods:** As a subsample of MASHAD cohort study (phase II) 1006 participants were randomly recruited. Through a phone call they were asked about their RLS. BMI was calculated by the formula, Weight (kg)/Height<sup>2</sup> (m). Applying SPSS software, p value less than 0.05 was considered significant. Logistic regression analysis was used to reduce the effect of confounding factors.

**Results:** Participants divided into three groups according to BMI: 233 (23.25%) less than 25, 436 (43.51%) between 25-29.9 and 333 (33.23%) more than 30. Among 449 male and 557 female entered the analysis, 371 were reported to have RLS. Our results revealed that BMI more than 30 was significantly associated with RLS before ( $p < 0.001$ ) and after adjusting for age and sex ( $p < 0.05$ ) in compare with BMI less than 25. Crude and adjusted OR was 2.04 (95%CI: [1.43-2.92]) and (95%CI: [1.08-2.29]).

**Conclusions:** In line with previous studies, BMI is positively associated with restless leg syndrome. This association could be justified by the role of dopamine in both pathologies.

**Keywords:** Restless Leg Syndrome, Body Mass Index, Weight, Height.

## Association of Restless Leg Syndrome and Central Obesity

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**Introduction:** Restless legs syndrome (RLS) is a frequent neurological disorder associated with metabolic disorders as well as obesity. The current study investigated the association of RLS and central obesity in MASHAD study participants.

**Methods:** As a subsample of MASHAD cohort study (phase II) 1006 participants were randomly recruited. Through a phone call they were asked about their RLS. Anthropometrics including weight, height, waist circumference (WC) and hip circumference (HC) were recorded. Central obesity was defined as WC more than 90 for men and 85 in women and waist to hip ratio (WHR) more than 0.90 for men and 0.85 for women. Data was analyzed using SPSS version 25. Logistic regression analysis was applied to show the associations. P value less than 0.05 was considered significant.

**Results:** According to WC and WHR, 712 (71.70%) and 660 (66.53%) were centrally obese. Among 449 male and 557 female entered the analysis, 371 were reported to have RLS. Our results revealed that central obesity according to WHR was significantly associated with RLS after adjusting for age and sex ( $p < 0.05$ ). Adjusted OR was 1.42 (95%CI: [1.05-1.92]). Central obesity according to WC was not associated with RLS ( $P > 0.05$ ).

**Conclusions:** In line with previous studies, BMI is positively associated with restless leg syndrome. This association could be justified by the role of dopamine in both pathologies.

**Keywords:** Restless Leg Syndrome, waist circumference, waist to hip circumference

## **Vitamin B2 effective dosage in different diseases conditions: an updated systematic review and meta-analysis**

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**Introduction:** Multiple studies have reported that different dosages of vitamin B2 supplementation could decrease the erythrocyte glutathione reductase activity coefficient (EGRAC), which corresponds to riboflavin's antioxidant action. We aimed to systematically review the evidence related to different vitamin B2 dosage supplementation on the level of EGRAC in subgroups by age and gender.

**Methods:** A systematic literature search of clinical trials on PubMed, Scopus and review articles was conducted, for April 2022. The mean and standard deviation of the main outcomes of EGRAC level in intervention and placebo groups were considered for analysis.

**Results:** In total, 362 subjects were enrolled in all the included studies. The data of EGRAC levels (WMD: - 0.38; 99.9% CI, -0.39 to -0.38;  $P = 0.001$ ) were compared to the placebo groups. We found that the most effective supplementation doses of vitamin B2 for the reduction of EGRAC levels are 2mg, 4mg, and



5mg daily. However, the upper and lower doses such as 1.3mg, 1.6mg, 10mg, 25mg and 60 mg daily had only limited effect on the reduction of EGRAC level. In addition, we found that Males and females differed in their response to drug treatment; the most effective doses had more effect on the reduction of EGRAC levels in females.

**Conclusions:** This systematic review and meta-analysis revealed the most effective dosage of vitamin B2 supplementation on the reduction of EGRAC levels in both genders and at two subgroups of males/females in the human

### **The effects of diets prescribed before bariatric surgery on postoperative outcomes, A systematic review**

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**Introduction:** Bariatric surgery is considered as an effective treatment to promote long-term weight loss and reduce morbidity and mortality in patients with severe obesity. Despite the overall low mortality rate, intra- and post-operative complications remain quite common. Overweight or obesity is considered as a known risk factor for poor surgical outcomes. Hence different low calorie-

(LCD) and very low-calorie diets (VLCD) are being used for the induction of a pre-operative weight loss. Studies are inconclusive regarding effectiveness and the best approach to apply pre-operative diets. Therefore, in this review, different nutritional managements used in obese patients before bariatric surgery and their effectiveness are discussed.

**Methods:** The search covered four literature databases (MEDLINE, Web of Science, Scopus and PubMed) and applied Boolean combinations of different search terms. Published electronic databases that evaluated surgical outcomes of preoperative diets until November 2022 were included in the study. Inclusion criteria were prospective cohort or randomised controlled studies that investigated the effects of weight-loss diets on postoperative outcomes in adults with obesity awaiting surgery. Participants with cancer were excluded. The initial search yielded 521 articles. After screening abstracts and full texts, twenty articles were included in the study.

**Results:** The types of regimens used included LCDs/VLCDs with the composition of regular, high protein, immunonutrition, soluble fibre, probiotic, ketogenic, liquid and/or low carbohydrate. Ten out of twenty studies reported better peri-operative weight loss and reducing Visceral Fat in comparison with regular regimens, while two studies reported no effect on weight loss. Six out of twelve studies reported lower



post-operative complications (shorter surgery and hospitalization time, improved liver histology and lower values of liver enzymes). Additional reported benefits included higher quality of life (one study), better patient compliance and acceptability (two studies) and better post-operative hemoglobin levels (one study). Five out of twenty studies reported no effects on weight reduction, post-operative complications or liver volume after surgery.

**Conclusions:** Multiple randomised controlled trials with better-defined dietary approaches and common surgical outcomes are required to establish impact on post-operative weight loss and complications.

**Keywords:** Bariatric surgery, preoperative, weight loss, VLCD, LCD

## **Nutrition Effects on Rheumatoid Arthritis Symptoms**

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As awareness grows among researchers and the general public regarding the influence of diet and nutrition on overall health, it is crucial to conduct further research that can substantiate dietary assertions. Currently, there is conflicting evidence regarding the relationship between dairy consumption and the progression of inflammatory

arthritis. Rheumatoid arthritis (RA) is an autoimmune disease characterized by joint involvement and progressive damage to cartilage and bone. Recent studies have highlighted the significant role of diet in the risk and progression of the disease. Certain nutrients, like polyunsaturated fatty acids, possess anti-inflammatory and antioxidant properties, providing protection against RA development. Conversely, substances such as red meat and salt have been associated with a detrimental effect. Promising adjunctive therapies for RA treatment include dietary patterns like the Mediterranean diet, as well as supplements such as vitamin D and probiotics. Encouraging a healthy lifestyle and emphasizing proper nutrition are important considerations for patients with RA. The Western diet, which is described by a high consumption of red meat, saturated and trans fats, a high intake of refined carbohydrates, and a low ratio of omega-3 to omega-6 fatty acids has been linked to an increased risk of RA. This association is primarily attributed to the diet's ability to promote inflammation, obesity and insulin resistance. Furthermore, diet plays a crucial role in shaping the composition of the microbiota, which has been implicated in the development of the disease. The impact of diet on RA onset and progression can also be mediated through changes in gut microbiota and alterations in body composition.

**Keywords:** inflammatory arthritis, gut microbiota, diet, nutrients



## Non-HDL cholesterol and CVD outcome among individuals with central obesity

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**Introduction:** Globally, cardiovascular disease (CVD) remains the leading cause of illness and mortality. Non-high-density lipoprotein cholesterol (non-HDL-C) encompasses several lipoproteins that contribute to the development of atherosclerosis, including lipoprotein (a) (Lp(a)), low-density lipoprotein (LDL), intermediate-density lipoprotein (IDL), and very low-density lipoprotein (VLDL). The aim of this study is to evaluate the association of non-HDL-C and CVD outcome among individuals with central obesity.

**Methods:** In our research, we enrolled a total of 9,704 participants from the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) cohort, and their average follow-up period was 10 years. Our primary outcome was CVD. Demographic data including age and sex, anthropometric parameters such as height, weight, body mass index (BMI), and biochemical

measurements including lipid profile and fasting blood sugar (FBS) were assessed.

**Results:** Our findings revealed that an increased non-HDL-C level had a noteworthy impact on the prevalence of CVD. A significant association was found between non-HDL-C level of  $\geq 130$  mg/dl and CVD burden among individuals with central obesity in an adjusted model for age and sex [odds ratio (OR) (95% confidence interval (CI); 1.29 (1.09-1.54),  $P=0.003$ ]. However, individuals with no central obesity revealed no significant association between elevated non-HDL-C and CVD events [OR (95%CI); 1.32 (0.98-1.78)].

**Conclusions:** Increased concentrations of non-HDL-C was significantly linked to approximately 30% enhanced risk of CVD events after adjustment for traditional confounders. Assessing non-HDL-C level in subjects with central obesity could be useful in risk stratification of CAD burden. Additionally, early intervention in order to decrease the concentration of non-HDL-C can have positive implications for the long-term prognosis of CVD. Further investigation is necessary to prioritize the reduction of non-HDL cholesterol as a key goal in the development of pharmaceutical interventions.

**Keywords:** non-HDL-C, Non-high-density lipoprotein cholesterol, cardiovascular disease, risk stratification,



## Introducing Gut Microbiota Interventions for Overweight and Obese Kids at Preschool: A Systematic Review

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**Introduction:** The increasing prevalence of obesity and overweight is a major public problem among children worldwide. Environmental and genetic factors, along with diabetes, are implicated in obesity as a major metabolic disorder. The gut microbiota (GM) has a high potential for energy production from food and play a vital role in the vulnerable child group. This systematic review is intended to evaluate changes in the gut microbiota composition of overweight and healthy children to understanding how GM, gastrointestinal dysbiosis and essential therapies for obesity are played out. Strategies for intervention in the improvement of obesity include diet change, probiotics, prebiotics, symbiontants, fecal microbiota transplantation and various microbial therapies. Each of these factors, including many receptors and compounds, function in different ways to control body weight.

**Results:** For PubMed, Scopus, the Web of Science as well as in Iran's Civilica and SiD.ir websites, the PRISMA protocol has been

applied. By the selected inclusion and exclusion criteria, a total of 27 research papers have been included. It has been found that the obese gut microbiota is reduced in both Bacteroidete, Bifidobacterium and AlphaDiversity but elevated in Proteobacteria and Lactobacillus.

**Conclusions:** In children, intervention with a daily intake of Probiotics has been shown to enhance alpha diversity and beneficial bacteria that contribute to weight loss. A remarkable change in the gut microbiota of overweight children has been observed.

**Keywords:** childhood, obesity, intestinal microbiota, microbiota diversity, nutrition intervention

## Various Forms of Fasting in Relation to CBC Markers: MASHAD Cohort Study

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**Introduction:** Ramadan is a spiritually significant month for Muslims, marked by a sacred observance of fasting that entails abstaining from both food and drink from dawn until nightfall. In current study we aimed to evaluate the relationship between various forms of fasting, including lifetime fasting, fasting during the Ramadan month, and fasting during non-Ramadan months, and cell blood count (CBC) markers.

**Methods:** In this retrospective cohort study, a total of 8,771 adult participants were surveyed regarding their fasting habits over a seven-year period. Inclusion criteria were applied to individuals aged 35 to 65, while those with a medical history of cardiovascular disease or currently pregnant were excluded. In the current study, univariate models were utilized, with the dependent variables being various CBC markers, and the independent variable being the type of fasting. The dataset was adjusted for covariates including age, gender, occupation, and marital status. Statistical significance was defined as a P-value below 0.05.

**Results:** By linear regression model, a lifetime of fasting is associated with reductions in WBC, RBC, Hb, HCT, and MCV by 0.328 (P-value = 0.001), 0.12 (P-value = 0.010), 0.59 (P-value < 0.001), 1.419 (P-value < 0.001), and 0.643 (P-value = 0.021) units, respectively. Intriguingly, this effect is accompanied by an increase of 9.763 (P-

value = 0.001) units in platelet count. Fasting exclusively affects lymphocytes, resulting in a decrease of 1.473 (P-value = 0.004) units. Furthermore, fasting during the month of Ramadan demonstrated a diminishing impact on WBC, RBC, Hb, HCT, RDW, monocytes, and eosinophils (-0.279 units; P-value = 0.002, -0.097 units; P-value = 0.024, -0.427 units; P-value < 0.001, -1.033 units; P-value < 0.001, -0.153 units; P-value = 0.002, -0.219 units; P-value = -0.035, and -0.327 units; P-value = 0.038, respectively). In contrast, during non-Ramadan months, fasting is linked to reductions in RBC, Hb, HCT, MCV, MCH, and eosinophils, while it leads to an increase in platelet count.

**Conclusions:** This retrospective study has illustrated a noteworthy correlation between different forms of fasting and CBC markers. To substantiate these findings, it is advisable to conduct longitudinal studies encompassing diverse populations.

## Depression and complications of Ramadan fasting

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**Introduction:** Ramadan fasting is a type of fasting in which people do not eat or drink for several hours after sunrise, and in fact, fasting is one of the 5 religious pillars of Muslims. Depression is a disorder in the nervous system related to a person's mood and decision-making. In current study our goal was to assess what effects fasting can have on depressed people or at risk of depression.

**Methods:** The MASHAD study is a population-based cohort that started in 2010 and continued until 2020. Beck's depression inventory II (BDI II) was used for depression measuring. Telephone interviews were run to obtain responses to a validated Ramadan fasting questionnaire. The study subjects derived from 3 groups: one healthy group, a group of people who developed depression during the 10-year of study (Dep1-, Dep2+), and a group of people who were depressed during the 10-year of follow-up (Dep1+, Dep2+).

**Results:** Altogether, 8388 individuals were included in the study. The results showed that the incidence of heart attack was more striking in the third group of the study (Dep1+, Dep2+) (P-value<0.001). Moreover, other complications such as loss of consciousness and severe hypoglycemia were higher in Dep1+, Dep2+ group and had

a positive significant relationship (P-value<0.001).

**Conclusions:** The different complications of Ramadan fasting including heart attack, loss of consciousness, and severe hypoglycemia were significantly associated with depression.

**Keywords:** Depression, Ramadan fasting

## Association of Syndecans and Metabolic Syndrome

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Metabolic syndrome (MetS) includes several cardiovascular risk factors including obesity, dyslipidemia and hypertension (HTN). Syndecans are the principal proteoglycans in the endothelial glycocalyx (eGCX) and are type 1 transmembrane proteins bound to the plasma membrane of the cells. The structure of syndecans consist of an ectodomain which is the attachment site for up to five glycosaminoglycans (GAG) chains, a cytoplasmic domain, and a transmembrane domain. They are involved in numerous biological processes including differentiation, cell adhesion, migration and angiogenesis. It has been shown that inflammation, hyperglycemia, ischemia and hypoxia can cause syndecan-1 shedding.



Previous studies showed that some matrix metalloproteinases (MMPs) are involved in syndecan shedding.

The association of syndecan-4 polymorphisms with HTN, BMI and the presence of type II diabetes mellitus (T2DM) has also been previously reported. Moreover, serum syndecan-4 levels are associated with metabolic disorders and fatty liver. Syndecans have a key role in the aetiology of diabetic complications. The decreased syndecan levels exert an important effect on the development of albuminuria in T2DM. Decreased syndecans concentrations have been observed in the kidney, retina, and cardiac muscle in diabetic models. Syndecan-1 and -4 mRNA expression have been reported to be increased in glomeruli in subjects with diabetic nephropathy (DN). At the other end of the scale, decreased glomerular syndecan-4 protein expression was detected in DN that indicating glomerular syndecan-4 shedding. This process was accompanied by increased plasma and urinary syndecan-4 levels, indicating systemic Glycocalyx (GCX) shedding.

So far, no study has assessed the relationship between syndecans and MetS. But previous studies have reported the relationship between syndecans and different components of MetS, furthermore, the molecular mechanisms involved are complex and need to be elucidated.

**Keywords:** Metabolic Syndrome, Syndecan, Diabetic complication

## The relationship of liver function and 7-year Ramadan fasting adherence

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## Association of Ramadan fasting complications and renal functions in patients with chronic kidney disease

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## **Assessment of the nutritional status of the elderly: Findings of The Amirkola Health and Ageing cohort Project (AHAP)**

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Elderhood is a crucial life stage, and promoting well-being during this period is a major goal and priority in human societies. One of the key factors influencing health in this stage is the nutritional status and its implications.

The Amirkola Health and Ageing Cohort Project (AHAP) study has been ongoing since 2011, aiming to assess various dimensions of elderly health, covering over 72% of the

target population in Amirkola city (located in northern Babol). The study involved more than 40 specialists and subspecialists in two phases, and its third phase commenced in 2023. In the AHAP study, various aspects of nutrition and relevant nutritional indicators were assessed, as follows: 1. The status of nutrient intake, in addition to food items and food groups, was evaluated using the standardized SQFFQ, which its validity and reliability were assessed in this study. 2. Evaluation of various anthropometric indicators determining obesity and muscle mass status.

3. Assessment of body fat distribution using the precise DXA method. 4. Assessment of the nutritional status of the elderly using the MNA questionnaire alongside food security status. 5. The measurement of blood indices and markers (including hematological and hormonal tests) related to nutrition. To date, over 10 nutritional articles have been published based on this cohort. Furthermore, the data and bio-bank from different phases of this cohort are accessible and open to all researchers for sharing.

**Keywords:** Nutritional Status, Elderly, Cohort, fat distribution, Malnutrition

## **physicochemical and sensory properties of cereal breakfast enriched with Inulin**

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The high consumption of low value cereal breakfast and malnutrition among the children and adolescents, is one of the problems that exist today in society. Therefore, in this study, the production of snacks with sorghum flour and its enrichment with inulin was investigated. The independent extrusion variables including die temperature (100,130 and 160 °C), inulin level (0, 5 and 10%) and moisture content (12 and 16%) were studied on the characteristics of extruded cereal breakfast. By increasing inulin, expansion ratio, porosity, WAI, WSI, OAI, lightness (L\*) and overall acceptability decreased and bulk density, hardness, redness (a\*) and yellowness (b\*) increased. Increasing die temperature decreased bulk density, hardness and lightness (L\*) whereas expansion ratio, porosity, WAI, WSI, OAI, redness (a\*), yellowness (b\*) and overall acceptability increased. Increasing moisture expansion ratio, porosity, WSI, OAI, redness (a\*), yellowness (b\*) and overall acceptability decreased and bulk density, hardness, WAI and lightness (L\*) increased. Accordingly, the optimum conditions for the cereal breakfast are 5% inulin, 160°C die temperature and 12% moisture.

**Keywords:** prebiotic, snack, extrusion, Inulin

## Malnutrition in Patients with Scleroderma

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Scleroderma (SSc) is a condition where the immune system incorrectly attacks the body's tissues, leading to progressive fibrosis or scarring of the skin and various internal organs, such as the lungs, heart, kidneys, and the gastrointestinal tract. Patients with SSc possess numerous risk factors that contribute to nutritional complications due to chronic inflammation and the progressive form of the disease affecting multiple systems. Affected individuals with SSc also face a heightened risk of malnutrition, with rates ranging from 15% to 58%, and approximately 20% of patients may experience fatal outcomes as a result. Fibrosis affecting the lymphatic system in the gut can result in malabsorption. There is no need to restrict the intake of fats or sugars. However, it is important to address the consequences of malabsorption and hidden gastrointestinal bleeding, which can lead to deficiencies in iron as well as vitamin B complex. In addition, a study revealed that 43% of SSc patients suffer from fat malabsorption,



accompanied by lower levels of copper, selenium, carotene, and ascorbic acid in their blood serum. Based on the recent investigations, probiotics were found to have a significant positive impact on the distention/bloating, reflux, overall gastrointestinal scales, and emotional well-being in SSc patients. These findings suggest that probiotics could be beneficial in treating distention/bloating associated with SSc. In cases with gastroparesis, it is advisable to promote frequent consumption of small, low-fiber meals with higher liquid content and reduced fat content. High sodium and inadequate energy consumption were observed in SSc patients, even among patients with cardiopulmonary. The consumption of nuts and seeds displayed an inverse relationship with liver transaminases. The presence of malnutrition and weight loss in SSc patients was found to be significantly correlated with heart failure, albumin levels, the degree of skin fibrosis, and pulmonary hypertension. In summary, there is a current lack of comprehensive and long-term research addressing the importance, outcomes, and treatment of nutritional decline in SSc patients with various clinical presentations. The findings of this study indicate that personalized nutritional counseling within an interdisciplinary approach has the potential to positively impact individuals with SSc.

**Keywords:** Scleroderma, nutritional complications, malabsorption, probiotics

## Meal distribution during Ramadan and hypertension

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**Introduction:** This study aims to evaluate the association between meal distribution during Ramadan and hypertension.

**Methods:** This was a retrospective cohort study conducted on the population of the Mashhad stroke and heart atherosclerotic disorder (MASHAD) study that completed the Ramadan fasting questionnaire in the second phase. Three study groups were compared in this study including healthy participants in both phases of the study (HTN1-, HTN2-), subjects with diagnosed hypertension in the 10-year follow-up (HTN1-, HTN2+), and subjects who had increased blood pressure from the beginning of the study (HTN1+, HTN2+). SPSS version 18 was used for statistical analyses.

**Results:** Results of the survey showed that in general, the meals of 83.9% of fasting subjects in Ramadan include Sahar and Iftar. 7.6% of participants eat Sahar, Iftar, and



dinner. 2.3% eat Iftar, and dinner, and 1.3% of fasting subjects eat dinner alone. This study shows that the incidence of hypertension was lower in subjects whose meals included Iftar and dinner.

**Conclusions:** Meal distribution including Iftar and dinner may be associated with a lower incidence of hypertension.

**Keywords:** Ramadan, Fasting, Hypertension

### **Melatonin supplementation in women with polycystic ovary syndrome: A Narrative Review**

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**Introduction:** Polycystic ovary syndrome (PCOS) affects approximately 7-10% of women of reproductive age, making it one of the most common endocrine disorders and a leading cause of infertility. The condition is characterized by androgenic hypersecretion, reproductive disorders, and ovulatory dysfunction. Melatonin is the primary hormone secreted by the pineal gland to regulate circadian rhythms, reproduction, and sleep cycles.

**Objective:**

This study aimed to investigate the effects of melatonin supplements on women with PCOS.

**Methods:** To conduct the study, we reviewed articles published in PubMed, Science Direct, and Google Scholar up to

August 2022. We searched for keywords such as PCOS profile, Melatonin, and Metabolic and selected 12 articles that met our criteria. All articles were written in English or Persian.

**Results:** The results showed that administering melatonin to women with PCOS significantly reduced hirsutism, total testosterone, hs-CRP, and MDA levels while increasing TAC and GSH levels. Additionally, melatonin administration decreased the expression of IL-1 and TNF- $\alpha$  genes. Studies also demonstrated that melatonin supplementation improved sleep quality and total testosterone levels in women with PCOS.

**Conclusions:** It appears that melatonin administration has beneficial effects on mental health parameters, sleep quality, and insulin levels in women with PCOS. This suggests that melatonin supplementation may offer beneficial therapeutic potential for women with PCOS. However, further research on more participants over a longer period is necessary to determine the full extent of these benefits.

**Keywords:** Melatonin supplementation, Women, PCOS

### **The impact of safrnal from saffron on cancer cells**

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Cancer treatment is still a critical area of investigation despite significant advancements. Saffron, the stigma of *Crocus sativus* flower, has gained attention in recent years due to its rich medicinal properties. Among its bioactive compounds, safranal has emerged as a potent anti-cancer molecule. Safranal exerts its anti-cancer effects through multiple mechanisms, making it a promising candidate for cancer therapy. Firstly, safranal has been shown to inhibit the proliferation of cancer cells by inducing cell cycle arrest and promoting cell death. Studies have demonstrated that safranal induces G2/M phase arrest in breast cancer cells, inhibiting their growth and progression. Moreover, safranal triggers apoptosis, or programmed cell death, in cancer cells, preventing their uncontrolled proliferation. Additionally, safranal exhibits potent anti-inflammatory properties, which play a crucial role in cancer development and progression. Chronic inflammation within the tumor microenvironment can promote angiogenesis, invasiveness, and metastasis. Safranal has been found to inhibit the production of pro-inflammatory molecules, such as tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) and interleukin-6 (IL-6), thereby suppressing the inflammatory response. Moreover, safranal enhances the activity of endogenous antioxidant enzymes, such as superoxide dismutase (SOD) and glutathione peroxidase (GPx), further protecting cells from oxidative stress-

induced damage. In conclusion, safranal, derived from saffron, exhibits significant potential in combating various types of cancers. Its ability to induce cell cycle arrest, promote apoptosis, reduce inflammation, and neutralize oxidative stress make it an attractive candidate for cancer therapy. However, further investigations are necessary to fully elucidate its mechanisms of action and assess its safety and efficacy in clinical settings.

**Keywords:** Saffron, Safranal, Cancer

## The visceral adiposity index as predictors of cardiovascular events

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**Introduction:** This study involved a prospective cohort of 9,685 individuals, both men and women aged 35 to 65, who were enrolled from the MASHAD study. The research encompassed demographic assessments, laboratory tests, measurements of anthropometric and metabolic parameters. Logistic and Cox regression analyses were employed to ascertain the link and risk factors associated with cardiovascular events in relation to VAI. **Methods:** The average VAI levels in individuals with cardiovascular disease



(CVD) were notably higher than those in healthy individuals across all three groups. Concerning the prediction of CVD events, VAI displayed a significant correlation with the likelihood of CVD in the second (odds ratio (OR) with 95% confidence interval (CI): 2.062 (1.047-4.342)) and third tertiles (OR (95% CI): 2.113 (1.397-5.222)) among individuals with a normal weight. However, this association was only observed in the third tertile (OR (95% CI): 2.189 (1.205-4.971)) among the overweight group. Interestingly, no such association was detected in the obese group.

**Conclusions:** In this research, we identified a noteworthy connection between VAI and cardiovascular incidents in both the normal weight and overweight categories. Nevertheless, we did not observe a significant correlation within the obese group.

**Keywords:** VAI, Normal weight, CVD

## **The association of smoking and arterial stiffness parameters in MASHAD cohort study**

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**Introduction:** Smoking and metabolic syndrome (MetS) are considered to be important determinants of arterial stiffness. Arterial stiffness is itself associated with an increased risk of cardiovascular disease (CVD). The present study aimed to evaluate the association between cigarette/ hookah smoking with arterial stiffness, comparing these associations for individuals with and without MetS.

**Methods:** Among 9704 individuals participating in the Mashhad stroke and heart atherosclerotic disorder (MASHAD) cohort study, we retrospectively evaluated 872 eligible middle-aged adults, and arterial stiffness was determined using a SphygmoCor XCEL System (AtCor Medical Incorporation) included cardio ankle vascular index (CAVI), pulse wave velocity (PWV), central augmentation index (CAI) and central aortic pressure (CAP). The participants were divided into MetS (n=473) and non-MetS groups (n=399). The smoking status, and whether they were cigarette/hookah smokers were evaluated. SPSS software version 21 was used for statistical analysis.

**Results:** The Mean±SD of none of the arterial stiffness parameters in healthy subjects (MetS-) was not related to smoking status. However, in the MetS+ group, the Mean±SD of PWV in ex-smokers was significantly higher than in no-smokers and current smokers (cigarette/ hookah). Moreover, the



duration of smoking was significantly higher than current smokers, which may somehow justify the higher PWV in ex-smokers than the others.

**Conclusions:** Our study demonstrated that in subjects with MetS, the effects of smoking in ex-smokers are associated with increased arterial stiffness. It seems that long-term smoking can cause irreparable damage to vascular health even after smoking cessation. Therefore, it is suggested that current smokers, particularly individuals with MetS, must pay more attention to reducing smoking and improving their lifestyles to prevent cardiovascular events.

**Keywords:** Cigarette Smoking, Hookah smoking, Arterial Stiffness

### **The Effect of Lactoferrin Extract from Camel Milk on MCF- 7 Cell Line**

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**Introduction:** Lactoferrin is a milk protein which has growth factor, antibacterial, antifungal, antiviral, antioxidant, immune system suppressor and inflammatory response properties.

**Methods:** lactoferrin was purified by ion exchange chromatography using CM-Sephadex-C-50 To determine of purity, SDS-PAGE test was performed to confirm the absence of dye in the presence of tetramethyl benzene (TMB). Km and Vmax values of lactoferrin were determined.

The effects of Lactoferrin on the Vero cell and primary cultures of rat liver in different concentrations were studied. Then morphological changes were studied in different times. In order to survey the rate of cell death, MTT assay was used after 24 hours. The result of MTT assay have been mentioned to the viability cells in percent.

**Results:** The results revealed significant cytotoxic effect at levels ( $P < 0.05$ ) for all concentrations. The highest inhibitory growth was 10  $\mu\text{g/ml}$  after 72hrs of exposure time (30.74%). It is shown in this research that Lactoferrin inhibit cancer cells proliferation. In contrast to cancer cells, these proteins increase the normal cells proliferation and length of life.

**Conclusions:** The results showed that the extracted Lactoferrin extract from camel milk can be used as a valuable food source for people undergoing cancer treatment or similar disease. The lactoferrin increase the production of interleukin 18 and inhibits angiogenesis.

**Keywords:** Camel milk, Lactoferrin, Vero cell, MTT assay



## The Effect of Whey Acidic Protein Extract from camel milk on MCF- 7 Cell Line

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**Introduction:** Milk proteins have a wide range of nutritional, functional and biological activities. Protein components of milk possess valuable and therapeutic properties.

**Methods:** To purify Whey Acidic Protein (WAP) from ion exchange chromatography by resin CM sephadex C-50, precipitation with 90% ammonium sulfate, centrifugation of the solution, and dialysis (in 20 mM Tris buffer) and gel filtration chromatography with Sephadex G-50 resin was performed. In order to distinguish lysozyme and WAP, the Scull test (Imoto method) was used. The effects of WAP on the MCF- 7 cell and primary cultures of rat liver in different concentrations were studied. Then morphological changes were studied in different times. In order to survey the rate of cell death, MTT assay was used after 24

hours. The result of MTT assay have been mentioned to the viability cells in percent.

**Results:** The purified concentrations ranging were (49 to 79) µg/ml. The results revealed significant cytotoxic effect at levels (P<0.05) for all concentrations. The highest inhibitory growth was 7 µg/ml after 72hrs of exposure time (42.16%). WAP inhibit cancer cells proliferation and increase the normal cells proliferation.

**Conclusions:** The extracted WAP proteins extract from camel milk can be used as a valuable food source for people undergoing cancer treatment. WAP has a negative regulatory role in the progression of the cell cycle of breast epithelial cells and is also capable of reducing the amount of cyclin 1D in the 1G phase.

**Keywords:** Camel milk, Whey Acidic Protein, MCF- 7 cell

## The Potential Role of Aloe Vera in the Management of Diabetes: A Narrative Review

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**Introduction:** To prevent complications from diabetes mellitus, it is important to effectively manage high blood sugar levels. Aloe vera, a natural remedy rich in bioactive compounds like polysaccharides and antioxidants, has been found to have potential in controlling diabetes. Studies suggest that it possesses hypoglycemic





properties and can enhance insulin sensitivity. People with diabetes may benefit from the regulation of blood sugar and improved blood sugar control that aloe vera can provide. It is worth considering complementary approaches like aloe vera to supplement traditional diabetes therapies. Our aim is to investigate the mechanism and effects of aloe vera in the control and management of diabetes mellitus.

**Methods:** A complete review of related research was done by searching in scientific databases such as PubMed, Scopus and Google Scholar using the keywords aloe vera, diabetes, management and control. The selected studies, including Persian and English studies, were evaluated for quality and relevance until August 2023. Then the data were extracted and analyzed.

**Results:** Aloe vera has been found to have anti-diabetic effects by enhancing insulin secretion from pancreatic beta cells. It contains compounds such as acemannan and lectin that can stimulate insulin release and improve beta-cell function. Additionally, aloe vera can reduce insulin resistance by promoting glucose uptake in peripheral tissues, which helps prevent excessive glucose accumulation. These effects are believed to be due to its anti-inflammatory and antioxidant properties. Furthermore, aloe vera may also help manage diabetes complications by protecting against oxidative stress and inflammation that can lead to kidney disease, neurological disease, and retinopathy.

**Conclusions:** More research is needed to understand Aloe vera's mechanisms, dosage, and safety in diabetes management. Standardized extracts and clinical trials are necessary to determine their efficacy and role in conventional treatment. In conclusion, Aloe vera has potential in diabetes management, aiding glycemic control, insulin sensitivity, and preventing complications. However, further research is required to explore its therapeutic potential and optimal application in diabetes care.

**Keywords:** Aloe Vera, Diabetes Mellitus, Blood Glucose, Antidiabetic Agent, Glycemic Control

## **Cardiovascular disease and 7-Year adherence to Ramadan fasting**

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**Objectives:** Cardiovascular diseases (CVD) are a major global health concern, necessitating lifestyle interventions for prevention and management. Intermittent fasting, including Ramadan fasting, has emerged as a potential strategy to mitigate CVD risk. This study aimed to explore the relationship between CVD and 7-year adherence to Ramadan fasting.

**Materials and Methods:** This retrospective cohort study enrolled 7,747 individuals (aged 35-65 years) from the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) cohort study. Participants completed a validated Ramadan fasting questionnaire.

**Results:** Adherence to Ramadan fasting exhibited variations over the years, with significant differences observed in fasting patterns between those with and without CVD (P-value <0.001). Notably, fasting from 2012 to 2018 showed a consistent pattern: those with CVD had a lower percentage of fasting individuals, with associated differences in the number of fasting days (P-value <0.001). This trend was most pronounced in 2018, where only 38.1% of individuals with CVD fasted compared to 64.4% without CVD. In terms of fasting days, those without CVD consistently reported more days of fasting each year, with statistically significant differences observed (P-value <0.001).

**Conclusions:** CVD may be associated with reduced adherence to Ramadan fasting.

**Keywords:** Cardiovascular disease, Ramadan, fasting, Adherence

## Ramadan fasting meal distribution among diabetic patients

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**Objectives:** Muslims are expected to fast during Ramadan. The Muslim tradition prohibits using of oral intake or medication during the fasting period. In Ramadan, two meals are usually consumed each day. The first meal is called sahur, and it is eaten before dawn. After sunset, iftar is the second meal to be consumed. As a result, during Ramadan, lifestyles and circadian rhythms are altered. This study investigates the relationship between Ramadan fasting meal distribution and diabetes mellitus.

**Materials and Methods:** It is a retrospective cohort study conducted on subjects from phase II of the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) study. The long-term effects of Ramadan fasting nutritional habits were investigated using a



validated Ramadan fasting nutritional habits questionnaire. There were 16 items in the questionnaire, categorized into Ramadan fasting basic information and nutritional habits. A comparison was made between healthy, newly diagnosed, and diabetic patients based on how their meals were distributed.

**Results:** It was found that 83.9% of those fasting in Ramadan consume both Sahar and Iftar. 7.6% of fasting individuals receive all three meals: sahur, iftar, and dinner. 2.3% percent of the respondents consume both iftar and dinner and 1.3% percent consume only dinner. Healthy individuals, people with new diabetes diagnoses, and diabetics did not differ significantly in their distribution of meals during Ramadan fasting ( $P=0.34$ ).

**Conclusion:** Our results show that meal distribution and diabetes mellitus do not appear to be related.

**Keywords:** diabetes mellitus, Ramadan, fasting, meal distribution

## Association of maternal Ramadan fasting and diabetes mellitus

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**Objectives:** Fasting during Ramadan consists of intermittent periods of fasting between sunrise and sunset, followed by intervals of feeding. Ramadan fasting constitutes a religious duty, even though certain groups, such as children, pregnant women, travelers, and patients are exempted. Although, some pregnant women insist on fasting during Ramadan. This study investigates the association between maternal Ramadan fasting and diabetes mellitus incidence among the lifetime of their children.

**Materials and Methods:** The current study with a retrospective cohort design was conducted on the subjects derived from phase II of the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) cohort study. Our study examined the long-term effects of maternal Ramadan fasting, using a validated Ramadan fasting nutritional habits questionnaire. The population is divided into three categories: healthy subjects, newly diagnosed diabetics, and patients who are already diabetic.

**Results:** Most of the mothers in all three study groups fasted during Ramadan (98.9%). Among diabetic patients, fasting during pregnancy is significantly more



frequent compared to nondiabetic patients (P=0.018).

**Conclusion:** The findings of our study indicate that Ramadan fasting during pregnancy may be associated with an increased risk of diabetes in the future for the child. Further studies should be conducted to clarify the benefits and risks of fasting on pregnancy outcomes and diabetes incidence.

**Keywords:** diabetes mellitus, Ramadan, fasting, Maternal

### **Association of anxiety score with the age and season of first Ramadan fasting experience**

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**Objectives:** During Ramadan fasting Muslims refrain from eating, drinking, and smoking from dawn to dusk. Anxiety disorders are among the most common mental disorders, and those affected

experience excessive fear, nervousness, and avoidance of perceived threats. Previous studies demonstrated a relationship between fasting and mood. Therefore, the aim of this study was to investigate the relationship between anxiety score and the age and season of the first Ramadan fasting experience.

**Materials and Methods:** This is a retrospective cohort study among the MASHAD (Mashhad Stroke and Heart Atherosclerotic Disorder) cohort study, a retrospective cohort from 2010 to 2020. Beck's psychological test was used to determine the anxiety score of the participants, which an upper score indicating more severity. Subjects were divided into three groups including healthy people in both phases (Anx 1-, Anx 2-); those with anxiety diagnosis in 10-year follow-up (Anx 1-, Anx 2+); and people with anxiety in both phases of the study (Anx 1+, Anx 2+).

**Results:** Totally, 8388 participants were included in the study. There was a relationship between the age of first Ramadan fasting and suffering from anxiety (P-value < 0.001). Also, anxiety scores increased by 6.8% regarding each 1-year increase in the age of the Ramadan fasting experience (P-value < 0.001), and people who started fasting in the summer had a 50% higher chance of suffering from anxiety (P-value= 0.001).

**Conclusions:** The result of this study showed that starting Ramadan fasting at an



older age had a significant inverse relationship with the anxiety score.

**Keywords:** anxiety, Ramadan, fasting, age

## **The Role of Micronutrient Fortification in Advancing Sustainable Diets: A Comprehensive Study on Health, Environmental, and Cultural Impacts**

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**Introduction:** In response to pressing sustainability concerns regarding our existing dietary practices and environmental challenges, the formulation of effective policies is crucial to safeguard both human well-being and the health of our planet. One proposed solution is the adoption of sustainable diets, which holds the potential to not only enhance public health and food security but also mitigate the adverse environmental impacts stemming from our food systems.

**Method:** Micronutrient deficiencies represent a significant global public health issue, affecting up to half of the world's population. These deficiencies result in unrealized human potential and diminished economic productivity. Large-scale fortification of various micronutrients has

emerged as a cost-effective strategy to address this concern, showing promise in improving public health outcomes.

**Result:** This study investigates the intricate nexus between micronutrient fortification and the cultivation of sustainable diets. It seeks to understand how deliberate micronutrient fortification contributes to the development of diets that are both environmentally and culturally sustainable.

**Conclusion:** By considering individual food preferences within the dimensions of cultural sustainability, the research explores how micronutrient fortification can concurrently combat deficiencies, enhance dietary quality, and reduce the environmental footprint associated with dietary choices.

**Keywords:** Food fortification, Micronutrient deficiencies, Biofortification, Sustainable diet.

## **The Association between Eating duration and Sleepiness during the day**

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**Introduction:** Eating duration is a significant additional dietary characteristic that nowadays might get neglected, which,



besides meal quantity and quality, impacts many aspects of health, including mental health, sleep quality, and daytime Sleepiness. Regarding sleep quality and Sleepiness as prevalent problems, which have been reported to be related to eating behaviors, this study aims to investigate the Association between eating duration and Sleepiness during the day.

**Methods:** This cross-sectional study has been conducted on 604 adult individuals (18-65 years old) from different cities of Iran, using the Epworth Sleepiness Scale questionnaire (ESS) to assess their daytime Sleepiness. To explore the Association between eating duration and Sleepiness during the day, logistic regression was used in crude and adjusted models via SPSS software.

**Results:** There was no significant association between daytime Sleepiness and eating duration in the crude model. Further, in model 1, which was adjusted for age, BMI, and total energy intake, and in model 2, which was further adjusted for gender, smoking, menstruation situation, and loss of relatives, no significant relationship was observed (P-value and P-trend > 0.05).

**Conclusions:** Eating duration and Sleepiness during the day were not found to be significantly associated in this study.

**Keywords:** Sleepiness, Sleep-Wake Disorders, Feeding and Eating Disorders

## Nutritional status of children with COVID19 hospitalized in the Intensive Care Unit

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**Introduction:** Malnutrition is associated with increased risk of delayed recovery, morbidity, and mortality following critical illness. On the other hand, a history sufficient dietary intake including macro-and micro nutrients is an important factor in preserving and developing immunity. Therefore, malnourished children are at increased risk of immune system impairment against COVID-19. Nutritional status of critically ill children with COVID-19 was evaluated in this study.

**Method:** This observational study was done in Pediatric Intensive Care Unit (PICU), Akbar hospital, Mashhad, Iran during 2021. Critically ill children with documented COVID-19 diagnosis were included. At admission time nutritional status of patients were evaluated by weight-for-lengths/heights z-scores, based on the World Health Organization child growth standards.



**Results:** A total of 54 children with mean age of 41 months were included in the study. Mean values of weight of included cases were 13.1 Kg. While 66% of patients (36 subjects) were at normal nutritional status upon the PICU admission time, 9 patients (16.6%) had moderate malnutrition and malnutrition was severe in 16.7% of patients.

**Conclusion:** As nutritional depletion is associated with worse clinical outcomes in stress phase response, targeted nutritional rehabilitation protocols are needed for COVID-19 critically ill children with existing malnutrition

**Keywords:** Malnutrition, COVID19, Pediatric, Critical Illness

### **Investigating the prevalence of food insecurity, and its level among households living in low income areas of Mashhad**

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**Introduction:** Inability to prepare proper and healthy food is considered as a primary component of human rights. Food security status is in relationship with health related outcomes. This study was carried out to

determine the prevalence of food insecurity, and its level among households living in low income areas of Mashhad.

**Method:** This cross-sectional study was carried out in low income districts of Mashhad in 2022. A total of 253 households aged 20-60 years were entered the study and 9-item Household Food Insecurity Access Scale (HFIAS) questionnaire was used to determine the food security status of the included subjects. SPSS software (version 20) was used for statistical analysis of the obtained data at a significance level of less than 0.05.

**Results:** Underweight (according to BMI index) was detected in 8.3 % of the low income areas residents while 49.4% of them were overweight/ obese. In total, 89.5% of the subjects had a level of food insecurity, of which 32.86% had severe, 28.9% moderate, and 26.9% mild insecurity.

**Conclusion:** The prevalence of house hold food insecurity in low income areas of Mashhad is high and in critical levels while the high prevalence of overweight /obesity. This can be due to poverty, non-availability of special food items and low level of nutritional literacy. This issue should be considered in future decisions on supportive policies of the aforementioned areas.

**Keywords:** Food Security, Food insufficiency, Food access.



## Successfulness of undergraduate medical education program in achieving nutrition competencies

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**Introduction:** Paying attention to the principles of nutrition in the diseases management and providing care plans for patients is an important component in improving the lifestyle and health needs of society and one of the important missions of medicine in social accountability framework. According to the document of minimum competencies of general physician, a medical student is expected to be able to plan his patient care in three levels of disease prevention, to design disease control, and prevention of its complications with a holistic view. The present study evaluated the successfulness of undergraduate medical education program in achieving this competency from themselves, perspective.

**Methods:** The current descriptive-cross-sectional study was carried out during 2022 in Mashhad University Medical Sciences (MUMS) using a validated and reliable researcher-made questionnaire (Likert scale based) in accordance with the criteria

related to the field of patient nutritional management in the document of minimum competencies of physician (edited in 2014). The data analysis was done using SPSS version 20 software and using related parametric and non-parametric tests.

**Results:** A total of 118 interns completed the questionnaire that 40% (46 persons) of them were female and 38 subjects were married. The average self-evaluation score of the interns in the area of attention to nutrition in the patient care plan was  $1.9 \pm 0.8$  and based on the study scale, it was evaluated as weak-moderate, and only 19 interns (16%) evaluated their ability in this area as good or very good. Among the interns, the effect of none of the variables of gender, marital status, educational system, passing quota in entrance exam, residential status, and economic status on the self-evaluation score was not significant considering the 0.05 level.

**Conclusion:** The findings of this study showed that the ability of interns in nutritional management of patients is evaluated at a weak and very weak level from themselves, point of view. Considering the role and importance of this skill in taking care of the health of the society members by future doctors, continuous training compensation programs and revision of the general medical education program should be placed on the agenda of the officials.

**Keywords:** Curriculum, Competency, Medical Education





## Effect of Nutritional Support On Micronutrient Status in Children with Chronic Liver Disease

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**Background:** Paying attention to nutrition and lifestyle modification in children with Chronic liver disease (CLD) is of special importance. This study aimed to determine the effect of nutritional support on micronutrient status in children with CLD.

**Materials and methods:** The present study is a two-group randomized clinical trial that was performed by consensus sampling in Mashhad in 2016. In this study, 77 children with CLD who met the inclusion criteria (45 children in the intervention group and 32 children in the control group) were studied. The intervention included six workshops and training on proper diet, post-workshop phone calls, and regular face-to-face counseling sessions (first 4 weeks once a week and second 4 weeks once every 2 weeks) on adherence to the above diet. Patients in the control group received routine care. The collection tools in the study included body composition device, and diet

plan form in the form of 24-h recall forms. Data analysis was performed using descriptive statistical tests and Mann-Whitney and Wilcoxon statistical tests using SPSS software version 16.

**Results:** Based on the results of the study, the mean age of the research units was  $7.8 \pm 3.6$  years. The mean duration of CLD was  $4.6 \pm 1.8$  years in the intervention group and  $5.1 \pm 1.9$  years in the control group. The mean crude intake of most minerals after the intervention was significantly higher than before the intervention, except for the crude intake of retinol, thiamine, riboflavin, folate, Vitamin C, iodine, and Vitamin B12. Furthermore, in relation to the modified intake of micronutrients, the mean modified intake of most micronutrients after the intervention showed a significant increase compared to before, except for retinol, Vitamin D, niacin, B12, and iodine.

**Conclusion:** Considering the effect of providing a nutritional support to improve micronutrient status in children with CLD we concluded that special nutrition programs should be provided to these children. In this regard, nurses can play an important role in improving the quality of nutrition of children by providing nutrition programs with appropriate follow-up.



## **A review of The National Iodine Deficiency Disorders (IDD) program in Iran from 1989 to 2023: the necessity of revitalization of the median urinary iodine concentration (UIC) program among school-aged children**

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**Introduction:** Iodine deficiency is still a public health problem in some countries. Fortunately, the Iranian National Committee of Iodine Deficiency Disorders (IDD) has implemented a comprehensive program based on cost-effective strategies to combat IDD. Aims: This study aims to address national program strengths and weaknesses in Iran.

**Method and material:** We searched Scopus, PubMed, Embase, Web of Science databases, and Google Scholar from 1989 to 2023.8.23. We visited related Iranian websites for the IDD program. We also interviewed ten IDD experts.

**Result:** we understood Iran has implemented a mandatory iodization program with potassium iodate as a cost-effective strategy since 1989. We discovered that the median urinary iodine concentration (UIC) program was interrupted from 2018; The median UIC

program assesses the effectiveness of iodine deficiency control strategies and reflects the iodine status of an individual or population. A median UIC of 100-199 µg/L had been defines as optimal. Also, we observed that the Iranian National Standardization Organization has increased the iodine content of Food Grade Iodized Salt from 40±10 (30-50) ppm to 45±15 (30-60) ppm based on ISIRI NO. 1195. Discussion: Despite the overall success of the IDD program, there are still some challenges, including the interruption of the medium UIC program since 2018, the necessity of more awareness among people about consuming iodized salt, and the quality control of iodized salt production.

**Conclusion:** The interrupted median UIC program is worrying, so it can spoil the IDD program. It is necessary to be revitalized as soon as possible.

**Keywords:** Iodine Deficiency, revitalization, the median urinary iodine concentration (UIC), potassium iodate

## **Increasing egg consumption per capita despite the upward trend of its price among Iranians in 3-years period**

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**Introduction:** The egg is an affordable food item, which is an excellent source of protein, lutein, zeaxanthin, vitamin A, vitamin D,  $\omega$ -3 LCPUFA, and choline. The aim of this study is to investigate the trends of whole egg price and its per capita among Iranians during 1399, 1400, and 1401 solar years.

**Method and Materials:** The average egg price (1kg) was obtained from the website of the Statistical Center of Iran and the egg consumption data from the Iran egg consumption promotion headquarters. SPSS software was used to analyze.

**Results:** Egg consumption per capita was 226 ( $\approx$ 14.1kg) in 1399, 235 ( $\approx$ 14.6kg) in 1400, and 249 ( $\approx$ 15.4kg), respectively. The trending egg price was significantly upward and multiplied 4.6 times (360%) during this period. We also found that 80% of egg per capita is consumed in households and 20% in the food industry. **Discussion:** The price of eggs and its per capita are increased simultaneously. It reflects that people are not worried about egg cholesterol anymore after the popularity of the WHO slogan "Every healthy person is allowed to eat an egg a day". The first reason is the educational program's effectiveness. The second reason is the decreasing purchasing power of Iranians to buy other protein foods such as beef, lamb, chicken, and fish, whereas egg still is affordable.

**Conclusion:** Increased egg consumption despite the upward price shows the educational program's effectiveness. The upward trend of food prices reflects a

multifactorial problem in Iran that requires the attention of the government and related international organizations such as UNICEF and WHO.

**Keywords:** egg consumption, per capita, price, health, high-quality protein, Iran

### **Radio-protective effect of melatonin on the side effects reduction of radiation therapy and quality of life improvement in breast cancer patients**

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**Introduction:** Ionizing radiation affects quality of life (QoL) score and causes tissue damage by releasing free radicals and increasing oxidative stress. This study investigated whether oral Melatonin can improve QoL score and reduce acute radiation dermatitis in patients receiving radiation therapy.



**Materials & Methods:** 34 women (age 20 years) with stage 1-3 breast cancer who received 50 or 60 Gy entered the study. They randomly grouped into melatonin and placebo groups: the Melatonin group (15) received 20 mg of Melatonin nightly during radiotherapy and two weeks following the last fraction. The placebo group (19) received a placebo. Exclusion criteria were diabetes mellitus, uncontrolled hypertension, asthma, fragrance allergy, or severe allergy history. Women with known connective tissue disorder or previous chest or breast radiation were excluded; chemotherapy had to be completed four weeks before study entry. The study was approved by the ethics committee (IR.SBU.REC.1400.128). All women had written informed consent.

**Results:** The acute radiation dermatitis in the melatonin group was lower than the placebo group during treatment; this difference was statistically significant in the third ( $P=.043$ ), fourth ( $P=.005$ ), and fifth ( $P=.021$ ) weeks. The frequency of grade 3 dermatitis was less in the melatonin group (6.7% vs. 15.8%).

**Conclusion:** Melatonin can protect against radiation injury via scavenging free radicals and reducing oxidative stress. However, Adjuvant Melatonin did not show a significant effect on QoL score in breast cancer patients, but it reduced acute

radiation dermatitis, and it could delay the onset of grade 3 acute radiation dermatitis.

**Keywords:** Melatonin, dermatitis, Antioxidant, Clinical Trial, Radio-protective

### **The effect of whole egg consumption on markers of glyceimic control: A meta-analysis study of randomized clinical trial studies**

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**Introduction:** Diabetes is one of the most disabling public health problems worldwide. Lifestyle emphasizing nutrition is known as the most important of them.

**Method:** This is a meta-analysis study that analyzed clinical trial studies that evaluated a whole egg's effects on glyceimic control markers. We searched in Scopus, PubMed, Embase, Cochrane, Web of Science databases, and Google Scholar search engine systematically without any language and time limitation until 25.01.2019. We



determined the effect of whole egg consumption on glycemic control markers with SMD and their upper and lower limits.

**Results:** According to the search strategy, 3607 records were found, but only 10 clinical trial studies met our inclusion criteria, so we selected them for the meta-analysis stage. Markers of glycemic control in the intervention group before and after egg consumption showed that HbA1C -0.39 (-0.57, -0.21) and HOMA-IR -0.64 (-0.90, -0.37) had a significant reduction. However, the reduction of FBS -0.00 (-0.13, 0.14) was insignificant, and the amount of insulin 0.00 (-0.23, 0.23) was constant before and after the intervention.

**Conclusion:** The results of the present study do not confirm the adverse effect of consuming 1 to 3 whole eggs daily on the markers of glycemic control. Regarding the FBS and HbA1C were controlled, but HOMA-IR as a long-term marker of glycemic control is reduced; it seems that whole egg consumption has probably improved insulin sensitivity so that insulin amount is diminished a little, HbA1C and FBS levels were controlled, and HOMA-IR was also reduced.

**Keywords:** Whole egg, markers of glycemic control, Insulin, Glycosylated hemoglobin, HOMA-IR

## The effect of whole egg consumption on markers of glycemic control: A meta-analysis study of randomized clinical trial studies

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**Keywords:** Whole egg, markers of glycemic control, Insulin, Glycosylated hemoglobin, HOMA-IR

### **Comparison of the amount of Lauric acid (C12), Capric acid(C10), and C12/C10 ratio in the ovine cold ghee in compared to bovine cold ghee as boosting immune system factors**

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**Introduction:** Since Lauric acid (C12) and Capric acid (C10) have some roles in the immune system and inflammatory bowel disease (IBS), so The C12/C10 ratio in milk fat derivatives is considered a health index. Cold ghee is derived from yoghurt butter by melting at a low temperature ( $\approx 70\text{ C}^\circ$ ). Ovine and bovine are popular types of ovine originating from sheep and cows. This study aimed to compare the C10, C12, and C12/C10 ratio in ovine and bovine cold ghee.

**Method:** This study was conducted on 27 ovine and 10 bovine cold ghee samples in Kermanshah Province, Iran. The fatty acid composition was determined using gas chromatography. SPSS software was used to analyze, especially the T-test and U Mann-Whitney test.

**Results:** The mean of the C10 and C12 were higher in ovine ghee than in bovine ghee ( $4.95\pm 1.07$ , and  $3.00\pm 0.66$  respectively) versus ( $2.04\pm 0.22$  and  $2.68\pm 0.11$ ) but C12/C10 ratio was significantly higher in bovine ones. The mean of C12/C10 ratio were  $0.60\pm 0.61$  in ovine ghee and  $1.33\pm 0.15$  in bovine ghee. It is mentionable that the differences were significant about C10 and C12/C10 ratio ( $P<0.05$ ) but non-significant about C12.

**Conclusion:** The higher C12/C10 ratio in bovine ghee significantly may provide additional health benefits due to its



functions in the immune system and IBS, but according to the C12 and C10 amount, ovine ghee is better. Doing well-designed clinical trial studies in vitro and in vivo is recommended to recognize the anti-inflammatory roles of milk-based fatty acids.

**Keywords:** ovine, cold ghee; bovine; immune system; lauric acid (C12); capric acid (C10)

### **Egg yolk consumption increases macular pigment optical density (MPOD) levels in adult individuals significantly**

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**Introduction:** Age-related macular degeneration (AMD) is an unhealthy eye condition that affects 170 million globally and threatens the elderly vision health. It is reported that Increased dietary intake of lutein, zeaxanthin, and  $\omega$ -3 LCPUFA is associated with a decreased risk of advanced AMD that egg yolk is a dense source of them. The association between egg consumption

and AMD incidence has been considered in the last decade, so a few clinical trials were conducted on MPOD and egg yolk.

**Methods:** We systematically searched in Scopus, PubMed, Embase, Cochrane, Web of Science Databases, and Google Scholar search engines without language or time limitation until 30.07.2020. We determined the effect of egg yolk consumption on macular pigment optical density levels. The obtained data were analyzed in STATA.14 software. A P-value 0.05 was considered statistically significant.

**Results:** Based on 6 reviewed studies with a sample size of 285 participants that were published between 2003- 2017, We observed that the difference in MPOD change in the intervention group and control group was significant so that both regular egg yolk and carotenoid enriched egg increased MPOD level.

**Conclusion:** This study shows the beneficial effect of 6 to 12 egg yolk consumption weekly from 28 to 365 days on MPOD; however, this beneficial effect is reachable by consuming 6 egg yolks per week. We concluded that everybody could benefit from egg yolk (up to 6 per week) to improve MPOD level and decrease AMD problems.

**Keywords:** macular pigment optical density, MPOD, age-related macular degeneration, ARMD, egg yolk, carotenoid, and clinical trial





**International UNESCO Center  
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- 1-Sport Supplements
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- 3-International educational and research opportunities
- 4-Challenges in Scientific Publishing
- 5-Application of SPSS in Nutritional Data Analysis
- 6-Photoshop
- 7-ELISA
- 8-Nutrient intake analysis
- 9-Strategies for obtaining national grants in educational studies
- 10-Non-Invasive Body Contouring
- 11-LLL Course: Nutritional Support in Renal Disease
- 12-LLL course: Nutritional Assessment and Techniques
- 13-Nutrition and Bariatric Surgery
- 14-NutritionDay Project
- 15-Evidence-Based Nutrition
- 16-STATA
- 17- Probiotics and clinical studies
- 18-Writing nutritional guidelines
- 19-Use of mathematics and machine learning to evaluate the relationship between dietary changes and diseases
- 20-ICU Supplements
- 21-Nutrition and Mood Disorders
- 22-Reference Interval Methods
- 23-Cell Culture
- 24-Iranian Authors' Writing Errors in the Field of Nutritional Sciences
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- 26-EndNote
- 27-SPSS and PRISM for Beginners
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