14th ACN 2023
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14th ACN 2023
ASIAN CONGRESS OF NUTRITION
SEPTEMBER 14-17th CHENGDU CHINA

14th ACN 2023

ABSTRACT BOOK

14th Asian Congress of Nutrition

Feeding the Future by Sustainable Nutrition

Chengdu, China
September 14-17, 2023

FEDERATION OF ASIAN NUTRITION SOCIETIES

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Category: Public Nutrition & Health

Focus Group Discussion among teachers about practice in Nutrition Balance Diet Guidelines and Barriers to apply

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Background and Objectives:

Non-communicable diseases currently dominate the world. Indonesia currently has balanced nutrition guidelines which are expected to be applied in the prevention of non-communicable diseases. This study aims to obtain information about balanced nutrition practices and barriers experienced by teachers in implementing nutrition balance guidelines.

Methods

Focus Groups Discussion (FGD) was conducted with a group of teachers at a public school in Makassar City. There were 11 participants. We used structured questions based on nutrition balance guidelines and probed practices and barriers to doing so. Nutrition balance guidelines including 10 main messages.

Results:

Nutrition balance guidelines practices carried out by teachers such as consuming vegetables, only once a day, consuming side dishes that are prepared simply such as fish or tempeh, not consuming a variety of staple foods which are only dominated by rice, skipping breakfast, not consume 2 litres water a day, and doing simple physical activities, such as homework and walk to a certain place. Barriers to not practicing balanced nutrition properly are limited time, so they don't have time to prepare vegetables or other side dishes, breakfast is not a habit, so it is difficult to do it, respondents afraid to go to the bathroom frequently because drink too much, and respondent don't have time to do physical activity.

Conclusions:

Teachers applied nutrition balance guidelines only partially. It is necessary to provide education about the importance of implementing nutrition balance guidelines so that respondents are willing and able to fully implement nutrition balance guidelines.

Key words Nutrition Balance Guidelines, staple food, skipping breakfast.

Category: Public Nutrition & Health

How neoliberalism shapes dietary practices and results in the increase of non-communicable diseases and extension of existing social inequality in the Philippines

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Evidence suggests that traditional diets are transiting to more industrial diets in many countries, including the Philippines. Many features and negative consequences of neoliberalism and neoliberal diets, such as the transnational corporate-controlled food supply and value chains, the increasing consumption of industrial foods, high consumption of additives such as sugar, salt, and oil, increasing incidence rates of non-communicable diseases, and extension of existing inequality have also been observed in the Philippines. To better understand the phenomenon, this paper utilizes the theory of neoliberalism and neoliberal diets as the conceptual tool to explore the mechanism of the shift of diets in the Philippines and how it results in the increase of non-communicable diseases and extension of existing social inequality. This paper briefs the theory tradition of neoliberalism and neoliberal diets and use the evidence in the Philippines to argue that neoliberalism has created the shift of diets, resulted in higher incidence rates of non-communicable diseases, and extended existing social inequality in the Philippines since the early 1980s. The conclusion is that neoliberal food policies and neoliberal diets are the causes of the increase of non-communicable diseases and the extension of existing social inequality in the Philippines. The government should be blamed for the negative consequences caused by neoliberalism and neoliberal diets rather than only blaming victims. A reflection should also be explored to consider what role the government should play to control social inequality and NCDs caused by neoliberal food policies and neoliberal diets.

Key words nutrition transition; non-communicable diseases; neoliberalism; industrial diets; social inequality; the Philippines

Category: Public Nutrition & Health

Unhealthy food promotion on television to Sri Lankan children: The forgotten threat to the obesity pandemic

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Funding information: International Development Research Center, Grant Number: 109170

Acknowledgement: Kantar Lanka (Pvt) Ltd, INFORMAS Research team, the project leader, and the secretariat, University of Taylor’s Malaysia

Introduction: The promotion of unhealthy food, particularly high in fat, salt, and sugar (HFSS), is a significant risk factor for obesity. However, restricting such promotion is often overlooked. We assessed the exposure of Sri Lankan children to food promotion on television as part of a multi-country study in Asia.

Methods: Food advertisements streamed on three television channels popular among Sri Lankan children were analysed over 432h (18h/day between 0600-0000 on 4 weekdays and 4 weekend days). A tool developed based on the International Network for Food and Obesity/NCDs Research, Monitoring and Action Support (INFORMAS) and the World Health Organisation (WHO) Nutrient Profile Model for South-East Asia Region (SEARO) was used to classify food as healthy/unhealthy based on nutrition threshold values.

Results: Of the total 23716 advertisements aired, 6824 were on food promotion. Children, on average, were exposed to ~17 food advertisements per hour (i.e. four every 15 minutes), of which over half (56.4 %) were on unhealthy foods according to the WHO-SEARO model. A third of these were aired during children's peak viewing time. Of the 289 food products advertised, 141 (48.7 %) were HFSS products, whereas 16 products (5.5%) were high in all three HFSS components. Notably, 42 (14.5%) products had insufficient nutrition information to classify as healthy/unhealthy.

Conclusion: Children in Sri Lanka are widely exposed to unhealthy food promotion, particularly for HFSS products, through television. This has a direct negative effect on their lifelong dietary behaviour contributing to obesity and emphasizes the urgent need for implementing stringent policies restricting unhealthy food promotion to children.

Key words Children; high in fat, salt and/or sugar HFSS; Promotional techniques; Unhealthy food promotion

Category: Public Nutrition & Health

Factors Associated with Nutritional Status among Adolescents in a Post-disaster Area

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The nutritional status of adolescents and their influencing factors in post-disaster areas is rarely carried out because it is not a priority group compared to other vulnerable groups such as children and pregnant women. This study aimed to identify the nutritional status of adolescents and related factors so that they can be used as input for adolescent nutrition interventions strategy in post-disaster areas.

A cross-sectional study was conducted on 395 adolescents aged 15-17 years living in a post-disaster area in Palu City, Indonesia, from August 2021 to October 2021. Adolescents who attended the four schools most affected by major disasters in 2018 were taken randomly. Nutritional status is measured anthropometrically with body mass index by age. Several other variables collected were household expenses, household size, family type, mother's education and nutrition literacy, adolescents' age and gender, nutritional literacy, school, body image, the influence of friends and parents, constructs that shape eating behavior as well as physical activity and food security. Analysis was performed by logistic regression with a p-value of 0.05.

The percentage of severely thinness and thinness is 11.6%, while overweight and obese are 10.65%. Adolescent nutritional status is associated with gender, interactive nutrition literacy, body image, and water intake. Boy, who have a lower interactive nutrition literacy score below average, want to be fatter, and have low water intake tend to have thinner nutritional status compared to normal nutritional status. Conversely, adolescents with high interactive nutrition literacy scores want to be thinner, and have higher water intake tend to be overweight and obese compared to normal nutritional status.

Malnourist is a public health problem, including adolescents in post-disaster areas. An effective strategy is needed to overcome the problem of malnourishment in adolescents, especially in food-vulnerable areas such as post-disaster areas.

Key words adolescents, nutritional status, post-disaster area

Category: Public Nutrition & Health

Sociodemographic Factors Influencing Ultra-Processed Food Consumption among Korean Adults

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Background and objectives: Global dietary patterns have changed significantly, from conventional, home-cooked meals to modern diets, including packaged and processed foods. In Korea, the fast food and processed food markets are experiencing growth; however, there is a lack of research on the epidemiological characteristics of Koreans' consumption of ultra-processed foods (UPF). Therefore, this study aimed to investigate the difference in UPF intake according to sociodemographic status in Korean adults.

Methods: This study used data from the 2010~2018 Korea National Health and Nutrition Examination Survey, a nationally representative cross-sectional survey, and a total of 35,082 Korean adults aged 19 years and older were included for analyses. Individuals' UPF intakes were estimated using 24-hour recall data and a NOVA food classification system.

Results: The average percent of energy intake from UPF significantly increased from 18.8% in 2010 to 24.6% in 2018 (p-trend <0.0001). When comparing UPF consumption based on sociodemographic characteristics, it was found that UPF intake was higher among men, current smokers, and alcohol consumers compared to their counterparts (all p<0.01). We also observed that younger age groups demonstrated a higher UFC consumption rate (19-39 years: 29.7%, 40-64 years: 21.3%, 65+ years: 16.3%, p<0.0001). Furthermore, individuals residing in single-person households showed higher UPF intake than those living with families (25.2% vs. 23.4%, p=0.0012).

Conclusions: This study reveals a steady rise in UPF consumption among Korean adults. Unhealthy lifestyles, such as smoking and alcohol consumption, and living alone were associated with higher UPF consumption. Considering the low nutritional value of UPF, efforts are needed to enhance the dietary quality of Korean adults with high levels of UPF intake.

Acknowledgments: This work was carried out with the support of "Cooperative Research Program for Agriculture Science and Technology Development (Project No. PJ01704702)" Rural Development Administration, Republic of Korea.

Key words ultra-processed foods, NOVA classification system, Korea National Health and Nutrition Examination Survey,

Category: Public Nutrition & Health

Poor Health Status and Unhealthy Dietary Practices as Determinants of Overweight and Obesity in Primary Health Care Workers

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Background and Objectives: Overweight and obesity are global health concerns linked to nutrition and lifestyle choices. Health care workers (HCW) are crucial as advocates and role models for healthy living, have been found to have a high prevalence of overweight and obesity in previous studies. However, there is a lack of comprehensive research investigating the specific factors associated with these conditions among HCW. This study aimed to determine the prevalence of overweight and obesity and its associated factors among Malaysian HCW.

Methods: A cross-sectional study was conducted among 487 primary health care workers (HCW) at selected public health clinics in Selangor, Malaysia, utilizing a cluster sampling approach. Data were collected using online survey questionnaire. Binary logistic regression analysis was conducted to determine the factors that contributed to overweight and obesity of the HCW.

Results: The prevalence of overweight and obesity among HCW was 50.4% (mean BMI: 26.33±8.79kgm^{-2}), almost nine times higher than the underweight prevalence of 5.7%. Binary logistic regression analysis revealed self-reported poor health status (OR=3.159, 95%CI:1.884–5.299; p=0.012), consistent dinner skipping (OR=2.291, 95%CI:1.204–4.359; p=0.012), frequent consumption of ultra-processed foods (UPF; OR=3.231, 95%CI:1.513–6.898; p=0.002), and exceeding recommended carbohydrate intake (OR=3.798, 95%CI:1.114–12.948; p=0.033) were contributed with overweight and obesity.

Conclusions: A significant proportion of HCW in Malaysia are affected by overweight and obesity. Unhealthy dietary practices, such as skipping dinner, consuming high amounts of UPF, and consuming excessive portions of carbohydrate-rich foods, emerged as prominent risk factors for overweight and obesity among HCW. To address this pressing concern, there is a clear need for a comprehensive workplace nutrition and health management programme that emphasizes practical nutrition education for HCW. By equipping HCW with the necessary nutrition knowledge and skills, they can improve their overall health status and become effective advocates for public health promotion.

Key words health care workers, overweight, obesity, dietary practices, weight management

Category: Public Nutrition & Health

The mapping of household food insecurity and its associated factors among women in Pahang, Malaysia.

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2.

Background and objectives: Food insecurity is a public health problem that receives attention at the global to the individual level. Thus, this study aimed to determine the household food insecurity and its related factors as well as to map the household food insecurity.

Method: A cross-sectional study was conducted in selected urban and rural area in Kuantan. It involved 110 participants which were purposely selected among households with women age (19-49 years). The FIES was used to measure the level of food security, socio-demographic and food access information was collected by using a questionnaire. In addition, the home coordinates of the participants were obtained through the smart phone WhatsApp application within 5 metre radius and geocoded to produce a visual map. The spatial relationship between household food insecurity and its associated factors was overlaid by using the Geographic Information System (GIS) software.

Results: A total of 42 (38.2%) households were mild food insecurity, seven (6.4%) were moderate food insecurity while one (0.9 %) with severe food insecurity. The household income [Adj OR: 19.33(95% CI;2.41, 154.95; p=0.005], mother’s working status [Adj OR: 3.92 (95% CI; 1.40, 10.97; p= 0.009]and mother’s marital status [Adj OR: 11.68 (95% CI; 1.17, 115.97; p= 0.036] were associated with household food insecurity. For the distribution of household food insecurity, the digital map produced by GIS showed that the household location is dispersed both in urban and rural areas. Those who were food insecure were found to be significantly associated with affordability to buy food and food delivery services.

Conclusion : The result warrants the need for further investigation. Health intervention programs should include food security into consideration based on its adverse implications towards public health.

Key words food insecurity, factors, mapping, GIS,

Category: Public Nutrition & Health

How Nutritious Are Children's Packaged Foods in Thailand: An Analysis of Newly Launched Products From 2016 to 2021

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Background: Utilization of marketing strategies on ‘children’ food packaging has an impact on children's decision-making, preferences, and dietary behaviors. Previous studies revealed that food products designed for children were characterized by high levels of fat, salt, sugar, and ultra-processing. This study aims to analyze newly released children’s products marketed in Thailand.

Methods: ‘Children’ product was a product having any marketing element targeting children (i.e. having a specified age range; using characters or celebrities, and fun or fantasy themes) on the front-of-package label. The nutrient composition of newly launched ‘children’ products marketed in Thailand from 2016-2021 was extracted. Data were retrieved from the Mintel Global New Products Database. Nutritional quality was evaluated by (1) healthfulness intensity, assessed by the proportion of eligible products bearing for Healthier Choice logo; and Health Star Rating (HSR); (2) processing’s degree, evaluated by the NOVA classification; (3) adherence to the recommendation for children, based on the criteria of the WHO Nutrient Profile Model for the South-East Asia Region (WHO SEA).

Results: A total of 290 products were included, most of which were sugary foods. Regarding healthfulness level, one-seventh (14.5%; n=42) was eligible to bear the Healthier Choice symbol, most (77.2%; n=224) scoring HSR<3.5 stars, with the highest proportion grading in both HSR 1 and 1.5 stars (14.1%; n=41). Besides, most (96.9%; n=267) were ultra-processed (NOVA 4) with a high number of ingredients and additives used. All of the analyzed products incorporate marketing elements aimed at children on their packaging. However, a majority (92.1%) fail to meet the children marketing's standards set by the WHO SEA

Conclusions: This study's results indicate that a considerable portion of children’s packaged foods in Thailand lacks a satisfactory nutritional profile. There is a need for measures aimed at enhancing nutritional quality and regulating marketing activities specifically targeting children on the packaging of such products.

Key words child-oriented food; food marketing; nutrition labeling; nutrition quality; Thailand

Category: Public Nutrition & Health

OPT Plus MApp: Development and Pretesting of a Mobile Application on Operation Timbang Plus – Nutrition Assessment for Under-Five Filipino Children

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Background and objectives: Operation *Timbang* Plus is an annual project in which all children 0-59 months old in the Philippines are weighed and measured in height to identify those malnourished. The data are recorded via a Microsoft Excel-based tool. Hence, using laptops in data collection is preferred. If none is available, the pen-and-paper method is used, thus reducing efficiency and increasing the risk of error. The study aims to (1) develop OPT Plus MApp, a mobile application that will serve as an alternative means of data collection for Operation *Timbang* Plus, and (2) pretest its usability.

Methods: A qualitative methodology with a design-based approach was used. Interviews with experts and target users, a process documentation, and a survey using the System Usability Scale were conducted.

Results: With the validation of experts from the National Nutrition Council, the University of the Philippines, and the Parañaque City Nutrition Committee, OPT Plus MApp was developed. Half of the pretesters (50%) find that OPT Plus MApp is easy to use, consistent, and has well-integrated functions. More than half (67%) can perceive that using the mobile application can be learned quickly. Ultimately, all pretesters (100%) feel very confident in using OPT Plus MApp and want to continue using it.

Conclusions: OPT Plus MApp is of value to the continued conduct of Operation *Timbang* Plus. The study shows that the target users are likely to adopt the new mobile application. From a broader perspective, the study also supports the potential of mobile technology in public health, especially in addressing the challenge of sustainable rapid data collection.

OPT Plus MApp (AVP): bit.ly/OPTPlusMApp_AVP

Key words mobile application, nutrition assessment, under-five children

Category: Public Nutrition & Health

Association between Eating Habits and Mental Health Status of Healthcare Shift Workers

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Background and Objectives

Working in shifts in a challenging environment of healthcare exposes healthcare shift workers to unhealthy lifestyles that may impact their mental health. This study sought to assess the association between healthcare shift workers' eating habits and mental health status.

Methods and Study Design

The sampling frame includes healthcare shift workers around Klang Valley, Malaysia. Eating habits and mental health status of the participants were assessed using the Malay Version of the Dutch Eating Behaviour Questionnaire (DEBQ) and the Depression, Anxiety, Stress Scale-21 (DASS-21). Pearson's $\chi 2$ and simple and multivariable binary logistic regression models were constructed following the Hosmer-Lemeshow approach to determine the potential association between the parameters.

Results

A total of 413 healthcare shift workers were recruited in this study. Overall, 40.7% of participants had one or more symptoms of depression, anxiety, or stress. The majority of the subjects obtained low scores for the emotional eating domain (86.9%). Whereas, 78.0% and 63.4% of the respondents obtained high scores for external eating and restrained eating respectively. This study demonstrated that emotional and external eating habits among healthcare shift workers are associated with increased odds of having a poor mental health status (OR = 2.25; 95% CI: 1.1 - 4.4; OR = 2.32; 95% CI: 1.3 - 4.2) respectively. Further analyses found that those categorized as emotional and external eaters are associated with two times increased odds of having anxiety (OR = 2.09; 95% CI: 1.2 - 3.7); (OR = 1.77; 95% CI: 1.1 - 3.0).

Conclusions

In conclusion, most of the shift workers in this study were categorized as having external and restrained eating habits. Despite only 13.9% of the shift workers being emotional eaters, their poor eating habit is associated with poor mental health status specifically anxiety.

Key words Shift workers, eating habits, psychosocial well-being, mental health, quality of life

Category: Public Nutrition & Health

The double burden of malnutrition among under-five children's mothers: A cross-sectional study in the slums of Dhaka, Bangladesh

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Abstract:

Background and objectives: The double burden of malnutrition (DBM) inevitably results from dietary transition. As well as undernutrition, the prevalence of overweight and obesity among women is also a rising problem in Bangladesh. We sought to estimate the prevalence and factors associated with the double burden of malnutrition (underweight, overweight/obesity) among mothers who have children less than 5 years of age residing in the slums of Dhaka city.

Methods: A cross-sectional quantitative study was conducted in Dholpur and Korail slum from Dhaka, Bangladesh. A total of 424 under-five children mothers were included in this study. The primary outcome variable was underweight and overweight/obesity compared to normal weight as the reference category, measured by the mother's body mass index (BMI) followed by dividing body weight (kg) by total height squared (m2). Descriptive and multivariate logistic regression analyses were conducted to identify the factors associated with both the underweight and overweight/obesity.

Results: The overall prevalence of underweight and overweight/obesity was respectively 13.4% and 45.3% among under-five children's mothers living in slums of Dhaka city and both were high in 20-29 years mothers. Those who were more than 3 times pregnant (AOR=4.8, 95% CI: 1.2- 18.3) and severely food insecure (AOR=2.4, 95% CI: 1.1- 5.4) respectively were more underweight. And those mothers from high-income families (AOR=2.7, 95% CI: 1.3 - 5.9) who delivered their children by c-section (AOR=0.4, 95% CI: 0.2-0.7) were more overweight/obese.

Conclusion: In Bangladesh slum areas, DBM was also a concerning number. The Ministry of Health of Bangladesh should consider these findings (i.e.; food insecurity, pregnancy frequency, mode of delivery, etc.) to create and execute health programs for the double burden of malnutrition among under-five children's mothers.

Key words Double burden of malnutrition, Under-five children's mothers, Slum, Bangladesh

Category: Public Nutrition & Health

Risk of Incident Chronic Kidney Disease in Metabolically Healthy Obesity and Metabolically Unhealthy Normal Weight

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Studies have reported inconsistent results about the risk of incident CKD in people with metabolically healthy obesity (MHO). We designed this systematic review and meta-analysis to evaluate the risk of developing CKD in people with MHO and metabolically unhealthy normal weight (MUNW). We used a predefined search strategy to retrieve eligible studies from multiple databases up to October 1st, 2022. Random effects model meta-analyses were implied to estimate the overall hazard ratio (HR) of incident CKD in obesity phenotypes. Compared to the Metabolically healthy normal weight (MHNW), the mean differences in cardiometabolic and renal risk factors in MHO, MUNW, and metabolically unhealthy obesity (MUO) were evaluated. 8 prospective cohort studies, including approximately 5 million participants with a median follow-up ranging between 3 and 14 years, were included in this meta-analysis. The overall HR for developing CKD was 1.42 in MHO, 1.49 in MUNW, and 1.84 in MUO. Compared to MHNW, the mean eGFR and HDL were significantly lower, and LDL, blood pressure, blood glucose, and triglycerides were higher in MHO and MUNW. In conclusion, MHO and MUNW are not benign conditions and pose a higher risk for incident CKD. Obesity, whether in the presence or absence of metabolic health, is a risk factor for CKD.

Key words Obesity, Nutrition, Metabolic syndrome, eGFR, Metabolic health, Chronic kidney disease

Category: Public Nutrition & Health

Associations between dietary diversity and dyslipidemia among Japanese workers: A cross-sectional study

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Abstract

Background and objectives: The present study aims to determine the associations between dietary diversity and the risk of dyslipidemia in Japanese workers.

Methods: The participants were 1025 men and 369 women aged 20 to 63 living in Tokushima Prefecture. Dietary intake was assessed using a food frequency questionnaire, and dietary diversity score (DDS) was determined using the Quantitative Index for Dietary Diversity. Dietary patterns that a correlation matrix for 17 food groups was assessed using principal component factor analysis. Three components were determined healthy, western, and sweetener patterns. Dyslipidemia was diagnosed fulfilled at least one of the following conditions: hypertriglyceridemia, high-LDL-cholesterol, low-HDL-cholesterol, high-non-HDL-cholesterol, and having a history of dyslipidemia. The multivariable logistic regression was used to calculate the odds ratios (OR) and 95% confidence intervals (CIs) for dyslipidemia according to the tertile of DDS after controlling for age, education, smoking habits, drinking habits, physical activity, BMI, and energy intake. Furthermore, we calculated the association between dietary diversity score and dyslipidemia with additional adjustments for each dietary pattern to assess the effects of specific dietary patterns.

Results: There was an inverse association between DDS and dyslipidemia among all participants; OR (95% CI) in Tertile 3 was 0.66 (0.48 - 0.91), p for trend = 0.017. The similar inverse association between DDS and dyslipidemia was found in additional adjustment for the western pattern (p for trend = 0.039) and the sweetener pattern (p for trend = 0.013), though its association was disappeared after adjustment for the healthy pattern.

Conclusions: The diversity in the diet was associated with a lower risk of dyslipidemia in Japanese workers.

Key words Dietary diversity, dietary pattern, dyslipidemia, Japanese workers, cross-sectional study

Category: Public Nutrition & Health

Sugar-sweetened beverages consumption increases the risk of metabolic syndrome in adults: Consistent and robust evidence from an umbrella review

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Background and objectives: Sugar-sweetened beverages (SSBs) are potential modifiable risk factors for reducing the risk of metabolic syndrome (MetS); however, there is a lack of an umbrella review that robustly synthesizes the evidence. This review aims to synthesize the evidence linking habitual SSBs intake with MetS in adults, emphasizing the need for policy and regulatory actions.

Methods: PubMed and Scopus databases were comprehensively searched for relevant meta-analyses of prospective studies up to February 2023. Two authors independently conducted the screening for eligibility, data extraction, and quality assessment. The outcome of interest was MetS in adults, encompassing its component conditions. This review was registered with PROSPERO (CRD42023402549).

Results: Of the 16 eligible meta-analyses identified, 30 summary estimates were obtained for the impact of SSBs consumption on obesity, type 2 diabetes, hypertension, and MetS. Seven were rated as 'High' methodological quality, with the rest classified as 'Moderate' and 'Low' quality, consisting of three and six references, respectively. A comparison of the highest and lowest levels of SSBs consumption revealed an increased risk of 18% (95% CI: 13% to 24%), 12% (95% CI: 11% to 14%), 29% (95% CI: 25% to 32%), and 29% (95% CI: 7% to 52%) for obesity, hypertension, type 2 diabetes, and MetS, respectively. Consistently, the findings from dose-response analyses are in agreement with and corroborate the existing evidence that SSBs are a significant risk factor for the development of MetS and its related conditions. Noticeably, the quality of evidence was predominantly deemed as highly suggestive and convincing. Moreover, consensus on specific criteria to identify studies related to SSBs in literature searching was lacking, and most primary studies were conducted in developed countries and Europe.

Conclusions: Our findings suggest that more rigorous and targeted policy interventions are warranted to curtail SSBs consumption to alleviate the global burden of MetS.

Key words Sugar-Sweetened Beverages, Drinks, Adult, Umbrella Review, Metabolic Syndrome, MetS, Hypertension, Obesity, Hyperlipidemia, Type 2 Diabetes

Category: Public Nutrition & Health

Do the malnourished children food secure? Findings from rural household in Malaysia

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Abstract: Food insecurity is a prevalent occurrence in Malaysian households. Nevertheless, there was a paucity in statistics pertaining the relationship between household food security status in malnourished and well-nourished children. **Objectives**: The aims are: 1) to determine the household food security status and its relationship in malnourished and well-nourished children, 2) to assess the nutrient consumption in malnourished and well-nourished children aged 6 to 60 months. **Methodology**: Approximately 52 malnourished children (cases) and 50 well-nourished children (controls) participated in a community-based case-control study in Kuala Langat, Selangor. The age, gender, and residence location of the case group individuals were matched to those of the control group. The Food Security Survey Module (FSSM) was used to measure household food security for a family. A three-days 24-hour diet recall (2 weekdays and 1 weekend) were completed upon estimating nutrients consumption through daily food intake in both groups. **Results**: Descriptively, more than two-third of the case (76.9%) and control (76.0%) groups were ranked as food secure, while 23.1% (cases) and 24.0% (controls) struggled with food insecurity. Statistically, a chi-square test revealed that there was no significant relationship ($p=0.876$) detected on household food security status among cases and controls. However, some nutrients namely energy, carbohydrate, protein, fat, calcium, vitamin A and zinc were significantly lower in malnourished children as compared to well-nourished children ($p<0.05$). **Conclusions**: Household food security status was not significantly related to malnourished and well-nourished children. Despite that, malnourished children had lower levels of several nutrients than children who were adequately fed.

Key words household food security, malnutrition, undernutrition, nutrient consumption, young children

Category: Public Nutrition & Health

Problematic States in Opioid Users (PSOU)

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According to the Center of Disease Control, National Center for Health Statistics dataset, there has been a six-fold increase in overdose deaths among all men and women from the years 2000 to 2017, as well as billions of dollars lost in economic value when estimating losses in workforce contribution and costly rehabilitation services.

The present validates a new clinical questionnaire, designed to identify problematic psychological/psychiatric issues among substance users that may complicate addiction if unrecognized in treatment. The questionnaire focuses on 15 psychological issues that appear over-represented in the addicted population, to the point where they may be considered dual-diagnosis vulnerabilities. The 15 subscales include the following: Depressive feelings, Anxious feelings, History of childhood maltreatment, History of childhood neglect, History of conduct disorder, Disordered attention spectrum, Hyperactive spectrum, lmpulsivity/sensation seeking traits, Post-trauma states, Moodiness spectrum, Socially anxious states, Pessimistic thinking, Resentful thinking, lsolative and introverted styles and Chaotic states.

Using a correlation analysis, 15 statistically valid psychological questionnaires across the scientific literature were evaluated and compared to this study' s experimental questionnaire, the Problematic States in Opioid Users (PSOU) questionnaire. Data were gathered from an outpatient methadone assisted treatment program in the United States. Forty-eight male and female subjects were tested, mostly of Caucasian descent. All participants took both the validated and unvalidated questionnaires for comparison, blind to which tests were validated vs experimental.

Results demonstrated that the PSOU was a statistically valid questionnaire to represent the intended psychological constructs of interest in 14 out of 15 of the proposed substance-abuse vulnerabilities tested. That said, the PSOU may be a helpful screener for clinicians to gain a wealth of clinical data about psychological vulnerabilities that may specifically complicate addition, all within one convenient measure that is less time-intensive and more accessible than the current standard within addiction intake assessment.

Key words Pearson Correlation, Addiction, Opioid Abuse, Testing, Screening, Assessment

Category: Public Nutrition & Health

中国西北地区胃癌患者血液代谢与肠道菌群的关系

The relationship between blood metabolism and gut microbiota in gastric cancer patients in the northwest region in China

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Introduction: Gastric cancer (GC) is one of the main causes of cancer mortality worldwide, including in China. It is certain that there is a link between blood metabolism and gut microbiota, but it is not yet clear what gut microbial disorders can affect the blood metabolism level of gastric cancer patients.

Objectives: This study aimed to examine the relationship between blood metabolism and gut microbiota in gastric cancer patients living in the northwest region in China.

Methods: The hospital-based study finally included eighty-eight gastric cancer patients and eighty-eight healthy individuals from Gansu Province, divided into gastric cancer group and control group. Stool samples were collected from all subjects and the gut microbiota was analyzed using whole-metagenome shotgun sequencing. Serum samples were collected from all subjects and serum metabolites were analyzed using liquid chromatography-mass spectrometry (LC-MS). Using bioinformatics methods for combined analysis to explore the relationship between blood metabolism and gut microbiota in gastric cancer patients in the northwest region in China.

Results: The study found that gastric cancer patients had gut microbiota disorders ($P < 0.05$) compared to the healthy group, reflected in alpha and beta diversity. Specifically, in the comparison of different bacterial genera, there was a significant proliferation of related species of Clostridium in the intestines of gastric cancer patients. Compared with healthy group, the abundance of Clostridium in the intestines of cancer patients was higher ($P < 0.05$), such as Hungatella, Clostridium_perfringens and Clostridium_symbiosum. In addition, cancer patients had significant blood metabolic disorders ($P < 0.05$), which were mainly related to the AMPK, FoxO, mTOR and PI3K-Akt signaling pathways.

Conclusion: There were differences in blood metabolism between gastric cancer patients and healthy individuals in the northwest region in China, which were related to gut microbiota.

Key words gastric cancer, blood metabolism, gut microbiota, the northwest region in China

Category: Public Nutrition & Health

Associations between Quality of Plant-Based Diet and Risk of New-onset Cardiometabolic Diseases in Chinese Adults: findings from a prospective cohort study

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Sun Yat-sen university

Aims: To investigate the long-term associations between quality of plant-based diet and risk of new-onset cardiometabolic diseases (CMDs), including type 2 diabetes mellitus (T2DM), myocardial infarction (MI) and stroke in Chinese adults.

Methods: Adults (N=14,581) from the China Health and Nutrition Survey (1997-2015) without CMDs and cancer at baseline were included. Dietary intake data were collected with 3-day consecutive 24-h dietary recalls and food-weighing methods. Quality of plant-based diet was assessed by overall, healthful and unhealthful plant-based diet indexes (PDI, hPDI and uPDI). CMDs were identified by validated self-reported questionnaires. Cox proportional hazard regression model was used for statistical analysis.

Results: During a mean follow-up of 10 years, a total of 1047 new-onset T2DM, 280 new-onset MI and 404 new-onset stroke cases were identified. Adherence to plant-based diet, as reflected by higher PDI scores, was associated with decreased risk of new-onset T2DM (Q5 vs Q1: HR=0.33; 95%CI:0.25-0.44). Adherence to healthy plant-based diet, as reflected by higher hPDI scores, was inversely associated with risk of new-onset T2DM (Q5 vs Q1: HR=0.75; 95%CI:0.61-0.92) and MI (Q5 vs Q1: HR=0.62; 95%CI:0.42-0.94). Adherence to healthy plant-based diet, as reflected by higher uPDI scores, was positively associated with risk of new-onset T2DM (Q5 vs Q1: HR=2.13; 95%CI:1.70-2.67), MI (Q5 vs Q1: HR=5.75; 95%CI:2.52-13.08) and stroke (Q5 vs Q1: HR=5.83; 95%CI:2.81-12.12) (all P-trend<0.05). Age and baseline hypertension significantly modified the associations between plant-based diet quality and risk of new-onset T2DM or stroke (all P-interaction<0.05).

Conclusions: Adherence to healthy plant-based diet was protective in the prevention of CMDs, while adherence to unhealthy plant-based diet was a risk factor for CMDs in Chinese adults. Dietary guidance should consider whether to include quality of plant-based diet aimed at reducing CMD risk in Chinese adults.

Key words plant-based diet; cardiometabolic diseases; type 2 diabetes mellitus; myocardial infarction; stroke

Category: Public Nutrition & Health

Status of fruits and vegetable consumption and factors associated with inadequate FAV consumption among Bangladeshi adult males aged 20-59 years

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Background and objectives: Bangladesh is experiencing an epidemiological shift with rising noncommunicable diseases (NCDs). Inadequate fruit and vegetable (IFAV) intake is a key risk factor. This study aims to investigate the prevalence of IFAV consumption and associated factors in Bangladeshi males aged 20-59 years.

Method: This study used data from the 2018-19 Bangladesh Food Security and Nutrition Surveillance Round, which enrolled 4,917 men from 82 rural, non-slum urban, and slum clusters across 8 administrative regions. IFAV consumption was defined as less than five servings or less than 400gm of FAV per day. Poisson regression with robust variance was conducted to identify factors associated with IFAV, and crude and adjusted prevalence ratios with 95% CI were calculated.

Results: The weighted prevalence of IFAV consumption was 83.01 %. On Poisson regression analysis we found that participants aged 50-59 years {Adjusted prevalence ratio (APR):1.04, 95% CI: 1.01, 1.06}; currently married (APR: 0.05, 95% CI: -0.00, 0.12), who were living in non-urban slum areas (APR: 1.1,95% CI: 1.07,1.12); and Slum areas (APR: 1.1,95% CI: 1.08,1.13); Muslim (APR: 1.06, 95% CI: 1.04, 1.09), living in Barishal (APR: 0.96, 95% CI: 0.94,0.99), Chittagong (APR: 0.93, 95% CI: 0.91,0.95), Mymensingh (APR: 0.65, 95% CI: 0.62,0.67), Khulna (APR: 0.84, 95% CI: 0.82,0.86), Dhaka (APR: 0.90, 95% CI: 0.88,0.92), Sylhet (APR: 0.95, 95% CI: 0.92,0.97) divisions; obese (APR: 0.96, 95% CI: 0.93, 0.99); and spending >7hours sedentary time (APR: 1.04, 95% CI: 1.02,1.06) had significantly higher prevalence of IFAV consumption.

Conclusion: More than 80% of adult male in Bangladesh are consuming lower amounts of fruits and vegetables than the recommendation of WHO. IFAV consumption was more frequently found in older people, less physically active and obese people. Public health interventions should be implemented to ensure adequate consumption of FAV in this targeted age group to prevent NCDs.

Key words Adult male, Fruits and vegetable consumption, Bangladesh

Category: Public Nutrition & Health

Unhealthy food consumption among men aged 20-59 years in Bangladesh: a nationally representative cross-sectional survey

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Background and objectives: Unhealthy food consumption is a major public health concern due to its adverse health consequences. We assessed unhealthy food (savory and fried snacks, SFS; sweets; and sugar-sweetened beverages, SSBs) consumption and identified factors associated with this consumption among men aged 20-59 years in Bangladesh.

Methods: Data from the Bangladesh Food Security and Nutrition Surveillance Project (2018-2019) was utilized. We interviewed 4917 men (20-59 years) from 82 sentinel sites selected through multistage cluster sampling from eight divisions. A structured questionnaire was used to collect data. Descriptive analysis and Poisson regression with robust variance were carried out to report prevalence and adjusted prevalence ratio (APR).

Results: The weighted prevalence of weekly SFS, sweets and SSBs consumption was 57.8%, 75.1%, and 77.3%, respectively. Age 20-29 years was associated with SFS (APR: 1.40, 95% CI: 1.28, 1.53) and sweets (APR: 1.06, 95% CI: 1.02, 1.12) consumption but not with SSBs consumption. SFS and SSBs consumption were associated with non-slum urban and slums residence. SFS, sweets, and SSBs consumption were associated with higher secondary and above education (APR: 1.28, 95% CI: 1.17, 1.39; APR: 1.18, 95% CI: 1.13, 1.25; APR: 1.11, 95% CI: 1.0, 1.15, respectively); highest wealth quintile (APR: 1.10, 95% CI: 1.02, 1.19; APR: 1.08, 95% CI: 1.03, 1.13; APR: 1.04, 95% CI: 1.00, 1.09, respectively) and being current smoker (APR: 1.10, 95% CI: 1.05, 1.15; APR: 1.05, 95% CI: 1.02, 1.09; APR: 1.16, 95% CI: 1.13, 1.18, respectively). Diabetes was associated with lower APR (0.8, 95% CI: 0.73, 0.88) for SSBs consumption only.

Conclusions: We found a high prevalence of SFS, sweets, and SSBs consumption among 20-59 years old men in Bangladesh. Several socio-demographic, behavioral and clinical factors were associated with unhealthy food consumption. These factors should be considered while designing and implementing interventions to reduce unhealthy food consumption.

Key words Savory and fried snacks (SFS) , sweets, Sugar-sweetened beverages (SSBs), adult men, Bangladesh

Category: Public Nutrition & Health

Associations of Dietary structure with Gut Microbiome in Children: A Cross-Sectional Multi-Omics Study

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Abstract

Background: Diet has been recognized as a key modifier of the gut microbiome that can affect microbiome development and function, largely due to its influence on the control of food intake and metabolism. However, there are still few studies in Chinese children that have thoroughly investigated the functionality of the human gut microbiome and its relationship to dietary behavior.

Objective: This cross-sectional study was designed to explore the relationship on the metabolic health, gut microbiome and systemic metabolome in children, in Northwest China, with different dietary structure.

Design: Plant-based diet indexes (PDIs) replacing the dietary structure were calculated using a validated FFQ and were correlated with metagenomic profiles of fecal samples and metabolomics of blood or fecal samples from 88 children aged 5.26±5.43 years.

Results:

There is no difference in the richness and diversity between high scores PDI and low scores ones. In genus level, the relative abundance of Prevotella, Akkermansia, and Coprobacillus were increased in high-PDI group; and in low-PDI group, the relative abundance of Roseburia, and Fusicatenibacter were increased. Metagenomic showed high-PDI group led to increased levels of the fibre-degrading Prevotella copri and Eubacterium hallii and of genes for complex carbohydrate degradation linked to butyrate metabolism, in addition, low-PDI group rich in protein metabolites, like L-Valine, L-Phenylalanine and L-Alanine. While the low-PDI group was significantly associated with the relative abundance of Coprococcus spp., Ruminococcus gnavus, and significantly occurred in bile acid pathways, such as glycohyodeoxycholic acid, cholic acid fermentation, both fecal and blood metabolites, compared with the high group.

Conclusion:

There was a marked difference in gut microbiota and metabolic activity between the plant-based and animal-based diets. In particular, we observed a significantly different abundance of fermentation and blood products associated with protein and fat intakes in plant-baesd group. Microbial composition may partially explain inverse associations between high-score group and abdominal fat accumulation.

Key words dietary structure, PDI, gut microbiota, children, Multi-omics.

Category: Public Nutrition & Health

The double burden of malnutrition among 20-59 years old men in Bangladesh: evidence from a nationally representative survey

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Background and objectives: Bangladesh has a high rate of malnutrition, as well as an increasing trend of overweight and obesity. However, little is known about the factors linked to these conditions in men aged 20 to 59 years, the age group between adolescence and senescence. We assessed the double burden of malnutrition (DBM) and the associated factors in men aged 20-59 years.

Methods: We utilized data from the Bangladesh Food Security and Nutrition Surveillance Project (2018-2019) that used a multistage cluster sampling approach across eight divisions of Bangladesh. Asian BMI cut-offs were applied to categorize the nutritional status of XXXX men recruited from 82 clusters. The weighted prevalence of underweight and overweight/obesity were calculated. Poisson regression with robust variance was used to determine crude and adjusted prevalence ratios (APR) with a 95% confidence interval (CI).

Results: The weighted prevalence of underweight and overweight/obesity was 15.1% and 33.9%, respectively. Prevalence of underweight was found higher among males aged 20-29 years (18.7%), living in slums (16.8%), living in Mymensingh division (22.7%), with no education (19.3%), and in the lowest wealth quantile (17.0%). The prevalence of overweight/obesity was higher among men aged 30-39 years (39.6 %), living in non-slum urban areas (49.4 %) and living in Rangpur division (43.8 %), with ⩾12 years of schooling (67.5 %), and in the highest wealth quantile (59.8 %). The factors associated with underweight were age, place of residence, marital status, education level, wealth status, and any tobacco use. On the other hand, place of residence, division of residence, education, wealth status, any tobacco use, sedentary time, duration of television watching, waist circumference, and self-reported hypertension were associated with overweight/obesity.

Conclusions: The DBM is a public health concern for Bangladesh. Interventions aimed at reducing DBM can focus on modifiable factors of DBM identified in this study.

Key words Double burden of malnutrition, overweight, obesity, adult men, Bangladesh

Category: Public Nutrition & Health

Associations of Dietary Preferences with Gut Microbiome in Children: A Cross-Sectional Multi-Omics Study

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Abstract

Background: Diet has been recognized as a key modifier of the gut microbiome that can affect microbiome development and function, largely due to its influence on the control of food intake and metabolism. However, there are still few studies in Chinese children that have thoroughly investigated the functionality of the human gut microbiome and its relationship to dietary behavior.

Objective: This cross-sectional study was designed to explore the relationship on the metabolic health, gut microbiome and systemic metabolome in children, in Northwest China, with different dietary structure.

Design: Plant-based diet indexes (PDIs) replacing the dietary structure were calculated using a validated FFQ and were correlated with metagenomic profiles of fecal samples and metabolomics of blood or fecal samples from 88 children aged 5.26±5.43 years.

Results:

There is no difference in the richness and diversity between high scores PDI and low scores ones. In genus level, the relative abundance of Prevotella, Akkermansia, and Coprobacillus were increased in high-PDI group; and in low-PDI group, the relative abundance of Roseburia, and Fusicatenibacter were increased. Metagenomic showed high-PDI group led to increased levels of the fibre-degrading Prevotella copri and Eubacterium hallii and of genes for complex carbohydrate degradation linked to butyrate metabolism, in addition, low-PDI group rich in protein metabolites, like L-Valine, L-Phenylalanine and L-Alanine. While the low-PDI group was significantly associated with the relative abundance of Coprococcus spp., Ruminococcus gnavus, and significantly occurred in bile acid pathways, such as glycohyodeoxycholic acid, cholic acid fermentation, both fecal and blood metabolites, compared with the high group.

Conclusion:

There was a marked difference in gut microbiota and metabolic activity between the plant-based and animal-based diets. In particular, we observed a significantly different abundance of fermentation and blood products associated with protein and fat intakes in plant-baesd group. Microbial composition may partially explain inverse associations between high-score group and abdominal fat accumulation.

Key words dietary structure, PDI, gut microbiota, children, Multi-omics.

Category: Public Nutrition & Health

Associations between inflammatory potential of diet and risk of new-onset cardiometabolic diseases and all-cause mortality: findings from a nationwide prospective cohort study

Huicui Meng*,Man Wu
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Aims: To investigate the long-term associations between dietary inflammatory index (DII) and risk of new-onset cardiometabolic diseases (CMDs), including stroke, type 2 diabetes mellitus (T2DM) and myocardial infarction (MI), and all-cause mortality in Chinese adults free from CMDs at baseline in a nationwide prospective cohort study.

Methods: Adults (N=14,581) from the China Health and Nutrition Survey (1997–2015) were included in the current analysis. Dietary intake data were collected with 3-day consecutive 24-h dietary recalls and food-weighing methods. DII was calculated with validated methods. CMDs were identified by validated self-reported questionnaires. Cox proportional hazard regression model was used for statistical analysis.

Results: During a mean follow-up of 10 years, a total of 404 new-onset stroke, 1047 new-onset T2DM, 280 new-onset MI cases and 1244 death cases were identified. A pro-inflammatory diet, as reflected by relatively higher DII scores, was positively associated with increased risk of stroke (Q5 vs Q1: HR = 1.86; 95%CI: 1.23-2.80), T2DM (Q5 vs Q1: HR = 2.04; 95%CI: 1.58-2.64), MI (Q5 vs Q1: HR = 1.75; 95%CI: 1.07-2.85) and all-cause mortality (Q5 vs Q1: HR = 1.68; 95%CI: 1.33-2.14) (all P-trend < 0.01). Age and sex significantly modified the association between DII and T2DM risk, and sex significantly modified the association between DII and MI risk (all P-interaction < 0.05). Higher DII was associated with increased risk of T2DM and MI in male rather than female participants.

Conclusions: With the use of DII, we reported long-term positive associations between a pro-inflammatory diet and increased risk of new-onset stroke, T2DM and MI and all-cause mortality in Chinese adults free from CMDs at baseline. These findings contribute to the current literature suggesting consideration of whether DII should be utilized as an effective tool for improving diet quality and CMDs prevention in Chinese population.

Key words dietary inflammatory index; cardiometabolic diseases; stroke; type 2 diabetes mellitus; myocardial infarction; all-cause mortality; Chinese population

Category: Public Nutrition & Health

Dietary Variety Score and Related Factors of Older Adults after the Great East Japan Earthquake in the Coastal Area of Fukushima Prefecture

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Background and objectives

This study examined older adults Dietary Variety Score (DVS) and related factors in the coastal area in Fukushima nine and a half years after the Great East Japan Earthquake (GEJE).

Methods

Data were collected from 65- to 84-year-old residents and 1,297 participants via a questionnaire from October to November 2020 in Soma city of Fukushima Prefecture. There were 1,133 respondents (response rate of 87.4%), excluding 76 who gave incomplete responses, and 1,057 people were included in the analysis (effective response rate of 81.5%). The Dietary Variety Score (DVS) measures food intake diversity. Information was collected about the respondents' weekly intake of ten food groups (meat, seafood, eggs, milk, soybean products, green and yellow vegetables, seaweeds, fruits, potatoes, fats and oils). The score ranged from 0 to 10 points, with higher values indicating a larger variety of food intake. Firsty univariate analysis was conducted to examine the relationship between the DVS and all other variables. Secondly a multivariate regression analysis was conducted.

Results

The mean (standard deviation) of DVS was 3.23 (2.48), 3.56 (2.55) in women and 2.83 (2.34) in men with a significant difference. Using multivariate regression analysis, the factors related to a low DVS were inability to chew certain foods, difficulties resting while asleep, male gender, living alone, rack of satisfaction with dietary habits, limited social networks, young, and junior high school education level or lower.

Conclusions

DVS among the older adults in coastal areas of Fukushima Prefecture was low nine and a half years after the GEJE. In order to raise the DVS, it is important to continue oral support, social network creation, and health support.

Key words disaster; older adults; dietary variety score (DVS); Fukushima

Category: Public Nutrition & Health

岩藻多糖通过去甲基化改善糖尿病小鼠认知功能障碍

Fucoidan improves cognitive dysfunction in diabetic mice through demethylation

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Background: Fucoidan has a potential protective effect on diabetes-induced neuronal apoptosis. AMP-activated kinase (AMPK) and mitochondrial tricarboxylic acid cycle homeostasis are important for neuroprotection. AMPK and Krebs cycle metabolites regulate 5-hydroxymethylcytosine (5hmC) by acting on 10-11 translocases. Therefore, we hypothesized that Fucoidan could improve cognitive dysfunction in diabetic mice by inhibiting diabetes-associated neuronal apoptosis by upregulating 5 hmC in the brain of diabetic mice.

Methods: Sixty 8-week-old C57 BL/6 J mice were randomly divided into 5 groups (n = 10): normal control group (CON), diabetes group (MOD), metformin group (MTF), Fucoidan dose group (FC50), Fucoidan medium-dose group (FC100) and Fucoidan high-dose group (FC200), conduct behavioral tests, tunel staining, and western blot experiments for verification.

Results: Fucoidan improved the long-term memory ability and exploration ability of diabetic mice, decreased the apoptosis rate of neurons in the cerebral cortex of diabetic mice, and significantly increased the expression levels of 5 hmC, TET 2 and P-AMPKα/AMPKα in the cerebral cortex of mice. Decreased (succinate fumarate)/alpha-ketoglutarate ratio.

Conclusion: Fucoidan up-regulates 5 hmC by activating AMPK and maintaining tricarboxylic acid cycle homeostasis, inhibiting neuronal apoptosis and improving cognitive function in diabetic mice.

Key words Diabetes, cognitive dysfunction, fucoidan, demethylation, behavior.

Category: Public Nutrition & Health

Difference between mother's perception about their under-five children's nutritional status from the anthropometry derived nutritional status: a Cross-sectional study in the slums of Dhaka, Bangladesh

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Background and Objectives: Maternal misperceptions, about their child's nutritional status may have implications for timely health-care seeking. Very limited evidence exists on this issue in the context of Bangladesh. We aimed to assess the difference between mothers' perceptions of their children's nutritional status and the nutritional status determined by anthropometry along with the factors associated with varied perception.

Method: A Cross-sectional study was conducted in the two large urban slums in Dhaka city corporation. A total of 437 mother-children (under age five) dyads were included in the final analysis. Mothers' varied perception about their children's nutritional status was recorded if mother's opinion of their children's nutritional status differed from the measured nutritional status (underweight and overweight). Descriptive analysis and logistic regression were done to report findings.

Results: Forty-six percent of mothers had varied perceptions; 37% underestimated their children's nutritional status and 9% overestimated it. The two significant associated factors behind the mothers' varied perceptions were: "the child does not want to eat" (AOR=3.77; 95% CI: 2.35 to 6.05; p<0.001) and "the child feels light when I carry" (AOR=4.09; 95% CI: 2.01 to 8.34; p<0.001). In addition, the odds of having a varied perception were found to be higher for households with an average monthly income of 10000 to 14999 BDT (AOR=2.41; 95% CI: 1.17 to 4.99; p<0.05).

Conclusion: About one in two mothers' perceptions about their children varied from the anthropometry-derived status. Health education on appropriate ways to understand the nutritional status of the children is required for early identification and care seeking.

Key words under-five children, nutrition, maternal perception, Bangladesh

Category: Public Nutrition & Health

Improving the Quality of the Operation Timbang Plus in the Philippines

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Operation Timbang Plus (OPT Plus) is the annual routine child growth assessment that aims to locate malnourished children for referral to appropriate services in all barangays in the Philippines. However, various studies have identified issues with data quality and conducting OPT Plus. In response, the National Nutrition Council and UNICEF Philippines commissioned a project to develop the OPT Plus data quality audit protocol and update the implementing guidelines. The project involved a desk review and fieldwork in selected cities and municipalities in Samar, Northern Samar, and Zamboanga del Norte provinces. Results showed gaps in actual practice compared to the 2012 OPT Plus Implementing Guidelines, and recommendations were made to improve OPT Plus implementation. The project team updated the electronic OPT Plus tool and developed the data quality check to integrate the OPT Plus process with the five quality dimensions of accuracy, completeness, reliability, usefulness, and timeliness. The draft implementing guidelines was reviewed at the local and national levels, pretested, and pilot tested before finalization and printing of the manual of procedures and other materials. Results of the initial national, local, and roll-out training showed that 70 supervisors and 359 OPT Plus members completed the training, with 48 supervisors and 157 OPT Plus members qualified for the highest level of certification. The new OPT Plus Guidelines will be adopted in the whole country in 2023-2024.

Key words OPT Plus, Growth Monitoring, Data Quality, Implementing Guidelines, Philippines

Category: Public Nutrition & Health

Hygienic assessment of school-age children's nutrition

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Background and objectives: Nutrition is a constant factor that is important for the growth, development and health promotion of children and adolescents. The proper nutrition is one of the factors constantly acting throughout the ontogenesis, on which the successful education of the child, his resistance to adverse environmental factors and health condition. The purpose of the work is a hygienic assessment of school-age children nutrition in Aktobe.

Methods: Investigation design: cross sectional study.

The study involved 457 children (girls and boys) aged 10 to 14 years. Nutrition is studied using an assessment questionnaire (FFQ_KZ). The results obtained were included in the FETA program and applied to statistical processing by the SPSS 25.0 program. The study population was calculated with 95% confidence intervals (CI) and Q1, Q3, mean, median (Me).

Results: According to the energy value, the diet of adolescents was below the norm for boys and girls. In boys and girls, the energy content of food is low, i.e. on average 1762.7 (± 395.7) kcal, correspondingly, in girls on average 1712.3 (± 407.2) kcal, normally 2400 kcal, p< 0.011.in the daily diet, the protein content was 70.3; the normal indicator is 60-80 g.

The protein content in the daily diet is 70.3; the normal indicator is 60-80 g. Fat content 90.07. under normal conditions 90-100g. Carbohydrate content 318.6. under normal conditions 350-500g. The calcium index is 908.1, the norm is 1200mg, that is, 291.9 mg below the norm. Iron is 13.3, normally 15-20mg. The sodium index is 137.2, normally 400 mg.

Conclusions: In the nutrition of children aged 10-14, the indicators of macroelements and vitamins correspond to the norm and micronutrients revealed a deficiency the Ca index is 908.1 [692.1; 1032.7], which is 291.9 mg lower in the study participants.

Key words proper nutrition, macronutrients, micronutrients, nutritional frequency, eating behavior

Category: Public Nutrition & Health

Promoting Healthy Eating Behavior in a Store Using Causal Inference

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2. Tsuji Culinary Institute

Background and Objectives:

Developing effortless and sustainable healthy eating behavior is a public health challenge. This study examines the effect of nudge-based interventions on consumers' eating behavior in stores using fast thinking (point-of-purchase advertising) and slow thinking (remembering target products).

Methods:

Nutritious product advertisements were placed in a Tokyo store, and a month-long intervention was conducted to assess customers' impressions of the advertisements and their attributes after purchasing the products. Based on the difference-in-differences design, we compared the nudged products with products that had the same sales slope over the last three months to exclude the effect of trend. We estimated the period of the intervention effect by calculating the monthly ratio of target product sales. We also examined the background details (sex, age, education, and average lunch budget) of the customers who received interventions in our analysis from January 2019 to February 2023 (total number of customers: 48,000).

Results:

Sales increased by 68% despite the bad weather and insufficient replenishment of products. The effects of health advertising and target product-based interventions lasted up to eight months before external factors were applied. About 70% of customers were repeat customers. In terms of sex, 10.5% of the clients were men and 89.5% were women. In terms of age, their average age was 40. Regarding education, 15% of them were high school or junior high school graduates. As for the average lunch budget, 20% spent less than 500 yen.

Conclusions:

The significant increase in sales could not be attributed to advertising alone; remembering target products, which requires slow thinking, might have helped retain the products in the consumers' memory, making the advertisement self-serving and promoting continuous purchases.Furthermore, the possible effects of interventions should be considered, as they may vary depending on the customers' background and external factors.

Key words Nudge, Indifferent Health, Eating Behavior, Intervention, Causal Inference

Category: Public Nutrition & Health

Understanding the association between depression and anxiety w.r.t nutrient intake: A systematic review of studies across the life span

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2.

Background and objectives: The current systematic review was conducted to understand the relationship and interaction between nutrition and mental health across the lifespan. Methods: The search adhered to PRISMA guidelines. Around 851 relevant articles published between January 2000 till 15th September 2021 were identified by systematic online search from 6 electronic databases (PubMed, PsycInfo, Science Direct, MEDLINE, Scopus and Google Scholar). Results: Thirty one studies that assessed the intake of wholesome diets, dietary components and used standardized measures of dietary assessments as well as aspects of mental health were finally included as per the inclusion criteria. The American Dietetic Association Quality Criteria Checklist for Primary Research (2016) and the European Micronutrient Recommendations Aligned Network of Excellence scoring system was used to assess the quality of articles in a 2 step process. The heterogeneity between study definitions of dietary and internalizing symptomatology variables precluded formal meta-analysis. A narrative synthesis of the findings from the included studies was performed. The results of the review suggest that healthy eating pattern, including green leafy vegetables and fresh fruits, polyunsaturated fatty acids, like alpha-linoleic acid and minerals like magnesium positively impact mental health across the life span, starting from the prenatal period where it has implications not only for the mental health of the mother but also for mental development and cognition of her offspring. Further, childhood meal patterns (especially high reliance on nutrient poor and HFSS foods) have an impact on the future health of the adolescents as mental health disorders start appearing around this age. Conclusions: While clearly, diet is not the only determinant of mental health, attention towards a balance dietary pattern has long term implications for mental well-being.

Key words depression, anxiety, nutrient intake, diets

Category: Public Nutrition & Health

Serum 25(OH)D, sun exposure behaviors, sun exposure questionnaire, sun exposure score
Sun exposure questionnaire to estimate vitamin D status in young adults

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Background and objectives : Cutaneous synthesis upon sunlight exposure is considered the main source of vitamin D for humans. The use of a sun exposure questionnaire is the low cost method to assess vitamin D status in a community setting. However, there is no validated published questionnaire to assess sun exposure in Sri Lankan population. The aim of this study was to develop and validate a sun exposure questionnaire to use as a tool to assess vitamin D status in young adults.

Methods : A total of 75 young adults (males = 37, females = 38) aged 18 - 44 years were recruited from a rural setting in Sri Lanka. Sun exposure behaviors were identified using a sun exposure questionnaire which included questions on sun exposure duration, skin exposure area during both weekdays and weekend days, clothing habits, nature of occupation (indoor or outdoor), mode of traveling, skin colour, sun avoidance, and use of sunscreen. Serum 25(OH)D concentration was measured using an Enzyme Linked Immunosorbent Assay. The sun exposure questionnaire was analyzed using a scoring system to get a Sun Exposure Score (SES).

Results : The nature of the occupation (p=0.021), duration of sun exposure (p=0.003), sun avoidance (p=0.050) and skin exposure area during weekdays (p=0.019) and weekend days (p =0.043) were significantly associated with serum 25(OH)D concentration. Accordingly, a sun exposure questionnaire was developed by considering the factors that were significantly associated with serum 25(OH)D concentration.

Conclusion : The sun exposure questionnaire, which gathered information on the nature of occupation, sun exposure duration, sun avoidance behave, and skin exposure area, can be used as a tool to estimate the vitamin D status of young adults.

Key words Keywords: Serum 25(OH)D, sun exposure behaviors, sun exposure questionnaire, sun exposure score

Category: Public Nutrition & Health

Advertising of Unhealthy Food and Beverages on Ghanaian Television Channels: A Cross-Sectional Study

Gideon Senyo Amevinya*[1],Iris Van Dam Dam[2],Stefanie Vandevijvere[2],Amos Laar[1]
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2. Sciensano

Background and Objective: Among adults and children, food advertising is associated with increased preference, purchase requests, and intake. Given their vulnerability, children's exposure to unhealthy food and beverage advertising is thus acknowledged as a violation of their rights. We assessed the extent and nature of food and beverage advertisements on Ghanaian television channels.

Methods: Three of the most viewed free-to-air television channels with nationwide coverage were included. Television programming were videotaped on eight randomly selected days (four weekdays and four weekends) from 06.00 to 24.00 hours between February and April 2020. A total of 54 hours of television programming were recorded on each day (18 hours per channel). Food advertisements were identified, and content analysis was conducted. Food advertisements were categorized according to the healthiness of the foods advertised (non-core – less healthy foods, core, and miscellaneous). The NOVA system was used to classify food products according to industrial processes

Results: A total of 999 food and beverages ads were identified, representing 22.4% of the total ads documented. Most food ads broadcast noncore products (58.3%). The proportion of noncore food ads was higher on weekdays (66.7%) with an average of 11.4 per hour, and also during peak viewing time (59.2%). The most frequently advertised non-core food was sugar sweetened drinks (43.5%). Noncore foods contributed the highest proportion of all food advertisements containing promotional characters (65.4%) and premium offers (58.3 %). Using the NOVA classification, over 57.4% of all advertised food products were classified as Ultra-processed foods.

Conclusions: The findings indicate a high exposure of the Ghanaian population to unhealthy food advertising on Television channels. Further studies are needed to monitor exposure to unhealthy food advertising on TV and other communication channels.

Key words Food advertising, television, exposure, children, obesity

Category: Public Nutrition & Health

Ethical Acceptability Of Child-Directed Food Marketing On Ghanaian Television

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Background And Objectives: Misleading advertisements, when directed at vulnerable populations such as children, have ethical and public health implications. This study characterises and examines the Truthfulness, Authenticity, Respect, Equity, and Social Responsibility (TARES) of Ghana-based Television (TV) food advertisements.

Methods: Secondary data - 24-hour nationwide recordings of food advertisements from three TV channels popular among children in Ghana were obtained from a project that aimed to characterise children's school food environment (the MEALS4NCDs project). Content analysis was used to characterise the food advertised in terms of healthiness and level of processing using the International Network for Food and Obesity/NCDs Research Monitoring and Action Support (INFORMAS) and NOVAS classification systems. The messages in the advertisements were transcribed verbatim and examined for ethicality using the TARES Framework. TARES assesses communication accountability and establishes ethical boundaries for persuasive messages.

Results: 84 unique advertisements were identified of which 4 out of every 10 were directed at children. Sugar-Sweetened Beverages (16.7%) and alcoholic drinks (13.1%) were the most advertised products. Fruits/vegetables were never advertised. These products were promoted in contexts such as lifestyle (22.6%), social/friendship (21.4%), family (17.9%), or in association with celebrities (21.4%). Per NOVA, half of the food advertised was characterized as ultra-processed, and 6 out of 10 were deemed unhealthy based on INFORMAS. In terms of ethicality, a third of advertisements verbally and visually exaggerated the properties of their products, while over half of advertisements omitted to provide information on the content of potentially health-harming nutrients (sugar, salt, and fat). Over 90% of advertisements did not demonstrate willingness to take social responsibility for the negative health outcomes.

Conclusion: Four in ten TV food advertisements were directed at children and promoted primarily food characterized as unhealthy and ultra-processed. These foods were advertised with minimal information on health-risk nutrients and in manners considered deceptive.

Key words Food advertisement, Nutrition, TV, Ethicality

Category: Public Nutrition & Health

Awareness And Self-Reported Consumption Of Sugar-Sweetened Beverages Among Ghanaian Residents

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Awareness And Self-Reported Consumption Of Sugar Sweetened Beverages Among Ghanaian Residents

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Background and Objectives: Consumption of sugar-sweetened beverages is a major contributor to the rising rates of obesity, diet-related non-communicable diseases, and other health conditions globally. This study assessed the awareness, and consumption of sugar-sweetened beverages among Ghanaians.

Methods: The study was cross-sectional in design, and involved a total of 7,800 Ghanaian residents. Participants were adults aged ⩾18 years living in Ghana at the time of data collection. Data was collected using an online self-administered questionnaire. Descriptive statistics were analyzed to measure awareness of, and self-reported sugar-sweetened beverage consumption.

Results: About 37% of respondents reported rarely consuming sugar-sweetened beverages whereas 6% consumed SSBs at least daily. About 70% of respondents were very concerned about obesity and non-communicable diseases in Ghana, especially among children. A vast majority (90.5%) of respondents knew that too much sugar consumption is linked to several health problems. Specifically, 77.7% of the the respondents were aware that sugar-sweetened beverages are a major contributor to the obesity problem in Ghana. Furthermore, 74.8% indicated it is very important for the Government of Ghana to take steps that discourage the consumption of sugar-sweetened beverages.

Conclusion: The findings of this study show the high awareness of negative health outcomes associated with sugar-sweetened beverages among the Ghanaian residents.

Key words Sugar-Sweetened Beverages, Non-Communicable Diseases, Consumption, Awareness, Ghana

Category: Public Nutrition & Health

An Analysis of Food Provisioning Policies and Programmes in Government Basic Schools in Ghana

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School food policies and programmes can create environments that support healthy dietary behaviours. In Ghana and other low- and middle-income countries, little is known about the “nutritional” quality of such programmes. This paper identifies, describes, and evaluates the “nutritional” quality of a food provisioning programme implemented in government basic schools in Ghana.

We conducted a literature review and in-depth interviews with key stakeholders to identify existing policies and programmes. Two independent reviewers evaluated identified policies and programmes against a list of quality indicators under 5 domains: Standards for Provided Foods/Beverages (SFP); Standards for Competitive Foods/Beverages (SCF); Wellness Promotion and Food/Beverage Marketing (WPFM); Water, Sanitation, and Hygiene (WASH); and Implementation, Accountability, Monitoring, Evaluation, and Communication (IAMEC). Reviewers assigned a score of 0 if the indicator was absent, 1 if it was present but was described using vague words that limit enforcement, and 2 if it was described using clear language that strengthens enforcement. We determined average comprehensiveness (percentage of indicators present) and strength (percentage of indicators assigned a score of “2”) scores for each domain and across all domains.

The relevant food provisioning interventions included in this study were the national school feeding policy and its associated programme. The characteristics of these included their application to provided foods, availability of implementation support and monitoring framework, and lack of clear nutrition standards. Together, the policy and programme average scores (comprehensiveness, strength) were (SFP: 24%, 10%), (SCF: 0%, 0%), (WPFM: 0%, 0%), (WASH: 50%, 0%), and (IAMEC: 50%, 17%). Overall comprehensiveness and strength scores were 21% and 7% respectively.

Our findings highlight weak overall policy and implementation environment in schools in Ghana; key areas needing improvement include appropriate nutrition standards, including standards for competitive foods/beverages and marketing within the school environment, wellness promotion, and strengthening oversight actions to ensure effective implementation.

Key words School food policy, school food programme, school food environment, nutrition standards, Ghana

Category: Public Nutrition & Health

Factors Affecting the Longitudinal Change in Vegetable Intake of Remote Island Residents in Japan

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〔Background and objective〕 A previous survey data showed that the vegetable intake of residents in a remote island in Shimane prefecture, Japan, was lower than that of the whole prefecture. This study aims to examine the factors that influence the longitudinal change in vegetable intake of the remote island residents.

〔Method〕 Data from surveys (lifestyle questionnaire and food frequency questionnaire) conducted in Nishinoshima town, a remote island in Shimane prefecture, at the time of formulating the health promotion plan (2014) and the mid-term evaluation (2021) were used. Data of 149 men and women aged 20 to 79 years who responded to both surveys were included in the analysis. Paired t-test or Wilcoxon signed rank test was used to compare subject attributes and vegetable intake at the two time points. A multiple regression analysis was used to examine the factors that influenced the change in vegetable intake between 2014 and 2021.

〔Results〕 A significant decrease in vegetable intake was observed between 2014 and 2021 (mean±SD=-18.4±7.7g, p=0.019). A multiple regression analysis showed that the decrease in vegetable intake was significantly small or even increased in people with "longer years of vegetable cultivation," "eating Japanese-style balanced diet," "having knowledge of appropriate dietary intake," and "not attending regular health examinations," e.g., the vegetable intake increased by 7.8g in people who knew appropriate dietary intake in both years and decreased by 40.9g in those who did not know in both years (p=0.005); that increased by 29.2g in people who had not attended regular health examination in both years and decreased by 24.0g in those who had in both years (p=0.044).

〔Conclusion〕 The implementation of the Japanese-style balanced diet may contribute to an increase in vegetable intake. Future issues include increasing the number of people who know the appropriate dietary intake and devising ways to conduct health examinations.

Key words Vegetable intake, Japanese-style balanced diet, Remote Island, Nutritional knowledge

Category: Public Nutrition & Health

Gender differences in obesity indicators among university students from Shanxi Normal University, China

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Background and Objectives: The university students in China has been suffered from the increasing prevalence of obesity. Multiple obesity indicators were developed to determine the prevalence of obesity among individuals in a variety of settings. The present study aimed to determine the prevalence of obesity using multiple obesity indicators, as well as to compare the gender differences in across these indicators.

Methods: A total of 185 university students were recruited from the Modern College of Humanities and Sciences, Shanxi Normal University in this cross-sectional study. The height, weight, waist circumference, body fat percentage of the students were measured and their BMI and waist-to-height ratio were calculated. Independent t-test and chi-square test were conducted to compare the gender differences across all the obesity indicators.

Results: More than half (51.4%) of the students were classified as overweight and obesity through BMI. On the other hand, the prevalence of abdominal obesity among the university students using waist circumference and waist-to-height ratio as obesity indicators were 36.8% and 35.7%, respectively. As for percentage of body fat, 41.1% of the students were classified as obesity. Significant differences were observed across all the obesity indicators between male and female students ($p < 0.05$), whereby female students generally had lower prevalence of obesity across all the obesity indicators compared to male students.

Conclusions: Obesity is a serious problem among the university students in China as the prevalence of obesity can be as high as 41.1%. Male students were found to be more prevalent in obesity issue compared to female students. Effective intervention should be formulate to improve tackle the emerging obesity problem among the university students.

Key words University students, obesity, BMI, waist circumference, percentage of body fat

Category: Public Nutrition & Health

Association between dietary factors and depression in late adulthood

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Background/Objectives: Depression is the most common mental illness in Korea. There are various factors related to the depression, and diet are one of the important factors. This study was conducted to confirm the association between dietary factors and depression in late adulthood.

Methods/Study design: The research subjects were 528 people, including 286 depressed group (DG) and 286 healthy control group (HG), among 2,594 adults aged 65 or older through the raw data of the 2016 and 2018 Korea National Health and Nutrition Examination Survey (KNHANES). All data in this study were analyzed using the IBM SPSS Statistics 26 program. The chi-square test or t-test was used for variable comparison. The association between dietary factors and depression was analyzed by applying binary logistic regression analysis. Differences were considered statistically significant at $p<0.05$.

Result: DG showed significant differences from HG in demographic characteristics, health behaviors, and chronic diseases. Frequency of breakfast intake and eating out, supplement intake rate, awareness of nutrition label and execution rate were significantly lower in DG than in HG. Food security, Index of Nutrition Quality (INQ) and nutrient intake ratio (NIR) were also significantly lower in DG than in HG. To confirm the risk of depression by dietary factors, demographic characteristics, health behaviors, and chronic diseases were adjusted. As a result, the risk of depression increased 3.115 times (95% CI, 1.150-8.438) in moderate or severe food insecurity compared to food security. INQ and NIR did not affect the risk of depression.

Conclusion: Low income can cause food insecurity, which has been found to be highly associated with depression. Therefore, it is suggested that providing food assistance to low-income individuals is necessary not only for physical health but also for mental health.

Key words KNHANES, depression, dietary factors, late adulthood

Category: Public Nutrition & Health

Food insecurity among people residing in underprivileged areas of South Delhi during COVID-19 pandemic

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Title of the article: Food insecurity during Covid-19 pandemic among people residing in underprivileged areas of South Delhi

Background: The components of food insecurity (accessibility, availability, and affordability of food) were adversely affected due to the lockdown caused by the coronavirus pandemic.

Objective: The study's objective was to evaluate the level of household food insecurity experienced by residents of South Delhi's impoverished neighbourhoods during the COVID-19 lockdown.

Study Plan: From July 2020 to October 2020, mother/ caregivers of low-birthweight children participated in the current study. Their household food insecurity was evaluated using the Household Food Insecurity Access Scale (HFIAS). Descriptive analysis was used to evaluate the data. In order to measure sociodemographic characteristics and food insecurity, proportions and frequencies were utilised. The distribution of households in terms of the various difficulties they faced during the lockdown was examined using the Chi-square test. At a p-value of 0.05, the results were declared to be significant.

Results: As a result of the pandemic, 64.5% of households experienced food insecurity, with the majority of these households experiencing moderate food insecurity (46.4%) and a minor percentage experiencing severe food insecurity (7%). This populace experienced worry and uncertainty about food supply as a result of the fight against coronavirus and the consequent quarantine that was imposed. The majority of respondents said they had restrictions on the types of food they could eat. Food insecure households had more difficulties during the lockout than food-secure ones did.

Conclusion: Extensive evidence-based studies are required to comprehend the causes of food insecurity and identify solutions during such unprecedented times.

Key words Food security, Covid-19, lockdown, Indian, coronavirus

Category: Public Nutrition & Health

Effects of Fermented Rice Consumption in Metabolic Health of Older Adults: A Comparative Study in India

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Background: Fermented Rice is the most common breakfast item eaten by the greatest number of people in India. The effect of fermented food in metabolic risk factors are still unknown to many of us. This study intended to find out the association of fermented rice intake and developing metabolic disorders.

Objective: It will be one of the first phase papers to establish the relationship to elaborate the role of fermented rice in metabolic health because there hasn't been much research has been done yet. The purpose of this study is to determine whether eating fermented rice every day improves metabolic health.

Methodology: This retrospective study was conducted in order to compare two groups of people's daily dietary consumption of fermented rice and their metabolic health. Fermented Rice Group (FRG) refers to the group that consumes fermented rice daily(n=38), whereas Control Group (CG) refers to the group that does not consume fermented rice on a regular basis(n=38). All the risk factors according to NCEP ATP III guideline are measured, like- waist circumference, fasting blood glucose etc. and compare the data using SPSS and R statistics.

RESULT: Out of all the risk factors waist circumstances (p=0.017), Triglyceride (p=0.034), Total Cholesterol (0.010) and Low Density Lipo-Protein(p=0.013). Body Composition Analysis also gave significant differences.

Conclusion: Our finding showed that intake of fermented rice had substantial protective effect with regard to some of the risk factors

Key words Fermented rice, Metabolic Syndrome

Category: Public Nutrition & Health

Using Context-Relevant Research, Evidence-Informed Advocacy, And Scholar Activism To Valorize, And Increase Demand For Healthy Food Policy: Lessons From Ghana

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Abstract

Background and objectives

Amidst high burden of infectious diseases, undernutrition, and micronutrient deficiencies, non-communicable diseases (NCDs) are predicted to become the leading cause of death in Ghana by 2030. Across the globe, NCDs are driven to a large extent by unhealthy food environments. The initiative herein presented, aimed to contribute to addressing the challenge through public health policy measures. However, data poverty and policy inertia presented important challenges. This paper shares a lower-middle-income country's experience of how a public interest coalition used context-relevant research, evidence-informed advocacy, and scholar activism to valorize and increase demand for healthy food policy in Ghana.

Methods: To address data poverty, the coalition generated relevant contextual evidence, curated the evidence, and availed the evidence to Ghanaian food environment actors (including policymakers, researchers, and civil society). The coalition responded to policy inertia through advocacy and scholar activism.

Results: This food activism intervention in Ghana has contributed to informed discourses about food systems, food environments, food ethics, food security, food policy, food democracy, and food justice. The evidence-informed advocacy and scholar activism have valorized and increased demand for a double-duty food-based policy bundle. The policies (comprising marketing regulations, front-of-pack nutrition labelling, food-related health taxes, and public food procurement policy) are currently being developed by a coalition of government agencies, academia, and civil society.

Conclusions: The assessments, evidence, engagements, and advocacy show that to improve the Ghanaian food environments, fit-for-local purpose double-duty policies, as well as strong leadership and accountability, are required. The engagements and advocacy have also led to a national recognition that the development and implementation of the policies will make unhealthy diets unattractive and unavailable, while making healthier diets available, and attractive.

Key words Food environments, double-duty policy bundle, advocacy, accountability, Ghana

Category: Public Nutrition & Health

Creating Healthy Food Environments in Universities

Rajshri Roy*
University of Auckland

Background: University food environments are important factors that can influence the dietary behaviours of young adult students. Roy et al's research has aimed to explore and understand the university food environment, and its impact on university students' food purchasing behaviours, preferences, opinions, and dietary intake. Her research has also evaluated the effectiveness of food environment interventions on their dietary behaviour.

Methods: The studies employed mixed methods such as systematic literature reviews, food environment audits, dietary assessments, surveys, ethnography, interviews, and quasi-experiments. The studies were conducted in large urban university campuses in Australia, New Zealand, and China.

Results: Taste, followed by price and then health are leading determinants of food purchasing behaviours among university young adults. The research has revealed that university food environments are dominated by unhealthy food options, with a limited availability of healthy food choices. Vending machines within university campuses have been found to be stocked predominantly with unhealthy foods and drinks. However, food environment interventions such as promoting healthy food options, providing nutrition education, and reducing the availability of unhealthy food options, have been found to be effective in improving young adult students' dietary behaviour. Particularly energy labelling, price-reduced healthy meals, healthier vending machines, labelling healthy food items on menus with symbols and social marketing campaigns increased the purchase of healthier options among university students.

Conclusions: The findings suggest that the university food environment has a significant impact on young adult students' dietary behaviour. The implementation of food environment interventions such as promoting healthy food options, providing nutrition education, pricing strategies, healthier vending machines, and food labelling is critical in creating healthier food environments in university settings. This is important for promoting healthier dietary behaviours among young adults and improving their overall health and well-being.

Key words university food environment, young adults, dietary behaviour, food environment interventions

Category: Public Nutrition & Health

Translating an evidenced based obesity prevention home visiting program into a self-guided web-based platform using a co-design approach: The Healthy Beginnings program

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5. University of Wollongong

Background and objectives: The Healthy Beginnings Trial was the world's first RCT to effectively impact obesity related behaviours in the first two years of life delivered through home visits. However, this was costly and not a feasible approach to scale up. Delivering health programs digitally is increasing as it's convenient and accessible, however very few consider cultural responsiveness or health literacy. This study aims to translate, develop and test the feasibility of the Healthy Beginnings program through a web-based platform specifically supporting families with low English proficiency.

Methods: This is a two-phased study. Phase 1 included 5 sub-studies that guided the development of the web-based program. 1a) systematic assessment of websites targeting healthy lifestyle behaviours for the first year of life; 1b) social media mapping of parent forums on child health behaviours; 1c) National-wide survey exploring parents internet usage of health information (N=500); 1d) Co-design workshops with English (n=20), Arabic (n=10) and Mongolian (n=10)-speaking parents; and 1e) Co-design workshops with health professionals (n=10). Phase 2 will include testing the program's feasibility.

Results: Few websites addressing infant behaviours are high quality, don't address health literacy or cultural responsiveness (Study 1a). The most commonly discussed topic on parenting forums is 'feeding difficulty' (Study 1b). Families from CALD backgrounds frequently use the internet for health information and significantly favoured videos (p=0.003) as a feature (Study 1c).Further, studies 1d and 1e, consumers and health professionals provided various feedback on content, branding and interactive tools to be made available on the web-based platform.

Conclusions: There is a need for web-based platforms supporting families with child health behaviours in the first year of life developed through a culturally responsive and health literacy lens. Involving consumers and health professionals in a co-design approach is necessary to addresses barriers they experience accessing online health information.

Key words Obesity prevention, digital health, health promotion, child health

Category: Public Nutrition & Health

一项针对澳大利亚学龄前儿童肥胖风险的为期 2 年的电话干预随机对照试验研究

A randomised controlled trial of a 2-year telephone-based intervention targeting obesity risk of pre-school aged children in Australia

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Background: There has been limited evidence of effectiveness of telephone-based intervention in reducing obesity risk for children. This study aimed to determine effects of a 2-year telephone-based intervention on body mass index (BMI) and eating habits among pre-school aged children.

Methods: We conducted a pragmatic randomised controlled trial (RCT) with 662 mother-child dyads in Sydney Australia 2019-2022. The intervention included 5 staged nurse-led telephone support calls to mothers to promote healthy eating and physical activity for children from ages 2 to 4 years. The outcomes included eating habits, screen time and height/weight for BMI at ages 3, 4 and 5 years. The data were collected via the computer-assisted telephone interviewing system using a mother self-reported standardised tool. We compared the outcomes between the groups using longitudinal data analysis based on the intention to treat principle.

Results: There were 537 (81%), 491 (74%) and 405 (61%) mothers having completed the follow-up assessments at ages 3, 4 and 5 years respectively. The intervention had a significantly lower mean BMI of 15.90 (SD 2.55) kg/m2 than the control 16.20 (SD 2.44), a difference of -0.30 (95%CI: -0.59 to -0.01), P=0.039. This effect was particularly stronger among low income families with -0.57 (95%CI: -1.05 to -0.10), P=0.018. Children in the intervention group were more likely not to have fast food [29% vs 23%, AOR 1.63 (95%CI: 1.01 to 2.65)] or eat in front of the TV [77% vs 65%, AOR 2.65 (95%CI: 1.57 to 4.67)] compared with the control.

Conclusions: The 2-year telephone-based intervention was effective in reducing BMI and increasing healthy eating habits of pre-school aged children. The effects of the telephone-based intervention could be sustained over a 12 months period. Telephone-based support has a great potential in reducing obesity risk in pre-school aged children, particularly among children from low income families.

Key words randomised controlled trial, telephone-based intervention, obesity risk and pre-school aged children

Category: Public Nutrition & Health

Father’s capability to save the future: Insights from haor areas of Bangladesh

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Background and Objectives: Maternal and child survival is one of the core dimensions of child growth in haor areas of Bangladesh that are subject to heavy floods. Men, as husbands or fathers, are primarily responsible for arranging health care for women in haor areas. We intend to understand what contextual factors underlie a father’s capability to secure safe delivery.

Methods: A qualitative study employing a participatory approach was conducted with the parents having children less than two years of age. The study areas included Derai, Baniachang, and Ashtagram subdistricts that are dominated by varying depths of haors. In the first round, eight focus group discussions (FGD) and eight in-depth interviews were conducted with the parents using specific interview guides with open-ended questions. The interview guides were developed using the capability framework for child growth model. In the second round, 17 focus group discussions were facilitated with the parents using visual tools to validate the emerging findings from the first round.

Findings: Fathers' capability to save the lives of mothers and children was primarily hindered by their late entry into health facilities. This was caused by a lack of resources such as a nearby well-equipped health facility, money, transportation, and skilled health care services, as well as by a range of societal and environmental factors such as lack of communication between the spouses, fear of cesarean delivery, reliance on God, seasonal calamities, and poor infrastructure. Women’s autonomy to seek health care by themselves was affected by their lack of access to financial resources, the availability of women-friendly social arrangements for health care, and their gendered roles restricted to indoor activities.

Conclusion: The findings highlighted the importance of addressing socially constructed gendered differences in improving women’s autonomy, which can be taken into account in designing context-specific nutrition-sensitive programs and policy instruments for haor.

Key words Child Growth, Capability Approach, Haor, Future

Category: Public Nutrition & Health

DETERMINANTS OF CHILD MALNUTRITION: EMPIRICAL EVIDENCE FROM RURAL AND URBAN INDIA

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Background and objectives

Child health is a vital sign of a healthy society. Being home to two-thirds of malnourished children, the prevalence has recently risen across India. In this study, an attempt has been made to determine the effects of each of the components of malnutrition on both rural and urban populations.

Methods

Children aged 0-59 months with malnutrition Z-score cut off <- 2 Standard Deviation were selected from the National Family Health Survey-4&5 data. The indicators of malnutrition are chosen, focusing on child food intake, maternal factors and immunisation and infections in both rural and urban areas. Panel regression and biplot analysis are used to identify the characteristics and determinants of childmalnutrition in Indian states. Boxplots are used to visualise the distribution of malnutrition.

Result

Wasting and underweight are closely related, with stunting more prevalent in urban and rural areas. Biplot analysis indicated that, Gujarat has the highest rate of underweight, while Bihar, Maharashtra, Jharkhand, and Uttar Pradesh have higher rates of multiple indices of malnutrition. Kerala, Sikkim, Tamil Nadu, Uttarakhand and Punjab have better health indices in urban and rural areas. Panel regression analysis indicated, that mothers' literacy (α=0.05), anthropometry (Body Mass Index < 18.5kg/m^2) (α=0.01) and children with fever or symptoms of acute respiratory infection (α=0.1) are the underlying factors of underweight both in urban and rural areas. Similarly, mothers' anthropometry (α=0.05) and children with fever or symptoms of acute respiratory infection (α=0.05) influenced wasting. Further, obese mothers' (α=0.01) is identified as the primary reason for child stunting in both rural and urban India.

Conclusion

Child malnutrition has to be eliminated from the grassroots level which is determined by factors viz.,mothers' literacy, body mass index, and acute respiratory infection. Analysis based on place of residence will be more beneficial in identifying who has the absolute burden of malnutrition.

Key words Malnutrition, India, Urban-rural, Underweight, Wasting

Category: Public Nutrition & Health

Vitamin D status and its determinants in young adults

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Background and objectives : Vitamin D deficiency is a common, public health problem in many countries including Sri Lanka. It is important to identify vitamin D status and its determinants when planning intervention programmes to improve the vitamin D status. However no recent studies have been conducted in Sri Lanka to identify vitamin D status and its determinants in young adults. This study aimed to identify vitamin D status and factors associated with vitamin D status among young adults in a selected area of Sri Lanka.

Methods : A total of 75 young adults ranging in age from 18 to 44 years were recruited from a rural setting in Sri Lanka by stratified random sampling. Socio-demographic information, physical activity, dietary intake, and anthropometric data were gathered. Three-day diet diaries were used to gather the dietary intake and computer software was used to identify the vitamin D intake. Serum 25(OH)D concentration was measured using an Enzyme-Linked Immunosorbent Assay.

Results : The mean serum 25(OH)D concentration of the participants was 19.87 ± 7.27 ng/mL. The prevalence of vitamin D sufficiency, insufficiency, and deficiency was 39% (n=29), 53% (n=40) and 8% (n=6), respectively. Vitamin D status was associated with gender (p= 0.01), where the mean serum 25(OH)D concentration for males (22.19 ± 8.42 ng/mL) was higher than for females (17.61 ± 5.09 ng/mL). Age (p=0.013) and vitamin D intake (p=0.032) showed significant positive associations with serum 25(OH)D concentration. Body Mass Index, ethnicity, religion, monthly income, education level, alcohol, and tobacco use were not significantly associated with serum 25(OH)D concentration.

Conclusion : More than half of the young adults were vitamin D deficient and or insufficient. The vitamin D status of young adults was influenced by age, gender, and vitamin D intake.

Key words Keywords: Serum 25(OH)D, young adults, determinants, vitamin D status

Category: Public Nutrition & Health

Contributing Factors to Nutritional Status among Thai Children Aged 7-12.9 years - SEANUTS II Thailand

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Background and objectives: Double burden malnutrition with increasing child over-nutrition is a significant public health problem in low- and middle-income countries. This study identified factors associated with both extremes of malnutrition.

Methods: Data were analyzed from 1084 Thai children aged 7-12.9 years (557 boys, 527 girls) who participated in the South East Asian Nutrition Survey II (SEANUTS II) Thailand. Nutritional status employed WHO BMI-for-age references and was classified into thinness, overweight, obesity, and normal weight. Multivariate-adjusted multinomial logistic regression was performed to determine factors associated with both malnutrition extremes compared to normal weight children.

Results: Children of low birth weight were more likely to be thin (adjusted OR, AOR: 3.47, 95% CI: 1.48, 8.14), while those born to obese mothers were less likely to be thin (AOR: 0.45, 95% CI: 0.21, 0.93). Children with low energy intake or from households with low monthly incomes were less likely to be overweight (AOR: 0.48, 95% CI: 0.27, 0.86; AOR: 0.48, 95% CI: 0.24, 0.95). Maternal and paternal obesity were positively associated with being overweight (AOR: 2.12, 95% CI: 1.34, 3.36 and AOR: 2.03, 95% CI: 1.27, 3.24). Girls were less likely to be obese than boys (AOR: 0.58, 95% CI: 0.37, 0.90). Children with low energy intakes were also less likely to be obese (AOR: 0.49, 95% CI: 0.29, 0.82). Lower physical activity, longer screen time, and maternal and paternal obesity were all positively associated with obesity (AOR: 2.03, 95% CI: 1.08, 3.82; AOR: 1.89, 95% CI: 1.17, 3.04; AOR: 2.99, 95% CI: 1.95, 4.58; and AOR: 1.95, 95% CI: 1.27, 3.01, respectively).

Conclusions: Child nutritional status at birth and parental nutritional status contributed to under- and over-nutrition in older children. Balance between energy intake and expenditure as well as household income are important ecological factors contributing to overweight and obesity.

Key words Overweight, obesity, thinness, children aged 7-12.9 years

Category: Public Nutrition & Health

Norovirus titers in symptomatic and asymptomatic children under 5 years old with malnutrition in Surabaya, Indonesia

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Norovirus (NoV) infection are second most frequent agent causing gastroenteritis in malnutrition children under 5 y.o. NoV can be detected in both symptomatic and asymptomatic children. However, in which threshold virus titer that could manifest to symptoms is not well understand. This study aimed to compare the NoV titer in symptomatic and asymptomatic children under 5 y.o. with malnutrition in Surabaya, Indonesia. Stool samples of symptomatic children (SC) were collected in Soerya Mother and Child Hospital, Surabaya. Meanwhile, samples from asymptomatic children (ASC) were collected in Semampir Subdistrict, Surabaya. One-step PCR GI & GII detection kit ver.2 was used to identify NoV. Genogroup-specific primer and probes were used for norovirus titers determination using RT-qPCR. The virus titers were then presented in RNA copies/g stool. We identified 54 and 32 NoV positive samples from SC and ASC group. In SC group, the minimum virus titers for GII genogroup that observed was 7.5 x 102 copies/g stools, while in ASC group was 5.2 x 103 copies/g stools. The minimum virus titer of GI genogroup was 7.5x101 and 7.6x102 for SC and ASC. The titers difference between both group was remarkable for GII genogroup (SC median (IQR)=3x104(7.4x105), ASC median (IQR)=9.5x103 (5.3x103), p-value=0.035), but not for GI genogroup. The minimum virus titer of SC group was lower of ASC for both NoV genogroup. This finding indicated that virus titer was not the major factor for symptom manifestation in NoV infection. Our finding was in line with former studies that reported no association between virus titers, symptom manifestation, and malnutrition, even though proinflammatory cytokines concentration were positively associated with the titers. According to our study, norovirus titers did not determine the clinical manifestation of the infection. Further study is needed to confirm the difference of proinflammatory cytokines concentration in SC and ASC with norovirus infection.

Key words Norovirus, symptomatic, asymptomatic, malnutrition, children, virus titers

Category: Public Nutrition & Health

Changing food consumption patterns and macronutrient intakes in ASEAN region

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Background and Objectives: Most ASEAN countries continue to face a double burden of malnutrition with a growing prevalence of overweight and obesity alongside key nutrient deficiencies and inadequacies. Economic growth and urbanization have contributed to nutrition transitions across the region. The aim of this study is to review the dietary patterns among general adult populations in ASEAN region, with a focus on macronutrient quality.

Methods and Study Design: ASEAN countries Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam, were included in this study. Dietary intake information including food consumption data and macronutrient intakes were extracted from nationally representative nutrition survey reports and publications including policy documents and journal articles, in English, from 2000 to 2021 (latest survey).

Results: Chronic energy deficiency is prevalent in Vietnam, Philippines, Indonesia, and Cambodia with more females being energy deficient than males. While staple foods such as rice still provide the majority of calories in diet, there is a shift towards lower carbohydrate consumption and higher fat and protein, specifically animal protein, in Singapore, Malaysia, Brunei, Indonesia, Thailand, and Vietnam. Fish, meat, and eggs are the main sources of protein intake, while total fat consumption (vegetable oils and animal fat) has shown a steady increase across the region over time. Polyunsaturated fatty acids and omega 3 consumption fall short of global average, except for Singapore and Malaysia; and high intake of added sugars and salt, and low consumption of dietary fiber are common in all countries.

Conclusions: This study highlights key dietary shifts among ASEAN countries, from diets high in carbohydrates to increased animal proteins and fats, indicating a deviation from traditional diets. Further research is needed to explore ways to achieve balanced diets despite such shifts, taking into account factors such as socio-economic, affordability and dietary preferences.

Key words dietary patterns, ASEAN, macronutrients, dietary shifts

Category: Public Nutrition & Health

Characteristics and Potential Applications of the “ARIGATO (Gratitude) Recipe Collection” Developed in Disaster-Affected Areas

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【Introduction and Objective】

After the Great East Japan Earthquake, TAF and its local partners held cooking classes in Tohoku region with 54,434 participants. In 2021, TAF published an “ARIGATO (Gratitude) Recipe Collection” with recipes from the cooking classes to thank the project stakeholders and to support independent local efforts to hold classes. Recipes are set nutritional value with consideration for health at a low cost. It included 109 recipes (for 36 meals) and useful tips on safety and hygiene precautions. The number of copies distributed exceeded 53,000. This study aims to evaluate the participants reported outcome.

【Methods】

Questionnaire survey by web research method was conducted anonymously in December 2022. The participants consisted of 213 belonging to local governments and dietary improvement promotion groups who were local partners or expressed interest in the recipe collection. The items of the questionnaire include the following: basic attributes, participant satisfaction, Net Promoter Score (NPS).

【Results】

The survey was completed by 114 respondents (54% response rate). Those who responded “very satisfied” or “satisfied” accounted for 95.1% of the total respondents. Regarding the experience of using the recipe collection, 83.3% of the respondents answered “Yes” to the question “Did you show or tell someone about it?” The NPS for the likelihood of recommending the collection to friends, acquaintances, and family was 42.1 (>0).

There were free comments described potential applications in a variety of situations, such as during disasters, cooking classes in the community, and as a useful dietary aid for the elderly, single adults, and busy people.

【Conclusions】

There was a high level of satisfaction with the recipes. The NPS was also positive. The recipe book is useful as a communication tool and hoped that its use will continue to expand to various regions in the future.

Key words Cooking class, Local community, Disaster, Nutrition, Recipe

Category: Public Nutrition & Health

增加海洋鱼类摄入有助于降低中国成年人双心病患病风险

Increased intake of marine fish contributed to a lower odds of comorbid depression and coronary heart disease in Chinese adults

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Background and objective: Population-based epidemiology evidence to date has supported that high-fish intakes are beneficial in attenuating depression or coronary heart disease (CHD). Nevertheless, the benefits for comorbid depression and CHD (DCHD) remain unclear. The aim of this study was to investigate the relationship between marine-derived fish intake and DCHD in Chinese adults.

Methods: We conducted a cross-sectional study of 1,099 Chinese adults aged 25–95 years living in Taizhou, Zhejiang. Fish intake was assessed by using a validated food frequency questionnaire (FFQ), while depression status was diagnosed by hospital anxiety and depression scales (HADS), with HADS scores ≥ 8 indicating a prevalent depression. Fish intake were categorized into three tertiles: ≤ 1 time/week (low), 2-6 times/week (moderate), and ≥ 7 times/week (high). Primary measurements were the prevalent depression comorbidity with CHD, presented as multivariate-adjusted odds ratios (ORs) with 95% confidence intervals (CIs) comparing the highest with the lowest category of fish intake.

Results: A total of 932 participants who completed the FFQs were analyzed, 194 (20.82%), 583 (62.55%) and 106 (11.37%) were diagnosed with depression, CHD and DCHD, respectively. Participants at the highest tertiles of fish intake have a lower odds of DCHD compared with those at the lowest (OR= 0.355, 95%CI: 0.198, 0.638), with 49% reductions in odds of DCHD for per one-tertiles (3 times/week) increase in fish intake (OR = 0.511, 95% CI:0.363, 0.716). The multivariate-adjusted ORs were 0.355 (95% CI: 0.221, 0.569) for depression and 0.727 (95% CI: 0.471, 1.123) for CHD, respectively. No significant interactions with DCHD were found between fish intake and age, gender, lifestyle factors and concurrent diseases.

Conclusions: Higher intake of fish was associated with a lower odds of DCHD, especially with depression. Such findings highlight that increased intakes of marine fish may offer a psychosomatic benefit in primary prevention of DCHD in Chinese adults.

Key words Fish, Depression, Coronary heart disease, Chinese

Category: Public Nutrition & Health

Development of a Food Logging and Nutrition Assessment Approach for a Dietary App Targeting Adults in China

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Backgrounds and objectives:

Dietary mobile applications (apps) collect dietary information to be able to generate personalized dietary recommendations. Compared to 24h dietary recall and food frequency questionnaires, the dietary diversity indicator (DDI) may better fit consumer usage based on its simplicity compared to other food quality indicators involving collection of complex quantitative information. This study aims to develop a DDI, fit for a consumer-grade dietary app targeting Chinese adults.

Methods:

A DDI composed of 12 food groups was developed according to the dietary diversity principle in the Chinese Dietary Guideline. Dietary data in China Health and Nutrition Survey (CHNS) 2009 and 2011 were analyzed to identify common consumed foods and explore association between DDI with nutrient intake adequacy for 21 nutrients. A DDI considering both number of food group and allocated weights to each food group according to nutrient contribution was subsequently developed to estimate probability of nutrient inadequacy based on dietary diversity.

Results:

A total of 70,609 dietary records from two waves of CHNS were included. Defined as consumed by 1% or above in the dietary recalls, 943 commonly consumed foods were identified and categorized into 12 food groups. To reach nutrient adequacy for the 21 nutrients (protein, vitamin A, thiamin, riboflavin, niacin, folate, vitamin B6, vitamin B12, biotin, choline, vitamin C, calcium, phosphorus, potassium, magnesium, iron, zinc, selenium, carbohydrates, fiber and phytosterol), the minimal number of food groups consumed is 8 (out of 12) with the contribution of each food group specified. The Pearson's correlation between the developed DDI score and the actual nutrient adequacy was higher than 0.5 for 16 of the 21 nutrients assessed.

Conclusions:

The simplicity of the DDI approach and its reasonable correlation to probability of nutrient adequacy render it a promising user-friendly solution for dietary App in China.

Key words Digital Nutrition, Food logging, Probability of nutrient inadequacy, Dietary assessment, Dietary diversity

Category: Public Nutrition & Health

Association of Serum Carotenoids and Various Fruit and Vegetable Intakes on All-Cause Mortality: The Mikkabi Study

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Background and Objectives: Consumption of fruits and vegetables rich in carotenoids is a major component of a healthy diet. The aim of this study is to determine the association of serum carotenoids and consumption of various vegetables and fruits on all-cause mortality.

Methods: We used data from the Mikkabi study initiated in 2003. Participants who gave informed consent for long-term follow-up were included in the analysis. Dietary intake was estimated by a validated food frequency questionnaire. Serum carotenoids and food intake were log-transformed to improve normality and analyzed as continuous variables. The frequency of consumption of each vegetable and fruit was asked on an 8-point scale and analyzed on three levels: less than once a week (reference), 1-2 times a week, and more than 3 times a week. Endpoints were identified by Vital Statistics and Long-Term Care Insurance data. Hazard ratios and 95% confidence intervals were obtained by Cox regression analysis adjusted for age, sex, smoking, alcohol intake, exercise, body mass index, and total energy intake.

Results: During the 10,194 person-years of follow-up for 838 participants, a total of 71 deaths were identified. Low hazard ratios for all-cause mortality were observed for serum beta-carotene (hazard ratio 0.41, 95% confidence interval 0.25-0.68) and total carotenoids (0.53, 0.31-0.91). Green and yellow vegetable intake (0.69, 0.34-1.01) and total vegetable and fruit intake (0.59, 0.34-1.02) were marginally and inversely associated with all-cause mortality. The frequency of intake of many vegetables and fruits was inversely associated with all-cause mortality, with tomatoes, carrots, broccoli, and grated radish showing significant inverse associations.

Conclusions: Abundant fruit and vegetable intake was associated with lower all-cause mortality, as in previous studies. Tomatoes, carrots, and broccoli may be good sources of carotenoids for the Japanese diet.

Key words Carotenoids, Vegetable, Fruit, Mortality, Cohort study

Category: Public Nutrition & Health

Dietary intake status in Chinese infants: findings from interim data analysis in Bone And MicroBiOme Onset (BAMBOO) study

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Background and objectives. The Bone And MicroBiOme Onset (BAMBOO) study is an ongoing observational cohort study conducted in Tianjin, China, aiming to determine age-appropriate trajectories for microbiome maturation and bone development from 0-3 years, and to identify the influence of dietary factors on these processes. This analysis is to assess dietary intakes of infants 0- 12m using a subset data.

Methods. Infants who met the inclusion criteria were invited to join the study at Tianjin Women and Children's Health Center. The participants were recruited into 2 groups. Subjects in group 1 and 2 were recruited at birth and 6m, and will be followed up to 12m and 36m, respectively. The recruitment started in September 2021 and was completed in February 2023. In total 1380 children were recruited, 690 in each group. Dietary intake information is being collected by 3-day food diary starting from 4m of age. Nutrient intakes are being calculated using Chinese Food Composition database, complemented by pack labels and literature reviews.

Results. Dietary intake data of the first 100 subjects recruited in each group were analyzed. We found that the prevalence of exclusive breastfeeding was 60% at 4m and decreased to 15% at 6m. Eighty percent of 6-month-old infants consumed complementary foods with an average age of introduction at 5.4m. Compared to the recommendations, the percentages of infants with excessive Vitamin A intake were high, especially in infants aged 9-12m (70%), whereas the intakes of iron and zinc were low among infants aged 6-12m.

Conclusions. Results from interim data analysis showed an excessive intake of Vitamin A and low intakes of iron and zinc compared to recommendations, especially in children aged 6-12m which coincided with the introduction of complementary foods. Consistent with previous observations, these findings underscore the importance of nutritional education and guidance in weaning process.

Key words Early life nutrition; microbiome; bone health

Category: Public Nutrition & Health

Serum branched-chain amino acids and cardiovascular health events in Chinese community-dwelling older people in Hong Kong: a prospective cohort study

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Background and Objectives: The role of branched-chain amino acids (BCAA) in the development of cardiovascular disease remains controversial, with limited studies having been conducted among older adults. We aimed to investigate the association between serum BCAA and cardiovascular health events in Chinese community-dwelling older adults.

Methods and Study Design: This study was based on the Mr. OS and Ms. OS (Hong Kong) cohort, a community-based prospective cohort study. Serum BCAA (isoleucine, leucine and valine) was measured at baseline in 2,994 participants aged above 65 years. The primary outcome was incident cardiovascular health event, including overall cardiovascular disease (CVD), coronary heart disease (CHD), stroke and CVD death. Cox regression was used to evaluate the associations between serum BCAA and incident cardiovascular health events with hazard ratios (HRs) and 95% confidence intervals (CIs).

Results: We ascertained 298 incident CVD events up to 7 years of follow-up and 258 CVD deaths up to 14 years of follow-up. Serum BCAA was positively associated with risks of CVD (HR: 1.26; 95%CI: 1.04, 1.52; P=0.018) and CHD (HR: 1.28; 95%CI: 1.02, 1.61; P=0.034) for per SD of ln-transformed serum BCAA in older women, but not for stroke (HR: 1.28; 95%CI: 0.93, 1.77; P=0.128). Similar results were found for leucine and isoleucine, but not for valine. However, adjusting for history of diabetes attenuated the association between serum BCAA with CVD. No association between serum BCAA and incident CVD event was found for older men. In addition, there was no association between serum BCAA and CVD mortality.

Conclusions: Higher serum levels of total BCAA, leucine and isoleucine were associated with increased risk of incident CVD event in Chinese community-dwelling older women.

Key words branched-chain amino acids; isoleucine; leucine; cardiovascular disease; cardiovascular event; older adults.

Category: Public Nutrition & Health

Effect of Changes in Dietary Fiber on Lipid Profile of Obese Adults in Indonesia.

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Background and objectives: Increasing dietary fiber intake is believed to reduce the risk of obesity. This study aimed to analyze changes in dietary fiber on lipid profiles of obese adults in Indonesia.

Methods: Data was generated from the cohort study of non-communicable disease risk factors in Bogor City, Indonesia. The total number of subjects was 138 adults newly diagnosed with obesity in 2014 and 2016. A 24-hr recall and FFQ were used to take consumption data, while lipid profile data was collected by calorimetric enzymatic method. Data were analyzed using Generalized Estimating Equation (GEE).

Results: Total dietary fiber intake in the beginning was 9.6 g and increased to 10.8 g in the end of the observation. Consumption of vegetables, fruits, cereals, and nuts increased by 152.6 g, 64.1 g, 69.3 g, 4.3 g consecutively. At first, 52.2% of the subjects had lipid profile disorders (if one indicator out of four experiences high/low), and towards the end, 58% did. There were inclining percentage of people who had high levels of total cholesterol (13%), triglycerides (9.5%), and LDL (0.7%), whereas HDL remained stable. While waist circumference (WC) and carbohydrate were unaffected ($p>0.05$), age and occupation type had a significant impact on total cholesterol ($p<0.05$). In contrast, triglyceride was influenced by gender, occupation, and protein intake ($p<0.05$) and other factors namely age, education, behavior factors, WC, BMI and carbohydrate were not ($p>0.05$). Age and WC ($p>0.05$) had an impact to LDL, but education, occupation, WC, emotional mental disorder, BMI and protein and carbohydrate did not ($p>0.05$). HDL were influenced by gender and BMI ($p>0.05$), while education, occupation, emotional mental disorder, BMI, protein and carbohydrate intake were not affected ($p>0.05$).

Conclusions: The change in dietary fiber was not associated with the lipid profile since their intake was less than the minimum requirement (25 g).

Key words Dietary Fiber, Obesity, Lipid Profile

Category: Public Nutrition & Health

Dairy Consumption at Breakfast in Children from the South-East Asian Nutrition Surveys II (SEANUTS II): Associations with Nutrient Intake

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Background and Objectives: Children require adequate nutrient intake for their rapid biological and physical growth, and breakfast containing dairy is an important meal to provide sufficient nutrients. This study investigated the prevalence of dairy consumption at breakfast among South-East Asian children and explored its association with nutrient intake at breakfast and throughout the day.

Methods: Using the Malaysian dataset of the South-East Asian Nutrition Surveys II (SEANUTS II), 2438 Malay children aged 2 to 12 years were included. Questionnaires and a one-day 24-hour recall were used to collect data on sociodemographic and nutrient intakes. Descriptive analysis and Wilcox's robust tests with robust post-hoc tests were used for data analysis.

Results: Only 38% of children consumed dairy at breakfast, with younger children more likely to consume dairy than older children ($P<0.001$). Additionally, ~80% of children who had breakfast did not meet the recommended daily dairy intake of two servings per day, with an average intake of 0.5 servings per day. Children in all age groups consuming dairy at breakfast had a significantly higher intake of calcium and vitamin D at breakfast compared to those who did not ($P<0.001$). Moreover, breakfasts with dairy were associated with better overall quality of daily diet, as reflected in higher daily intakes of several important nutrients, including vitamin A, B1, B2, B12, C, β-carotene, iron, calcium, potassium, and phosphorus ($P<0.001$).

Conclusions: The findings of this study highlight the importance of promoting dairy consumption at breakfast among children in South-East Asia to improve nutrient intake at breakfast and in the overall diet, indicating that breakfast is an important meal contribution to the overall quality of diet. More information about children in Thailand, Indonesia, and Vietnam will be included in future analysis.

Key words Dairy, breakfast, children, nutrient intake, South-East Asia

Category: Public Nutrition & Health

Prevalence of Micronutrient Deficiencies, Anemia, and Nutritional Status among Thai Children Aged 4-12 Years - SEANUTS II Thailand

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Background and objectives: Micronutrient deficiencies (MNDs) and anemia can affect child growth and development, as well as other vital physiological functions, and can be present among undernourished children. This study assessed micronutrient status, prevalence of MNDs, and anemia among Thai children aged 4-12 years by their nutritional status.

Methods: Weight and height were measured and nutritional status was determined using WHO BMI-for-age growth references. Blood samples were collected from 631 children who participated in the South East Asian Nutrition Survey II (SEANUTS II) Thailand. Hemoglobin (Hb), biochemical micronutrient status, namely, ferritin, soluble transferrin receptor (sTfR), C-reactive protein, α-1-acid glycoprotein, vitamins A, B12, and D, and zinc were assessed.

Results: Overweight/obese children had significantly higher Hb concentration than normal weight children ($P < 0.05$), and significantly higher vitamin A concentration than normal weight and thin children ($P < 0.05$). In contrast, vitamin B12 concentration in overweight/obese children was significantly lower than in thin and normal weight children ($P < 0.05$). While mean ferritin and sTfR were not significantly different among groups, prevalence of all stages of iron deficiency (inclusive of those below cutoff for ferritin and above cutoff for sTfR) was highest among overweight/obese children, followed by thin children, and lowest among normal weight children. However, up to one-fifth of normal weight children had iron deficiency. Deficiencies of vitamins A, D, and B12, and zinc were low with no significant differences by nutritional status.

Conclusions: The findings suggest that overweight/obese children are at a higher risk of iron deficiency compared to normal weight and thin children, despite having higher concentrations of Hb and vitamin A. However, the prevalence of other MNDs did not differ significantly by anthropometric status. These results highlight the importance of targeted screening interventions for iron deficiency in overweight/obese children.

Key words Micronutrient deficiencies, nutritional status, Iron, Vitamin D, Zinc

Category: Public Nutrition & Health

Review of nutrient profiling systems supporting food policies in Asian and Pacific low- and middle-income countries

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Background and objectives: Micronutrient deficiencies, undernutrition, and overweight/obesity are prevalent in low- and middle-income countries. Nutrient profiling systems, initially developed to help reduce diet-related chronic diseases prevalence in Western countries, could be one solution to promote nutrient-dense foods in Asia. Our aim is to review nutrient profiling systems supporting low- and middle-income countries food policies in South-Asia and East-Asia and Pacific, and their relevance considering local nutritional challenges.

Methods: Food policies implemented in low- and middle-income countries were identified from the World Cancer Research Fund' s NOURISHING database, WHO' s GINA database, and the Global Food Research Program' s food policy maps. Prevalence of undernutrition, overweight/obesity and three micronutrient deficiencies plus summary exposure to twelve dietary risk factors were extracted from UNICEF, WHO, and World Bank datasets, NCD Risk Factor Collaboration results and the Global Burden of Disease study.

Results: Among 48 Asian and Pacific low- and middle-income countries, 15 countries used nutrient profiling systems to support nutrition policies, either for sugar and sweetened beverages taxation purposes or front-of-pack labelling. Three schemes were implemented in South and East Asia: the Healthier Choice logo in Thailand, China, Indonesia, and Malaysia which included thresholds for sugars, sodium, fats, dietary fibers and at least one micronutrient, except in China; the Traffic Light labels in Sri Lanka focusing on sugars, fats, and salt; and the Sangkap Pinoy Seal in the Philippines highlighting products fortified with iron, vitamin A and iodine. Of the 15 countries using nutrient profiling systems, five are facing a double burden of malnutrition. Dietary iron deficiencies are prevalent in most countries and vitamin A deficiencies are widespread across the Pacific islands.

Conclusions: Nutrient profiling systems encompassed both macro- and micronutrients in Indonesia, Malaysia, and Thailand which helps promote nutrient dense food and tackle regional nutritional challenges.

Key words Asia; nutrient; profiling; malnutrition; policy

Category: Public Nutrition & Health

Trends in cardiovascular disease and diabetes mortality attributable to BMI and fasting plasma glucose in Asia from 1990 to 2019

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Background and objectives: Asia faces many challenges in cardiovascular diseases (CVD) and diabetes mellitus (DM) prevention and treatment as continent with largest population being susceptible to these diseases and has worse outcomes. Hence, we aimed to analyze temporal trends in mortality from CVD and DM attributable to high Body-Mass-Index (BMI) and fasting plasma glucose (FPG) in Asia from 1990 to 2019.

Methods: We used Global Burden of Diseases Study 2019 database for Asia from 1990 to 2019. Joinpoint regression analysis was used for trend estimations and annual percent change (APC) was reported. We calculated weighted- average (AAPC) as summary measure of CVD and DM mortality trends from 1990 to 2019.

Results: Asian mortality rate of CVD and DM from high FPG was found higher compared to BMI in both 1990 and 2019. However, annual increase in DM mortality attributable to high BMI was found higher compared to FPG (4.8% vs 2.4%). Similarly, CVD mortality attributable to high BMI (AAPC=3.0) was higher than FPG (AAPC=2.5). High BMI and FPG caused mortality from both CVD and DM changed annually at higher rate in males compared to females from 1990 to 2019. From mid-1990s to the mid-2000s, an increasing trend of high BMI attributable to mortality from CVD (APC=3.6) and DM (APC=5.6) was observed. An increasing trend in high FPG attributable to mortality from CVD was found in early 2000s (APC=5.3) whereas DM was during mid-1990s (APC=3.0). During 2010s, high BMI attributable to DM (APC=4.9) and CVD (APC=3.2) mortality increased persistently.

Conclusions: We found rate of changes in mortality caused by high FPG was higher compared to BMI for CVD and DM, however, high BMI showed increased APC compared to FPG in Asian region. Therefore, eating balanced diet and being physically active should be encouraged to address and mitigate metabolic risk factors' effects.

Key words Body-Mass-Index; Cardiovascular disease; Diabetes Mellitus; Fasting Plasma Glucose; Joinpoint regression analysis

Category: Public Nutrition & Health

What Is the Evidence for Dietary-Induced DHA Deficiency in Human Brains?

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Background

Docosahexaenoic acid (DHA) is a major constituent of neural and visual membranes and is required for optimal neural and visual function. DHA is derived from food or by endogenous synthesis from α-linolenic acid (ALA), an essential fatty acid. Low blood levels of DHA in some westernised populations have led to speculations that child development disorders and various neurological conditions are associated with sub-optimal neural DHA levels, a proposition which has been supported by the supplement industry.

Method

This review searched for evidence of deficiency of DHA in human populations, based on elevated levels of the biochemical marker of n-3 deficiency, docosapentaenoic acid (22:5n-6).

Results

Three scenarios/situations were identified for the insufficient supply of DHA, namely in the brain of new-born infants fed with high-linoleic acid (LA), low-ALA formulas, in cord blood of women at birth who were vegetarians and in the milk of women from North Sudan. Twenty post-mortem brain studies from the developed world from adults with various neurological disorders revealed no evidence of raised levels of 22:5n-6, even in the samples with reduced DHA levels compared with control subjects.

Conclusions

Human populations most likely at risk of n-3 deficiency are new-born and weanling infants, children and adolescents in areas of dryland agriculture, in famines, or are refugees, however, these populations have rarely been studied. This is an important topic for future research

Key words docosahexaenoic acid (DHA); human; brain; deficiency of DHA; alpha-linolenic acid (ALA); de-ficiency of ALA; docosapentaenoic acid (22:5n-6); vegetarian; vegan

Category: Public Nutrition & Health

Development and Validation of a Food Frequency Questionnaire for Chinese Immigrants Living in Italy: the CHINT Study

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Background and objectives

Immigrants often substitute their traditional healthy diet with foods typical of the host country, that may increase risk of cancer and other chronic diseases. No validated instruments are available to assess the diet of Chinese immigrants in Italy. As part of the CHINT study on risk factors for cancer in the Chinese community of Milan, Italy, we are developing a food frequency questionnaire (FFQ) specific for Chinese immigrants to Italy/Europe.

Methods

The FFQ development includes: (a) a list of foods/dishes eaten; (b) food preparation/cooking methods and condiment use; (c) method for assessing portion sizes; (d) method for estimating energy and nutrient content. For (a) and (b) the starting-point is the Taizhou-FFQ which will be modified based on an Italian validated FFQ (It-FFQ) and findings of a dietary survey on Chinese immigrants in Milan. For (c), each food item is associated with portion size photographs (from It-FFQ) or other portion size indicators. New photographs will be obtained and validated for items not present in It-FFQ. For (d) Italian and Chinese food composition tables will be harmonized and in-house software applied to estimate the energy and nutrient content of each food item. The FFQ will be validated by comparison with a three-day food diary compiled by Chinese volunteers.

Results

The prototype FFQ has 120 food items, 17 cooking/preparation methods, and 15 condiment regimens. Testing on volunteers aims to reduce the number of food items, cooking methods and condiment regimens. Compilation time (food frequency only) is ~35 minutes; we aim for an FFQ, assessing both frequencies and portion sizes, that is compiled in <30 minutes.

Conclusions

We are developing the first validated FFQ in Europe to assess diets in Chinese immigrants. The FFQ will be important for monitoring and assessing nutritional status and risky behaviours in this important population.

Key words Dietary assessment; Food frequency questionnaire; Chinese immigrants, Cancer prevention.

Category: Public Nutrition & Health

Sleep Quality and its associated factors among postmenopausal women in Malaysia

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Poor sleep quality among postmenopausal women is gaining its attention not only because of its widespread prevalence, but also attributed to its' associations with unfavorable physical, psychological and cognitive changes. While it is more recognised in other populations, studies on sleep quality among postmenopausal women are relatively scarce in Malaysia. This study aimed to identify related factors of poor sleep quality among postmenopausal women which can provide a normative framework for efficient intervention in the future. A total of 304 postmenopausal women were recruited, with pre-tested questionnaires were used to obtain information on socio-demographic, anthropometric parameters, lifestyle behaviours (dietary quality and acidity, drinking behaviour of alkaline water, physical activity), presence of depression, anxiety and stress. Presence of metabolic syndrome and its components were ascertained among the respondents while sleep quality and its components were assessed using Pittsburgh Sleep Quality Index questionnaire. Poor sleep quality was prevalent with close to two-third of the respondents were poor sleepers and less than 15% had sleep duration more than 6 hours per day. With more than 80% had sleep latency, sleep insufficient and experienced sleep disturbance, these were corresponding with 70% of the women experienced daytime dysfunction. A total of 50-70% of the respondents were depressed, anxiety and stressed. In the hirarchy logistic regression analysis, high percentage of body fat, elevation of low density lipoprotein, triglycerides and fasting plasma glucose were associated with poor sleep quality. Postmenopausal women who were depressed, anxiety and stressed were 1.85, 1.62 and 1.60 times more likely to be poor sleepers. On the other hand, postmenopausal women who consumed low acidity diet and alkaline water had better sleep quality and longer sleep duration. This study provides important insights on modifiable factors that should be considered in the formlation of appropriate intervention to address sleep problem among postmenopausal women.

Key words Sleep Quality, Sleep Duration, body fat percentage, lipid profile, diet acidity

Category: Public Nutrition & Health

The effects of cigarette smoking and alcohol drinking on salty taste preference, based on Korean Community Health Survey 2010–2017

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Background/OBJECTIVES: Excessive sodium intake, smoking, and alcohol consumption are risk factors for multiple diseases, and the combination of these risk factors may have stacking effect. The study was designed to examine whether smokers and drinkers were more likely to have higher salty preferences and enjoy foods with more salt.

Methods: This study analyzed data from two four-year Korean Community Health Survey cycles (2010–2013 and 2014–2017) based on more than 16 million Koreans. The respondents' preferences for salty foods (specifically, their salt intake levels, whether they add salt or soy sauce to foods served on the table, and whether they dip fried foods in salt or soy sauce) and the odds ratio (OR) of the preference were examined among smokers and drinkers when adjusted for gender, age, body mass index (BMI), educational level, household income, marital status, and cigarette smoking or alcohol consumption status.

Results: Cigarette smoking and alcohol consumption were correlated with salty food. The adjusted odds ratios (AORs) for smokers who reported "Very high" and "High" salt intake levels were 2.09 (95% CI: 1.90–2.30) and 1.41 (95% CI: 1.38–1.44) ($P < 0.001$), and the AOR for drinkers were2.50 (95% CI: 2.26–2.77) and 1.52 (95% CI: 1.48–1.55) ($P < 0.001$). Cigarette smokers and alcohol drinkers also prefer adding salt or soy sauce or dipping fried foods in soybean more than non-smokers and non-drinkers based on the adjusted model. In addition, people who smoke and consume alcohol reported a more significant stacking effect regarding salty taste preference.

Conclusion: This large population-based study found that both smoking and alcohol consumption were associated with salty taste preferences. This can lead to excessive sodium intake, triggering the development of multiple disease processes.

Key words cigarette smoking, alcohol drinking, sodium, food preferences

Category: Public Nutrition & Health

Composition of 24-hour movement behaviour and its association with adiposity in Malaysian school children

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Background and Objectives

A healthy balance of movement behaviours, namely physical activity (PA), sedentary behaviour (SB) and sleep, is important for health, growth, and body composition of children. However, the combined effect of these movement behaviours on body fatness in children, particularly in Asian populations, is not well understood. This study aims to investigate time-use composition of 24-hour movement behaviour of Malaysian school children and its association with different indicators of adiposity.

Methods and Study Design

A total of 383 children (57% girls) with an average age of 9.7 years (±1.6 years), who participated in the South East Asian Nutrition Surveys II (SEANUTS II) Malaysia were included in this study. The children were asked to wear a tri-axial accelerometer on their non-dominant wrist for seven consecutive days to record their light PA (LPA), moderate-to-vigorous PA (MVPA), SB, and sleep duration. Based on data obtained from weight, height, and bio-impedance analysis, several indicators of adiposity were calculated, including body mass index-for-age (zBMI), waist circumference (WC), waist-to-height ratio (WHtR), body fat percent (BF%), and fat-mass index (FMI).

Results

On average, children spent the most time being sedentary (45% of their daily time), followed by sleeping (33%), LPA (17%) and MVPA (5%). The composition of movement behaviours was significantly associated with zBMI, WC, WHtR, BF% and FMI ($p<0.001$) using compositional regression analyses. Relative to other movement behaviours, spending more time in MVPA was negatively associated with all indicators of adiposity, except for zBMI.

Conclusions

The overall composition of movement behaviour was significantly associated with adiposity among Malaysian school children. Encouraging more MVPA relative to other behaviours could be an effective strategy for promoting healthy weight and preventing obesity among children.

Key words movement behaviour, time use, physical activity, sedentary behaviour, sleep, obesity, children

Category: Public Nutrition & Health

Estimation of Iron Bioavailability at the Indonesian Girl's Diet

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Background and Objectives: Adolescent girls are prone to iron deficiency anemia caused by consuming foods with low bioavailability of iron. There is no a national information the estimation of iron bioavailability among the Indonesian's girls. So, this study was to estimate iron bioavailability in adolescent girls aged 10-18 years in Indonesia. Methods and study design: The study used secondary data from the Indonesian Food Consumption Survey (IFCS) with a national cross-sectional study design included 11,766 adolescent girls. A 24 hours food recall was collected and the iron bioavailability using Du et al reference. Results: Mean daily intake of iron in subject is 10±7 mg/day and intake of heme iron (4±6 mg/day) is lower than non-heme iron (6±4 mg/day). The bioavailability of iron is only 9,7±0,8%, so the amount of iron absorbed is 1±1,5 mg/day. None of the adolescent girls in this study had an iron bioavailability greater than 15%. Cereals and processed foods (45,7%), fish and seafood (16,6%), nuts and processed foods (11,0%), meat and processed foods (6,2%), and also vegetables and processed foods (6,0%) are the food groups that contribute the most to total iron intake. Conclusions: The iron bioavailability among adolescent girls was lower compared to the Indonesian's iron RDA.

Key words Adolescent girls, Food consumption, Iron bioavailability, Iron intake

Category: Public Nutrition & Health

Spatiotemporal variations in mean height of 17-year-old students in 47 Japanese prefectures from 1974 to 2019

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Background and objectives: Mean height is an important indicator of nutritional status of populations. Although mean height has been studied across countries and territories over time, less is known about the trends and variations across subnational units. The objective of this study was to examine mean height of adolescents across 47 prefectures in Japan since the 1970s.

Methods: We used published data on prefectural mean height of 17-year-old students in Japan from the cross-sectional School Health Surveys implemented annually in 1972–1976 and 1979–2021. We linearly interpolated missing values in a few years and smoothed data by unweighted centered five-year moving averages. We quantified inequalities in prefectural mean height using the range and the coefficient of variation. We applied the k-means algorithm to group prefectures by mean height between 1974 and 2019.

Results: The median (range) of prefectural mean height was 168.6 cm (3.8) for boys and 156.1 cm (3.9) for girls in 1974. It then increased before plateauing at 170.9 cm (2.9) for boys and 158.0 (2.3) cm for girls in the late 1990s. Mean height was consistently lower in southwest prefectures and higher in prefectures in the Greater Tokyo Area and from the south-central area to the north-western area facing Eurasia in the main island. Both the range and the coefficient of variation stayed constant after the late 1980s, following rapid increases of mean height in the prefectures that originally had the lowest means.

Conclusions: Mean adolescent height increased and disparities between prefectures decreased over time, but the progress has been slow in the past few decades. A comprehensive policy framework is necessary to address diverse factors affecting variations in the physical growth of adolescents at the subnational level.

Key words mean height; adolescents; School Health Survey; inequalities; spatiotemporal analysis

Category: Public Nutrition & Health

Social Determinant of Food Variety Scores (FVS) among Public University Students in Peninsular Malaysia

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Background and objectives: Healthy diet can be measured by the variety of food intake. However, the quality of food intake might be influenced by the expenditure on food. This study aims to identify the food variety scores (FVS) and determinants among public university students in Peninsular Malaysia.

Methods: Multistage random sampling was used to select respondents from public universities in Peninsular Malaysia. A total of 427 undergraduate students completed a self-administered questionnaire at four randomly selected public universities in Peninsular Malaysia. The questionnaire consisted of information concerning demographic and socioeconomic backgrounds, food security status, meal expenditure, and food frequency questionnaire (FFQ) among university students. Frequency, chi-square, and logistic regression were used to analyse the variables.

Results: Mean age of respondents was 21.6 years, and 60.9% of the respondents were food insecure. Both genders spent about RM 300.00 ± 110.00 monthly on food. The mean of FVS was 88.52 ± 48.22. Meal expenditure ($x2 = 11.326$) was associated with low FVS. Respondents who allocated less than 67.98 USD (300.00 MYR) per month for food doubled the likelihood of having a low FVS (AOR= 2.326, 95% CI: 1.486-3.642).

Conclusions: A well-balanced diet includes a wide variety of foods. However, about two out of three students have lower FVS. It is possible to have a wide variety of food if the respondents have more money to spend on food. Further studies needed to determine the cost of a healthy diet among university students. Since a healthier diet help students perform better academically.

Key words meal expenditure; food variety scores; diet quality; food security; university students

Category: Public Nutrition & Health

Exploring Determinants of Successful Weight Losers in Use of a Smartphone Healthcare Application: Secondary Analysis of a Randomized Clinical Trial

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Interventions using smartphone healthcare applications have gain popularity recently and can be one of available and effective weight loss methods. However, it is currently unknown which factors of app usage and participants characteristics lead to successful weight loss. We analyzed baseline participants' characteristics and app usage over 3 months from 72 Japanese adults with overweight and obesity who were assigned to the intervention group of a previous weight loss trial. In the intervention groups, participants were asked to use an application that could provide nutritional advice by artificial intelligence (AI) for three months. A logistic regression analysis identified the following as the significant predictors of successful weight loss: participants who were male (OR 0.15; p = 0.017), walking faster (OR 4.88; p = 0.012), had a family medical history (OR 14.00; p=0.003), fewer dietary input in the first 2 weeks (OR 0.27; p=0.027) and more mood input in the first 2 weeks (OR 15.54; p=0.047). These results can help us to determine the characteristics of people who use smartphone application to successfully lose weight and we can apply these factors to our future healthcare app.

Key words smartphone application; nutrients advice; successful weight loss; predict factor

Category: Public Nutrition & Health

Changes in Fast Food Consumption among Peninsular Malaysian Primary Schoolchildren Over the Course of a Decade

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Background and objectives: Nutrition transition has accelerated children's adoption of unhealthy dietary patterns, including fast food consumption. Frequent consumption of fast food has been linked to higher risk of non-communicable diseases. This study aimed to investigate the changes in consumption of fast food at restaurants, by socioeconomic status over a decade.

Methods: A total of 1370 and 1425 children, representing 2.43 million and 2.31 million children aged 6-12 years from Peninsular Malaysia, participated in the South East Asian Nutrition Surveys, SEANUTS I (2009/2010) and SEANUTS II (2019/2020), respectively. Socioeconomic characteristics, including age, sex, residential region, living area, ethnicity, and household income, as well as fast food consumption pattern, were assessed through questionnaires. Changes in fast food consumption were determined by complex samples Pearson chi-square tests.

Results: Overall, only 7.5% of children consumed fast food at least once a week in 2010; however, the proportion tripled (22.6%, $p<0.001$) after a decade. Fast food consumption was doubled in East Coast, tripled in Central and Southern, and quadrupled in Northern. Consumption of fast food among children living in rural areas increased by five times (3.9% to 19.6%, $p<0.001$) and their urban counterparts consumption increased by 3 times (8.2% to 23.7%, $p<0.001$). Older children (10.00-12.99 years) quadrupled the consumption (6.8% to 29.3%, $p<0.001$), while it doubled among younger children (6.00-9.99 years) from 8.1% to 17.1% ($p<0.001$). Children from high-income group demonstrated a doubling in fast food consumption (12.1% to 22.5%, $p<0.05$), while those in middle-income group tripled (8.1% to 21.6%, $p<0.001$), and low-income group quadrupled (5.6% to 24.0%, $p<0.001$).

Conclusions: Increment in fast food consumption occurred across all socioeconomic groups over the past decade. Further investigation is needed to understand the motivation behind fast food consumption, which can in turn contribute to effective intervention development and policy planning.

Key words Children, Fast Food Consumption, Malaysia, Socioeconomic Status

Category: Public Nutrition & Health

Food and Nutritional Preferences among Tourist: A case study in Bali, Indonesia

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Background: Bali is one of the popular tourist destinations in Indonesia with all its potential. The receding pandemic provides the potential for the creation of a new tourism trend, especially in food and nutritional tourism. Indonesia, with its abundant tourist destinations, needs to look at this potential by creating unique and healthy attractions for tourists. This study aims to define tourist food and nutritional preferences in Bali, Indonesia.

Methods: This was employed a cross-sectional design with a total sample of 274. The participants were tourists visiting Bali and were recruited from various tourist centers, such as Kuta and Sanur beaches. Dietary preferences were collected through a modified and validated questionnaire, while nutritional preferences were collected using a food frequency questionnaire (FFQ)

Result: The study found that more females were domestic tourists, while more males were international tourists. Family-oriented tourism was more common among international tourists, while domestic tourists preferred to travel with friends. Both local and international tourists were not commonly vegan, vegetarian, or pescatarian. International tourists had allergies to eggs and nuts, while local tourists had allergies to fish. International tourists had a more diverse daily intake of energy sources, plant and animal proteins, vegetables, and fruits than domestic tourists. Tourists preferred snack and fruit-based foods over meat and fish during their travels.

Conclusion: It can be concluded that tourist food and nutritional preferences can be developed into a new type of tourism supported by nutritious food with significant potential. The potential of fruits in Indonesia to be processed into healthy snacks as tourist provisions is highly feasible.

Key words Food preferences, nutritional preferences, tourist

Category: Public Nutrition & Health

Factors Associated with Developmental Delay among Urban Poor Children in Malaysia

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Background and objectives: Developmental delays among young children have significant implications on their future health, academic performance, and socio-economic outcomes, particularly children from urban poor households. This cross-sectional study aimed to determine the associations between socio-demographic, nutritional, parental, and environmental factors with developmental delay among urban poor children aged 2 to 5 years old.

Methods: 480 children (girls=56.9%, mean age=3.32 years) recruited from public low-cost flats in Kuala Lumpur, Malaysia using multistage sampling method. Mothers completed a self-administered questionnaire regarding sociodemographic background, parenting style, mother's depressive symptoms, breastfeeding practices, food insecurity and home environment. Children's developmental delay was measured using the Ages and Stages Questionnaire Third Edition (ASQ-3). Anthropometric measurements of both mothers and children were measured.

Results: This study found that 61.2% of the children had developmental delay, with girls (64.1%) reporting higher rates of developmental delay than boys (57.5%). Binary logistic regression results showed that being a girl (AOR=1.557, 95% CI=1.045 – 2.320, p=0.030), overweight/obesity (AOR=2.327, 95% CI=1.025 – 5.280, p=0.043), not working mothers (AOR=1.784, 95% CI=1.205 – 2.641, p=0.004), larger household size (AOR=1.552, 95% CI=1.091 – 2.433, p=0.048), mothers with depressive symptoms (AOR=1.574, 95% CI=1.047 – 2.365, p=0.029), and food insecurity (AOR=1.986, 95% CI=1.331 – 2.962, p=0.001) increased the likelihood of developmental delay in children. However, higher scores in the physical environment (AOR=0.832, 95% CI=0.716 – 0.966, p=0.016) and variety in experience domains (AOR=0.846, 95% CI=0.722 – 0.992, p=0.039) of the Early Childhood Home Observation for Measurements of Environment (HOME) Inventory were associated with a lower likelihood of developmental delay.

Conclusion: This study highlights the need for early identification and monitoring of developmental status of urban poor children. Interventions targeting the children who are overweight and obese, mothers' depressive symptoms, food insecure households, and providing developmentally appropriate stimulating activities may improve child developmental status and reduce inequality.

Key words urban poor children; developmental delay; young children; food insecurity; home environment

Category: Public Nutrition & Health

Optimizing Food-Based Dietary Recommendations for Urban Poor Undernourished Children in Malaysia Using Linear Programming Approach

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Background and objectives: Poor diet quality may contribute to undernutrition, especially among young children from low-income households during the COVID-19 pandemic. To address this issue, affordable and healthy local food-based dietary recommendations (FBR) are needed. This cross-sectional study aimed to develop affordable and realistic FBR to improve dietary adequacy of urban poor undernourished children aged 24 to 47 months old from low-income households in Seremban district, Malaysia. **Methods:** Weekly food consumption of 85 undernourished children were obtained using a non-consecutive 3-day 24-hour dietary recall. FBR were developed by linear programming (LP) approach using WHO Optifood software. **Results:** Inadequate intakes of niacin, vitamin B6, folate, vitamin B12, calcium, and zinc were found. Folate was identified as the absolute problem nutrient, while vitamins B6, B12, C, iron, and zinc were challenging to achieve even when the diet was optimized. Full cream milk, chocolate malted milk, cornflakes, chicken egg, and orange were the top five locally available nutrient-dense foods that would fill these nutrient gaps. The developed FBR were 3 servings/day of grains (of which 1 serving/day of cornflakes), 1 serving/day of fruits (of which 3 servings/week of vitamin C-rich fruits and 3 servings/week of papaya), 2 servings/day of dark green leafy vegetables, 2 servings/day of meat, fish and eggs (of which 1 serving/day of eggs), 1 serving/day of legumes, nuts and seeds, and 1 serving/day of dairy products. **Conclusion:** These findings suggest that a healthy, balanced and affordable FBR should be implemented to improve nutrient adequacy at a minimum cost of the undernourished children in low-income households.

Key words linear programming, local food-based dietary recommendations, Optifood, key problem nutrient, undernourished children

Category: Public Nutrition & Health

Linear Regression Analysis of Dietary Nutrients and Obesity Using NHANES Data

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Background and objectives: Obesity has turned into a worldwide epidemic often associated with unhealthy food intake and lifestyle. Obesity and overweight lead to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance. Waist circumference (WC) has been widely used to assess the abdominal obesity. The purpose of this study was to assess the associations of individual nutrients with WC as well as the metabolic syndrome (MS) in the 1999 - 2014 National Health and Nutrition Examination Surveys (NHANES).

Methods: Data of 12,284 participants aged 18 and above were extracted from NHANES. MC is defined according to NCEP ATPIII (National Cholesterol Education Program Adult Treatment panel III) criteria. Linear regression analyses stratified by gender were performed on a nutrient-by-nutrient basis. Each nutrient was first adjusted for total caloric intake by the residual method, followed by the regression adjusted for age, race, education, poverty to income ratio, and physical activity. P values were Benjamini-Hochberg corrected for false discovery rate to maintain an alpha level of 0.05 for analyses.

Results: After adjusting the confounders, there were some gender differences of the association between nutrients and waist circumference and metabolic syndrome. For the metabolic syndrome, females negatively demonstrated associations with fiber, magnesium, vitamin E, B2, B6 (p=1.76E-04 to 3.74E-04), while males showed the associations with the total and food folate (p=2.64E-04 and p=5.88E-04). For waist circumference, both males and females showed negative association with fiber (p=2.88E-04 and p=6.67E-06), and positive association with sodium and PFA20:4 (p=1.12E-05 to 1.58E-09). Males also demonstrated positive association with other fat including total fat, saturated fat, monounsaturated fat and cholesterol as well as protein (p=2.40E-05 to 3.24E-07), and negative association with vitamin A, E, C and K, as well as carbohydrate (p=7.17E-04 to 3.93E-09).

Conclusions: Nutrients are associated with WC and MS in a gender-differentiated manner.

Key words obesity, nutrients, linear regression, waist circumference, metabolic syndrome

Category: Public Nutrition & Health

Prevalence of anemia and iron deficiency anemia in various hemoglobin type patterns among Thai children aged 4-12 years

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Background and objectives: Globally, hemoglobin (Hb) disorders are common hereditary hemolytic anemias. While anemia and iron deficiency anemia prevalence have been reported in other Thai age groups, this study provides the prevalence rates of anemia and iron deficiency anemia (IDA) of various hemoglobin patterns among Thai children aged 4 to 12 y.

Methods: Blood samples were collected from 635 children who participated in the South East Asian Nutrition Survey II (SEANUTS II) Thailand. Complete blood count and serum ferritin, soluble transferrin receptor (sTfR), C-reactive protein, ∝-1-acid glycoprotein were analyzed. Hemoglobin typing was performed by electrophoresis.

Results: Participants were classified into eight groups by Hb pattern, mean corpuscular volume, mean corpuscular hemoglobin (Hb), and red cell morphology. Sixty percent of children had Hb disorders, the most common being ∝-thalassemia 1 trait (20.0%) and Hb E trait (19.2%). Only 2.5% and 2.0% had β-thalassemia trait or Hb E homozygous, respectively. Anemia prevalence was highest in the Hb E homozygous group (69.2%), followed by the β-thalassemia trait (37.5%), ∝- thalassemia 1 trait (11.8%), and Hb E trait (8.2%) groups, and lowest in the normal Hb type group (1.6%). IDA prevalence determined by ferritin and/or soluble transferrin receptor was significantly higher in the Hb E homozygous (53.8%), β-thalassemia trait (20.0%), and ∝-thalassemia 1 trait (5.6%) groups compared to the normal Hb type group (0.4%) ($P<0.05$).

Conclusions: Although homozygous Hb E and β-thalassemia trait are relatively uncommon, they require attention because of the high prevalence of IDA. IDA is not a significant problem in the general population, including normal Hb type, ∝-thalassemia 1 trait, and Hb E trait. These findings provide valuable insights into anemia and IDA prevalence in different Hb types among Thai children, which can provide valuable guidance for effective treatment.

Key words iron deficiency anemia, ferritin, hemoglobin, soluble transferrin receptor, thalassemia

Category: Public Nutrition & Health

Body Image Perception and Nutritional Status in 10-12-year-old Thai Children - South East Asian Nutrition Survey II (SEANUTS II) Thailand

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Background and objectives: Body image reflects a person's perceptions and feelings about their physical appearance as well as their nutritional status, which can affect children's health as adults. This study investigated the prevalence of body image dissatisfaction and its association with nutritional status among 10-12-year-old Thai children.

Methods: This study encompassed 540 children (278 boys and 262 girls) who participated in SEANUTS II Thailand. Body image perception was assessed using seven boys or girls figure silhouettes ranging in size from very thin to obese. Children selected the silhouette they believed was most similar to their own and the silhouette they most desired. Discrepancy between the actual figure and the ideal figure represented body image dissatisfaction. Height and weight were measured and nutritional status was determined using WHO BMI-for-age growth references. The association between body image dissatisfaction and nutritional status was assessed using the Chi-squared test.

Results: The prevalence of body image dissatisfaction was 77.4%. A high percentage of body image dissatisfaction was found among 59.2% of girls and 51.8% of boys who wanted a thinner body figure than their own, while 22.1% of girls and 21.9% of boys wanted a larger body figure. BMI status was significantly associated with body image dissatisfaction ($P < .001$). Overweight/obese children (>90%) had greater body image dissatisfaction than children of normal weight (69.2%). Body dissatisfaction and desire for a thinner body were more frequent among boys and girls with a higher BMI.

Conclusions: The proportion of children with body image dissatisfaction was high, especially among girls, and associated with sex and nutritional status. Overweight/obese children had a higher proportion of body image dissatisfaction. Programs to promote a healthy weight and healthy eating habits should be implemented among children to prevent eating disorders and other health-related concerns.

Key words Body image, Body image dissatisfaction, Nutritional status, Body mass index

Category: Public Nutrition & Health

Infant and Young Child Feeding Practices in Thai Children Aged 6-23 Months - SEANUTS II Thailand

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Background and objectives: Infant and young child feeding (IYCF) practices are important for the growth and nutritional status of children under 2 years old. This study aimed to determine percent compliance regarding IYCF practice indicators among children aged 6 to 23 months, as well as to compare percent compliance among children aged 6-8 months, 9-11 months, and 12-23 months.

Methods: The study comprised 738 Thai children (370 boys and 368 girls) aged 6 to 23 months who participated in the South East Asian Nutrition Survey II (SEANUTS II) Thailand. Compliance with key IYCF practice indicators (i.e., ever breastfed, minimum acceptable diet, and other indicators) were computed according to WHO-UNICEF (2021) definitions. Kruskal Wallis test and Pearson Chi-Squared test were used to test statistical differences among age groups.

Results: Overall, children aged 6-23 months had a low prevalence of stunting, wasting, underweight, overweight, and obesity, while 95% of children were ever breastfed (EvBF). As for complementary feeding, compliances with minimum dietary diversity (MDD), minimum acceptable diet (MAD), and egg and/or flesh food consumption (EFF) were higher in children aged 9-11 months and 12-23 months compared to among children aged 6-8 months (66.9% and 72.1% vs. 35.3%, $P < 0.001$; 61.3% and 67.1% vs. 33.6%, $P < 0.001$; 90.6% and 95.9% vs. 59.7%, $P < 0.001$, respectively). Additionally, the percentage of vegetable or fruit consumption among children aged 9-11 months and 12-23 months was higher than among children aged 6-8 months (84.5% and 84.9% vs. 66.4%, $P < 0.001$).

Conclusions: The prevalence of EvBF was high in children, while the prevalence of MDD, MAD, EFF and vegetable or fruit consumption were higher among older children. IYCF indicators can be used as background information for improving children's diets to optimize their growth and development.

Key words Infant and young child feeding, IYCF practices, breastfed, breastfeeding, SEANUTS

Category: Public Nutrition & Health

Correlates of metabolic syndrome in middle-aged and older Chinese adults in Malaysia

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Background and objectives: Metabolic syndrome (MetS), is defined as a cluster of metabolic disorders, covering central obesity, hypertension, dyslipidemia and disturbed glucose metabolism, and it has significantly increased risk of chronic diseases and healthcare burden worldwide, including in Malaysia. Thus, the main objective of the study was examining the non-modifiable and modifiable dietary and lifestyle factors on the MetS risk among 230 community-based middle-aged Chinese adults and elderly Kelantan, Malaysia.

Methods: Numerous measurement procedures such as socio-economic and health status, anthropometry and body composition assessments by DXA device, dietary intake pattern, and lifestyle behavioral practices, blood biochemical markers were conducted. The classification of MetS risk was determined based on the new revised international joint consensus criteria.

Results: The prevalence of MetS was 19.6%, with males had higher MetS prevalence than females. Multivariate logistic regression analyses showed that age, gender, BMI and daily moderate-to-vigorous physical activity (MVPA) levels were significant independent determinants on the MetS risk, after full adjustments for all potential known biological, dietary and lifestyle confounding factors. MetS risk was increased with increase age of ⩾60 years (Adjusted OR: 2.27) males (Adjusted OR: 2.18), higher BMI levels (Adjusted OR: 4.02) and daily MVPA factor (Adjusted OR: 0.39). Higher BMI and MVPA were emerged as significant independent modifiable lifestyle factors, whereby participants with overweight and obese, and lower daily MVPA levels of <1hour had increased MetS risk than those with lower normal BMI and higher MVPA levels.

Conclusions: Modifiable BMI and lifestyle practices such as high daily active physical activity levels decrease the risk of MetS. Thus, effective dietary and lifestyle intervention strategies should emphasize to reduce the risk of metabolic syndrome disorder with aging in order to prevent the risk of cardiometabolic disease risks.

Key words Metabolic syndrome (MetS), dietary, lifestyle, cardiometabolic health, older adults

Category: Public Nutrition & Health

Combined exposure to multiple essential metals and cadmium at early pregnancy on GDM: a prospective cohort study

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Background and Objectives: The association between prenatal exposure to essential metals and gestational diabetes mellitus (GDM) is poorly understood. This study aims to examine the associations between serum calcium (Ca), iron (Fe), zinc (Zn), copper (Cu), magnesium (Mg) and cadmium (Cd) concentrations in early pregnancy and GDM risk in Chinese pregnant women.

Methods and Study Design: A total of 1168 pregnant women were included in this prospective cohort study. The concentrations of serum metals were measured using polarography method before 14 gestational weeks and an oral glucose tolerance test was conducted at 24–28 gestational weeks. Binary logistic regression analysis and restricted cubic spline were applied to evaluate the association between serum individual metal and GDM. Bayesian kernel machine regression (BKMR) and weighted quantile sum (WQS) regression were used to assess the associations between mixed metals exposure and GDM risk.

Results: The mean concentrations of Zn (124.65 vs. 120.12 μmol/L), Fe (135.26 vs 132.21 μmol/L) and Cu (23.33 vs. 23.03 μmol/L) in the GDM group were significantly higher than those in the control group. Single-element modeling results suggested second and fourth-quartile maternal Zn and Fe concentration, third and fourth-quartile Cu concentration and fourth-quartile Ca concentration were associated with an increased risk of GDM, compared to first-quartile values. Restricted cubic spline analysis showed U-shaped and non-linear relationships between Cd and GDM. According to the BKMR models and WQS analyses, a six metals mixture was significantly and positively associated with the risk of GDM, but the individual effects were all attenuated. Additionally, Cd, Zn and Cu contributed the most strongly to the association.

Conclusions: Serum Zn, Cu, Fe and Ca exposure during early pregnancy showed a positive association with GDM in the individual evaluation. The multiple-evaluation showed high levels of metals mixture, particularly Cd, Zn and Cu, may promote the development of GDM.

Key words Metals; Gestational diabetes mellitus; Mixed exposure; Zinc; Copper; Cadmium

Category: Public Nutrition & Health

The association between anthropometric status and child eating behaviour among preschool children aged 2-4 years in some rural areas in Umuahia South Local Government Area of Abia State, Nigeria.

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Introduction and objective: Eating behaviour at the childhood level plays a pivotal role in the overall health, and eating rate could also contribute to the outcome of the nutritional status of an individual. The study was focused on the association between anthropometric status and child eating behaviour.

Methodology: Purposive sampling method was used to identify 290 households with preschool children, however, 256 of the households consented to participate in the study and their children aged 2-4years were recruited across the study areas using purposive sampling method. The caregivers were interviewed on the eating behviour of their children using a semi-structured child eating behaviour module, and anthropometric measurement of the children were taken. WHO Anthro-software for child growth standard was used to categorize anthropometric status of the preschool children, while correlation was performed to determine association between variables under study, and $P < 0.05$ was significant.

Results: Mean comparison of child eating behaviour by gender showed significant difference ($P < 0.05$) between male and female children in their eating behaviour with respect to enjoyment of food and satiety responsiveness. Some (26.6%, 20.7% and 16.4%, respectively) of children were wasted, stunted and underweight. A significant association ($P < 0.05$) was observed between body mass index-for-age and food fussiness behaviour of the children. There was also a significant difference ($P < 0.05$) between weight-for-age and food fussiness behaviour of the children.

Conclusion: The study showed that child eating behaviour may have contributed to the anthropometric status of the children, however, differences in their eating behviours by gender was observed.

Key words Child Eating Behavior, Preschool Children, Anthropometric Status

Category: Public Nutrition & Health

Demand for nutritious lunch and its influencing factors for medical personnel in a hospital in Deyang, China: a cross-sectional study

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Background:

A great number of research works have showed that the unhealthy dietary behavior of medical personnel is very prominent. There is an urgent need to provide healthy food for medical personnel to promote their health. This study aimed to investigate the demand of medical personnel in a hospital in Deyang, China for nutritious lunch and its influencing factors, and to provide reference for the introduction of nutritious lunch.

Methods: Cross-sectional survey of medical personnel in a hospital in Deyang, China using an anonymous online questionnaire via special survey website. The questionnaire consisted of demographic characteristics questions, specific questions on health related factors and questions about nutritious lunch requirements. Multivariate logistic regression model was constructed to determine the influencing factors of demand for nutritious lunch.

Results: A total of 458 medical personnel (58 males and 400 females) aged 20–56 years (mean ± SD: 30.84 ± 6.92years) were included. Of the medical personnel, 14.1% were overweight or obesity (BMI≥24kg/m2). A total of 336 (73.4%) medical personnel indicated they would choose a nutritious lunch if it was offered. And overweight or obesity medical personnel preferred to choose high-fiber and low-fat nutritious lunch (P=0.000), were willing to pay more for a nutritious lunch (P=0.004) and were more likely to refer to the nutrition label (P=0.003). The multivariate logistic regression analysis showed that department, number of meals per day, lunch place and exercise frequency were significantly associated with the demand for nutritious lunch among medical personnel.

Conclusion: In China, the medical personnel are facing a great deal of overtime work and generally showing unhealthy dietary behaviors. In our study, medical personnel showed strong demand for nutritious lunch. Therefore, there is an urgent need to provide nutritious lunch for medical personnel to promote their health.

Key words Medical personnel; Unhealthy dietary behavior; Nutritious lunch

Category: Public Nutrition & Health

坚果摄入与认知能力变化之间的关联在认知衰退风险人群中的研究

Nut consumption and changes in cognitive performance in a population at risk of cognitive decline

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Background and objectives: Tree nuts and peanuts (henceforth, nuts) are nutrient-dense foods rich in neuroprotective components, thus their consumption could benefit cognitive health. However, evidence to date is limited and inconsistent regarding the potential benefits of nuts for cognitive function. Therefore, the aim of this study was to prospectively evaluate the association between nut consumption and 2-year changes in cognitive performance in older adults at cognitive decline risk.

Methods: 6,630 participants aged 55-75 years (mean age 65.0±4.9 years, 48.4% women) with overweight/obesity and metabolic syndrome, completed a validated semi-quantitative food frequency questionnaire and a comprehensive battery of neuropsychological tests at baseline and after a 2-year follow-up. Composite cognitive scores were used to assess global, general, attention, and executive function domains. Nut consumption was categorized as <1, ≥1 to <3, ≥3 to <7, and ≥7 servings/week (1 serving=30 g). Multivariable-adjusted linear regression models were fitted to assess associations between baseline nut consumption and 2-year cognitive changes.

Results: Nut consumption was positively associated with 2-year changes in general cognitive function (p-trend <0.001). Compared to participants consuming <1 serving/week of nuts, those categorized as consuming ≥3 to <7 and ≥7 servings/week showed more favorable changes in general cognitive performance (β z-score [95% CI]= 0.06 [0.00,0.12] and 0.13 [0.06,0.20], respectively). No significant changes were observed in the multivariable-adjusted models for other cognitive domains assessed.

Conclusion: Frequent nut consumption was associated with smaller decline in cognitive performance over a 2-year period in older adults at risk of cognitive decline. Further prospective cohort studies and randomized clinical trials to verify our findings are warranted.

Key words cognition, cognitive decline, nuts, older people, unsaturated fatty acids

Category: Public Nutrition & Health

Study on lactose intolerance in Mongolia

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Background: The population of Mongolia has a high genetic predisposition for lactose intolerance. However due to relatively high consumption of milk and dairy products, especially fermented dairy products, the symptoms were not that severe. In recent years, the decrease in the consumption of dairy products by Mongolian citizens was more evident in the urban population, especially in school-aged children.

Methods: In this study, a total of 421 school children under the age of 18 and 253 people over the age of 18 voluntarily participated. The participants filled out a questionnaire to evaluate their symptoms, their background, and their eating habits in terms of milk and dairy products.

Results: About 55% of the children who participated in the study did not show symptoms of lactose intolerance, while the remaining 45% already had them. On the other hand, about 95% of adults surveyed have already developed symptoms of lactose intolerance. When looking at the relationship between milk and dairy products and age, elementary school children's daily consumption was the highest, while senior students said that they consumed it several times a week. This kind of repetition was also the case for adults, who showed that with age, the regular consumption became less stable, and the cause of symptoms reduced their use.

Conclusion: It was determined that all participants of the study lacked knowledge about lactose, and the frequency of consumption of milk and dairy products was low, and so the effects of unpleasant symptoms on the body were directly related to this. The affected persons tend to reduce their dairy and thus calcium intake. It is concluded that in the future, these factors should be taken into careful consideration when conducting a similar study of lactose intolerance representing the population of Mongolia.

Key words Lactose intolerance, Nutrition, Survey, Healthy habits, Mongolia

Category: Public Nutrition & Health

Serum 25-hydroxy Vitamin D in Thai Children and Its Relation to Ultraviolet Exposure, Vitamin D Intake, and Body Mass Index

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Background and objectives: Adequate vitamin D levels in blood improve bone health and may reduce cardiovascular disease, hypertension, type I diabetes, cancer, and infections. Few studies, however, have reported the impact of ultraviolet (UV) exposure on serum 25-hydroxyvitamin D [25(OH)D] production in children. Consequently, this study assessed serum 25(OH)D in Thai primary school children and its relation to UV exposure, dietary vitamin D intake, and body mass index.

Methods: This cross-sectional study was based on results from the South East Asian Nutrition Survey II (SEANUTS II) Thailand. Data were collected from 401 children aged 6-12 y from January to December 2020. Serum 25(OH)D levels were assessed by Liquid Chromatography with tandem mass spectrometry. UV exposure was determined by polysulphone film badges and dietary vitamin D intakes by 24-hour dietary recall. Body mass index was also assessed for all children.

Results: The children had a median (P25, P75) serum 25(OH)D of 76.9 (63.2, 93.1) nmol/L; UV exposure of 0.7 (0.5, 0.9) SED/day; dietary vitamin D intake of 3.6 (2.0, 5.6) μg/day; and a body mass index for age Z-score of -0.0 (-1.0, 1.3). Most children (94.5 %) had sufficient vitamin D levels (≥ 50 nmol/L). After controlling for covariates in multiple linear regression analysis, the results showed that low serum 25(OH)D levels were associated with females, older children, and low UV exposure.

Conclusions: Consistent sun exposure and regular consumption of vitamin D-rich foods should be promoted among young children to maintain healthy vitamin D levels in the blood.

Key words vitamin D, 25(OH)D, ultraviolet exposure, children, SEANUTS II

Category: Public Nutrition & Health

基于机器学习的高中生隐性饥饿风险预测模型
Prediction of Hidden Hunger in High School Students Based on Machine Learning

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Background and Objectives: Hidden hunger is the presence of multiple micronutrient deficiencies associated with various diseases, such as diabetes, cardiovascular disease, and cancer. According to statistics, more than two billion people worldwide suffer from hidden hunger, yet there is still a lack of effective prediction methods. Machine learning is a scientific discipline that focuses on how computers learn from data, which has been widely used in the medical field and has achieved satisfactory results. In this study, we aimed to build an accurate model for predicting the risk of hidden hunger among high school students using machine learning algorithms based on the subjects' demographic characteristics, nutritional awareness levels, and lifestyle habits.

Methods and Study Design: We used a multistage stratified whole-group random sampling method to select 9,038 high school students in 11 cities of Anhui Province, China, for a questionnaire survey and assessed their risk level by the Hidden Hunger Assessment Scale. Then, we used Random Forest, Support Vector Machine, XGBoost, Deep Learning, and Decision Tree algorithms to build the risk prediction models. Furthermore, we validated the models' reliability using 587 samples from Bengbu city. In addition, we presented the top ten important factors affecting hidden hunger among high school students based on the obtained prediction model.

Results: Random forests had the most powerful predictive capability among the five algorithms, with AUC = 0.758, sensitivity = 0.743, and specificity = 0.613 in the real external validation set. We found that the frequency of eating fruits, paying attention to nutritional balance in daily life, satisfaction level of the daily diet, level of nutrition awareness, mother's literacy level, frequency of eating coarse grains, place of origin, and father's literacy level were the ten most important factors.

Conclusions: We developed an accurate and effective model for predicting the risk of hidden hunger among high school students.

Key words Hidden Hunger; Machine Learning; Micronutrients.

Category: Public Nutrition & Health

玛琅女模特的肥胖饮食和瘦身对身体的不满

Fat Diets and The Skinny on Body Dissatisfaction of Female Models in Malang

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Female models often feel unsatisfied with their body shape because of social pressure that requires assumption is a thin body shape and low body weight. Most of female models go on a diet in their daily life because they still feels dissatisfied with their body. The research intended to analyses fad diets, nutritional status, and body dissatisfaction of female models in Malang. The research design was cross-sectional in 52 female models aged 18 - 25 years who were selected by simple random sampling. The data of fad diets used in the questionnaire, nutritional status data using BMI method and body dissatisfaction using questionnaire BSQ. Data analysis used the chi-square test. The participants of this research showed the fad diets (70%), had a skinny at high level (27%), skinny at mild level (48%), and normal (25%) of nutritional status, and experienced of body dissatisfaction (77%). There was a significant (p=0.028) correlation between fad diets and body dissatisfaction (r = 0.279), and also there was a significant correlation (p=0.05) between the skinny level and body dissatisfaction (r = 0.25). This research finding that the female models who exposed by fad diets and skinny level caused by the body dissatisfaction of body distortion among female models. Female models are has the potential to do fad diets due to body dissatisfaction, even with a skinny level condition among standard size models.

Key words Fad diets, Skinny level, Body dissatisfaction, Female models

Category: Public Nutrition & Health

中国农村人群水果蔬菜的摄入量与2型糖尿病风险的剂量-反应关系研究

The dose-response relationship of fruit and vegetable intake and risk of type 2 diabetes: The Henan Rural Cohort Study

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Background and Objectives: Fruit and vegetable have been demonstrated to be of benefit in reducing the risk of various chronic disorders including obesity, stroke, and cardiovascular disease. However, findings regarding the relationship between fruit, vegetable and type 2 diabetes are contradictory. This study was designed to examine the association between fruit and vegetable intake and the risk of type 2 diabetes and to further evaluate the dose-response relationship.

Methods and Study Design: A total of 38798 adults were recruited from the Henan Rural Cohort Study. Fruit and vegetable intake was assessed by a validated food-frequency questionnaire. Logistic regression and restricted cubic splines analysis were conducted to calculate the odds ratio for type 2 diabetes relative to fruit and vegetable intake in multivariate models and investigate the dose-response relationship.

Results: Higher intake of fruit or combined fruit and vegetable was in connection with a lower risk of type 2 diabetes, after adjusting for multiple confounders. After analyzing the dose-response relationship, we found that the odds of type 2 diabetes decreased significantly with fruit consumption between 250 and 540g/day or both fruit and vegetable intake between 600 and 1500 g/day. Fruit individually and combined fruit and vegetable intake were negatively associated with type 2 diabetes risk in all subgroups. And that the negative correlation between fruit consumption and type 2 diabetes was more pronounced in non-current smokers and non-current drinkers.

Conclusions: High intake of fruit alone or combined fruit and vegetable is related to a reduced risk of type 2 diabetes. Individuals who consume 250-540g/day of fruit or 600-1500g of both fruit and vegetable appear to benefit most in reducing their risk of diabetes.

Key words Fruit, vegetable, dose-response, type 2 diabetes, Chinese

Category: Public Nutrition & Health

晚期早产儿的蛋白质需求模型分析

Modeling Protein Requirements for Late Preterm Infants

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Background Late preterm infants (LPT) are those born at $34^{0/7}$-$36^{6/7}$ weeks of gestation. Dietary protein intake of LPT cannot simply follow other newborns. However, dietary protein requirements remains unclear for LPT. **Objectives** This review aimed to model dietary protein requirements for LPT. **Methods** This review searched PubMed, Cochran, CNKI, Wanfang database to collect data on protein requirements for preterm and low birth weight infants and adopted INTERGROWTH-21st to obtain the appropriate birth weight for preterm infants at $34^{0/7}$ - $36^{6/7}$ weeks of gestation. And the protein requirements for LPT is set to based on appropriate growth velocity based on Intergrowth-21st. Only AGA subjects were included in the study. **Results** The estimates of dietary protein requirements for LPT suggested that the protein requirements for AGA at 34, 35 and 36 weeks of gestation to achieve optimal body weight at term were respectively 3.2-3.5g/kg/d, 2.9-3.1g/kg/d and 2.6-2.9g/kg/d,which had no significant difference between boys and girls. With advancing of gestational age and birth weight increasing, the dietary protein requirements for LPT showed a decreasing trend. **Conclusions** The estimated protein requirements for LPT are 2.6-3.5g/kg/d ,which may provide a basis for estimation of the better feeding patterns and amounts for obtaining appropriate proteins. However, the results of this review are modelled, so further studies are needed to test the suggested value.

Key words Late preterm infants; Dietary protein; Gestational age; Intrauterine growth rate; Weight gain

Category: Public Nutrition & Health

西方化饮食模式及脂质谱与正常体重型腹型肥胖的关联

The associations of a westernized dietary pattern, lipidomic profiles, and normal weight central obesity

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Background and Objectives: Etiological factors and biological mechanisms of abdominal adiposity accumulation are still not clear. We aim to evaluate the associations of dietary patterns with normal weight central obesity (NWCO), and explore “dietary pattern-lipids-NWCO” correlation patterns.

Methods and Study Design: The present study was a sub-study based on the baseline data and blood samples from the Regional Ethnic Cohort Study in Northwest China (RECS). NWCO was defined as normal body mass index (18.5-25 kg/m^2) but central obesity (waist circumference ≥90 cm for men or ≥80 cm for women). Dietary intake frequency of 28 major food items for individuals with NWCO (n=150), or propensity score-matched normal weight controls (n=150) were collected by food frequency questionnaire. A total of 1246 serum lipids were quantified by high-coverage-targeted lipidomics. Dietary patterns were derived by factor analysis. Conditional logistic regression was used to assess the associations of dietary patterns and lipidomic profiles with NWCO, and linear regression was used to evaluated the associations between related dietary patterns and lipidomic profiles. Pearson’s correlation test was used to explore correlation patterns between β estimates of “dietary patterns-lipids” and ORs of lipids-NWCO associations.

Results: Three dietary patterns were identified, and a westernized dietary pattern (characterized as high intakes of sugar-sweetened-beverages and meat but low intakes of fresh vegetables, fruits, and nuts) showed robust positive association with NWCO. A positive correlation pattern of “westernized dietary pattern-lipidomic profiles-NWCO” was observed ($r = 0.528$, $P < 0.001$). In the perspective of lipid classes, the correlations for glycerolipids ($r = 0.539$, $P < 0.001$) and sphingolipids ($r = 0.505$, $P < 0.001$) were stronger than others.

Conclusions: The “dietary pattern-lipidomic profiles-NWCO” correlation may shed some fresh insights into the role of circulating lipids, especially for glycerolipids and sphingolipids, in the association between dietary pattern and NWCO risk.

Key words normal weight central obesity, dietary pattern, lipidomics, obesity phenotypes

Category: Public Nutrition & Health

老年人中医体质和握力的相关性研究

Study on the correlation between TCM constitution identification and grip strength measurement in the elderly

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Abstract **Objective** To explore the correlation between traditional Chinese medicine constitution and grip strength in the elderly. **Methods** The traditional Chinese medicine physical constitution identification data and the grip strength data of elderly people participating in community physical examination were collected from 2018 to 2019. The correlation between the results of physical identification and the results of grip strength measurement was analyzed. **Results** A total of 546 elderly patients were included, including 213 males and 333 females, and basic information such as age, height, weight and disease status were collected. The left hand grip strength and right hand grip strength of the elderly (65-89 years old) and the longevity period (≥90 years old) were different, and the difference was statistically significant (P<0.001); The left hand grip strength of the elderly with Yang deficiency was lower than that of other deficiency, and the difference was statistically significant (P all<0.001); The grip strength of Peaceful quality was higher than that of other constitutions, and the difference was statistically significant (compared with phlegm-dampness quality, Yin deficiency quality, Yang deficiency quality, blood stasis quality and Qi-deficiency quality, P<0.001; Comparison of peaceful quality and characteristic quality, P<0.05; Comparison of hygrothermal and calm quality, P<0.05); Yang deficiency can be used as a key indicator to predict the probability of disease in the elderly (P<0.05). **Conclusion** There is a correlation between traditional Chinese medicine constitution and grip strength in the elderly. Peaceful quality are protective factors to maintain muscle strength, Yang deficiency is a risk factor for muscle strength loss, and Yang deficiency can predict the probability of disease in the elderly. It is inferred that physical conditioning and grip strength training can improve the grip strength of patients, reduce the probability of disease and improve the quality of life of the elderly.

Key words TCM constitution identification; Muscle function; grip strength; Correlation; the elderly

Category: Public Nutrition & Health

遵守中国饮食指南宝塔(2022)饮食、饮食炎症潜力与健康相关生活质量的性别关联:中国人群的证据

Gender-specific association of Chinese food guide pagoda (2022) diet, diet inflammatory potential and health-related quality of life: evidence from Chinese population

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Background and Objectives: Diet was one of the most important factors influencing health status which had relatively great differences between China and Western countries. The role of it in promoting health still has not been elucidated clearly. This study aimed to explore the association between pattern of Chinese food guide pagoda, diet inflammatory potential and health-related quality of life by gender.

Methods: Totally 103,596 participants (mean age, 53 years; 61% women) recruited from the baseline survey of the Regional Ethnic Cohort Study in Northwest China were included. Lifestyle information was collected through a baseline questionnaire. The 12-Item Short Form Survey (SF-12) was used to assess participants' physical component score (PCS), which ranged from 0 to 100.

Results: In total population, after multivariate-adjusted, following Chinese food guide pagoda and anti-inflammatory foods were significantly associated better PCS (ß, 0.515, 95% CI, 0.460 –0.570; ß, 0.071, 95% CI, 0.048 –0.094, respectively) and pro-inflammatory foods was significantly associated less PCS (ß, -0.103, 95% CI, -0.131 – -0.075). In men, following Chinese food guide pagoda and anti-inflammatory foods were significantly associated better PCS (ß, 0.572, 95% CI, 0.484 –0.660; ß, 0.186, 95% CI, 0.150 –0.222, respectively). The association between pro-inflammatory foods and PCS was not statistically significant. In women, following Chinese food guide pagoda was significantly associated better PCS (ß, 0.486, 95% CI, 0.416 –0.556) and pro-inflammatory foods was significantly associated less PCS (ß, -0.166, 95% CI, -0.202 – -0.130). The association between anti-inflammatory foods and PCS was not statistically significant.

Conclusions:

Adherence to the Dietary Pagoda Guidelines for Chinese residents can help improve the physical component of quality of life for Chinese adults. Moreover, for better health statue, men should increase their intake of anti-inflammatory foods, and women should pay more attention to controlling intake of pro-inflammatory foods.

Key words Health-related quality of life, Chinese food guide pagoda, Inflammatory potential, Anti-inflammatory, Pro-inflammatory Foods

Category: Public Nutrition & Health

夜宵和早餐对成年人肥胖的影响：基于社区自然人群纵向研究
Skipping breakfast and night eating and 4-year changes in weight and waist circumference in Chinese adults

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Background and objective: The association between individual dietary components or dietary patterns and weight gain has been well-documented, but the effects of specific eating behaviors, such as skipping breakfast and night eating, were less evaluated with mixed results.

Methods: In the current longitudinal study, included were 48,150 Chinese adults (mean age: 50.1 ± 13.9 y) who were free of diabetes, cardiovascular diseases, and cancer in 2014, when information on dietary intake and the presence of night-eating behavior and skipping breakfast was collected via questionnaires. Weight and waist circumference (WC) were measured repeatedly in 2016 or 2018, and the association between night eating and/or skipping breakfast and annual changes in weight and WC were evaluated using the generalized estimating equation method.

Results: During the 4-year follow-up, among people who had both of two eating behaviors, weight increased 0.52 kg (95%CI: 0.42, 0.62) per year and WC increased 0.40 cm (95%CI: 0.26, 0.54) per year after adjusting for potential covariates, compared with the normal eating behaviors group. The association might be attenuated in women and more pronounced in people with higher BMI at baseline, lower diet quality, regular physical activity[D1] [MOU2] , insomnia disorder, dyslipidemia, impaired fasting glucose, and hypertension (P-interaction < 0.001 for all).

Conclusion: Skipping breakfast and/or night eating is a predictive factor of weight and WC gain in adults even after adjusting for energy intake and diet quality. These associations were particularly pronounced among people with chronic status[D3] [MOU4] , and further highlighted that mealtime was an independent risk factor for obesity in addition to energy intake, diet quality, and exercise.

Key words Obesity; Longitudinal study; Eating behavior; Skipping breakfast; Night eating

Category: Public Nutrition & Health

成人饮食摄入活的微生物与慢性便秘之间的关系

Association between dietary intake of live microbes and chronic constipation in adults

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Background: Chronic constipation (CC) is a common gut health problem. Probiotics are known to benefit gut health, but the direct impact of live dietary microbes is lacking evidence.

Obiectives: This study aimed to investigate the relationship between dietary intake of live microbes and CC.

Methods: Using data from the National Health and Nutrition Examination Survey (NHANES) 2005-2010, we identified a total of 11,170 adult participants who completed both the 24-hour face-to-face dietary recall and bowel health questionnaire. CC was defined according to Bristol stool form scale. We categorized" food into 3-level: low, medium, and high based on their estimated live microbial contents. Additionally, we analyzed combined data for the medium and high categories (MedHi). Multivariate regression models were constructed to assess the association between dietary intake of live microbes and CC.

Results: In the weighted sample, we found that prevalence of age-adjusted CC was 7.06% (95% CI: 6.45-7.67). Female sex (OR = 2.55, 95% CI: 2.04-3.18), Non-Hispanic Black (OR = 1.72, 95% CI: 1.34-2.22), Mexican Americans (OR = 1.64, 95% CI: 1.22-2.22), and depression (OR = 2.17, 95% CI: 1.54-3.05) were positively correlated with CC. Higher education (OR = 0.53, 95% CI: 0.43-0.66), obesity (OR = 0.61, 95% CI: 0.50-0.75), higher income (OR = 0.60, 95% CI: 0.50-0.71), higher alcohol intake (OR = 0.68, 95% CI: 0.54-0.87), higher caffeine intake (OR = 0.63, 95% CI: 0.51-0.77), and higher MedHi intake (OR = 0.67, 95% CI: 0.53-0.85) were negatively correlated with CC. After controlling for confounders, a significant inverse association was observed between dietary live microbes consumption and CC.

Conclusion: In conclusion, our findings suggest that a high dietary live microbes consumption may have a protective effect against CC. However, further prospective studies are required to comprehensively assess whether live microbes consumption can effectively reduce the occurance of CC.

Key words Live dietary microbes; Chronic constipation; NHANES

Category: Public Nutrition & Health

代谢相关脂肪性肝病患者饮酒与死亡风险的关联：来自英国生物银行的研究

Association of Alcohol Consumption and Mortality Risk in Patients with Metabolic Dysfunction-Associated Fatty Liver Disease: a UK Biobank Study

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Abstract

Background

The optimal alcohol consumption recommendation for patients with metabolic dysfunction-associated fatty liver disease (MAFLD) remains unclear, particularly concerning different alcoholic beverages.

Objective

The aim was to evaluate the association between alcohol consumption and mortality in patients with MAFLD.

Methods

We conducted a study using data from the UK Biobank, including 110,459 individuals with MAFLD. Hepatic steatosis was defined as a fatty liver index ≥60. Participants were categorized into four groups based on alcohol consumption (non-drinkers: ≤1 drinks/week; light drinkers: >1 and ≤14 drinks/week for men, >1 and ≤7 drinks/week for women; moderate drinkers: >14 and ≤21 drinks/week for men, >7 and ≤14 drinks/week for women; excessive drinkers: >21 drinks/week for men, >14 drinks/week for women; 14 grams pure alcohol for each drink). All-cause and cause-specific mortality were obtained from National Death Registries up to 12 November 2021. Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs), adjusting for potential confounders.

Results

During a median follow-up of 12.6 years, there were 8,183 deaths recorded including 1,803 cardiovascular disease (CVD) related deaths, 4,034 deaths from cancer, and 376 deaths due to liver disease. Compared to non-drinkers, the fully adjusted HRs (95% CI) for light total alcohol drinkers were 1.00 (0.89, 1.13) for all-cause mortality, 0.97 (0.74, 1.26) for CVD mortality, 1.08 (0.90, 1.28) for cancer mortality, and 1.29 (0.63, 2.66) for liver disease mortality. Regarding wine consumption, the fully adjusted HRs (95% CI) for light drinkers were 0.84 (0.80, 0.88) for all-cause mortality, 0.79 (0.71, 0.88) for CVD mortality, 0.89 (0.83, 0.96) for cancer mortality, and 0.98 (0.77, 1.25) for liver disease mortality.

Conclusions

Among patients with MAFLD, light total alcohol consumption was not significantly associated with a higher risk of all-cause or cause-specific mortality, while light wine consumption was associated with lower risks of all-cause, CVD, and cancer mortality.

Key words Metabolic dysfunction-associated fatty liver disease; alcohol consumption; mortality risk; UK Biobank; hepatic steatosis

Category: Public Nutrition & Health

膳食多样化评分评价中国不同母乳喂养状态下6-23月龄儿童的有效性

Validity of Dietary Diversity Score for Children aged 6-23 Months modified by breastfeeding status in China

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Background: Dietary diversity score (DDS) is a core indicator for evaluating the adequacy of dietary micronutrients intake for children aged 6-23 months. Little information is available for assessing the validity of DDS for children aged 6-23 months in different breastfeeding status in China.

Objectives: To validate DDS for evaluating micronutrients intake of children aged 6-23 months with different breastfeeding status in China.

Methods: This was a cross-sectional study and 570 children aged 6-23 months were included. The 24h test weighing method and weighted dietary record method were used to measure breastmilk intakes and other food intakes, respectively. DDS was calculated by using dietary record according to WHO standard questionnaire method. Multiple linear regression was used to analyze the association between DDS and the mean nutrient density adequacy ratio (MNDAR).

Results: Compared with DDS of 5, MNDAR was lower in the groups with DDS of 2 and 3 ($P<0.05$), no difference was detected between the group with DDS of 4, 6 and 7 ($P>0.05$) for breast-fed (BF) and non-breast and non-formula fed (NBNFF) children. The median of MNDAR in the group with DDS of 2, 3, 4, 5, 6, and 7 was 0.835, 0.777, 0.832, 0.870, 0.904 and 0.910 for BF children, and 0.617, 0.732, 0.838, 0.859, 0.932 and 0.930 for NBNFF children, respectively. However, DDS was not relate to MNDAR for mix-fed and formula-fed children.

Conclusions: MNDAR was greater for children aged 6-23 months in China with "DDS>=5" than those "DDS=2 or 3" in the group with BF and NBNFF. However, the relationship did not exist in the children with any formula-fed.

Key words Dietary diversity score, Nutrient density, breastfeeding status, infants and young child, China

Category: Public Nutrition & Health

孕妇血清维生素 K1 和 MK-4 水平与妊娠并发症及新生儿结局的关联

Associations of maternal serum vitamin K1 and MK-4 levels in pregnant women with pregnancy complications and neonatal outcomes

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Background and Objective

Vitamin K is a fat-soluble vitamin that includes vitamin K1 (phylloquinone, PK) and vitamin K2 (menaquinones, MK, MK-n). We aimed to explore the associations between serum vitamin K1 and MK-4 levels with pregnancy complications and neonatal outcomes.

Methods and Study Design

In this cross-sectional designed study, a total of 831 pregnant women with informed consent from Binzhou were enrolled. Serum levels of vitamin K1 and MK-4 were detected by LC/MS/MS. Information of the onset of gestational diabetes (GDM) and other complications in pregnant women, and clinical information of newborns were collected. Multifactorial logistic regression was used to analyze the correlations between parameters.

Results

After controlling for potential confounders, serum vitamin K1 levels were negatively associated with the risk of pregnancy-induced hypertension (PIH) and GDM, with OR (95% CI) of 0.36 (0.20, 0.63) and OR (95% CI) of 0.54 (0.34, 0.87) in the highest compared to the lowest quartile, respectively. Serum MK-4 levels was negatively associated with the risk of PIH, with OR (95% CI) of 0.29 (0.15, 0.56) in the highest versus the lowest quartile. In addition, maternal serum vitamin K1 levels were negatively associated with preterm birth and the risk of neonatal bilirubinemia, with OR (95% CI) of 0.29 (0.17, 0.50) and 0.45 (0.27, 0.76) in the highest compared to the lowest quartile. Maternal serum vitamin MK-4 levels were negatively correlated with preterm birth with OR (95% CI) of 0.40 (0.23, 0.70) in the highest compared to the lowest quartile.

Conclusions

In pregnancy women, serum vitamin K1 were negatively associated with the risk of PIH, GDM, preterm birth, and neonatal bilirubinemia. Serum MK-4 levels were negatively associated with the risk of PIH and preterm birth. The findings provided reference for guiding pregnant women to consume vitamin K.

Key words Vitamin K; pregnant women; pregnancy complications; neonatal outcomes

Category: Public Nutrition & Health

慢性肾脏病患者血清25-羟基维生素D浓度与全因和病因特异性死亡率的关系

Association of Serum 25-Hydroxyvitamin D Concentrations With All-Cause and Cause-Specific Mortality among Individuals With Chronic Kidney Disease

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Background: The evidence regarding vitamin D status and mortality among people with chronic kidney disease (CKD) is scarce.Objective: We aimed to examine the association of serum 25-hydroxyvitamin D [25(OH)D] concentrations with all-cause and cause-specific mortality among adults with CKD.Methods: In this prospective cohort study, we included patients with CKD from the U.S. National Health and Nutritional Examination Survey (NHANES) 2001–2018. Death outcomes were ascertained by linkage to National Death Index records through 31 December 2019. The weighted Cox proportional hazards models were used to estimate hazard ratios (HR) and 95% CIs for all-cause and cause-specific mortality.Results: Among the 5,327 patients with CKD from NHANES 2001-2018, the weighted mean (95% CI) level of serum 25(OH)D was 72.5 (71.7, 73.3 nmol/L), and 30.7% had deficient vitamin D (<50 nmol/L). During 18,769 person-years of follow-up, 893 deaths were documented, including 333 CVD deaths, 134 cancer deaths, 17 kidney disease deaths, and 263 other-cause deaths. Compared with participants with 25(OH)D <25 nmol/L, the multivariate-adjusted HRs and 95% CI for participants with 25(OH)D >75 nmol/L were 0.46 (0.29, 0.72) for all-cause mortality, 0.40 (0.20, 0.77) for CVD mortality, 1.01 (0.20, 2.47) for cancer mortality, 0.10 (0.03, 0.34) for kidney disease mortality, and 0.59 (0.30, 1.16) for other-cause mortality. In the fully adjusted model, we observed a 12% reduced risk of all-cause mortality and a 12% reduced risk of CVD mortality per 10 nmol/L increment of 25(OH)D level in patients with CKD.Conclusion: Higher serum 25(OH)D levels were significantly associated with lower all-cause and cause-specific mortality in patients with CKD. These findings suggest that elevated serum 25(OH)D concentration might benefit CKD patients with vitamin D deficiency.

Key words chronic kidney disease; serum 25-Hydroxyvitamin D; mortality; National Health and Nutrition Examination Survey

Category: Public Nutrition & Health

膳食宏量营养素摄入量与心血管疾病风险和死亡率：前瞻性队列研究的系统综述和剂量效应荟萃分析

Dietary macronutrient intake and cardiovascular disease risk and mortality: a systematic review and dose-response meta-analysis of prospective cohort studies

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Background: Many epidemiological studies have evaluated the intake of macronutrients and the risk of mortality and cardiovascular disease (CVD).Objective: To examine and quantify the potential dose-response association of dietary macronutrient intake with CVD morbidity and mortality. Methods: Prospective cohort studies from PubMed, Embase, and CENTRAL was conducted, which reported associations of macronutrients (protein, fat, and carbohydrate) with all-cause, CVD, cancer mortality, or CVD events. Multivariable relative risks (RR) were pooled and heterogeneity was assessed.Results: Results of 124 prospective cohort studies were included in the systematic review and 101 in the meta-analysis. During the follow-up period of 2.2 to 30 years, 506,086 deaths and 79,585 CVD events occurred among 5,107,821 participants. High total protein intake was associated with low CVD morbidity (RR 0.88, 95% confidence interval 0.82 to 0.94), while high total carbohydrate intake was associated with high CVD morbidity (1.08, 1.02 to 1.13). For fats, a high intake of total dietary fat was associated with a decreased all-cause mortality risk (0.92, 0.85 to 0.99). However, this effect was not observed in cause-specific mortality; Saturated fatty acid (SFA) intake was only associated with cancer mortality (1.10, 1.06 to 1.14); Both monounsaturated fatty acid (MUFA) and Polyunsaturated fatty acids (PUFA) intake was associated with all-cause mortality (MUFA: 0.92, 0.86 to 0.98; PUFA: 0.91, 0.86 to 0.96), CVD mortality (MUFA: 0.89, 0.84 to 0.95; PUFA: 0.95, 0.91 to 0.998) and cancer mortality (MUFA: 0.95, 0.91 to 0.99; PUFA: 0.94, 0.89 to 1.00).Conclusion: Existing evidence suggested that protein intake was associated with decreased risk of CVD morbidity, while carbohydrate intake was associated with an increased risk of CVD morbidity. High total fat intake was associated with a low risk of all-cause mortality and this effect was different in an analysis stratified by the type of fat.

Key words macronutrient intake; cardiovascular disease; mortality; meta-analysis

Category: Public Nutrition & Health

血浆和尿液代谢组学与基因组学整合分析揭示结直肠癌潜在干预靶点

Systematic investigation of plasma and urinary metabolites to discover potential interventional targets for colorectal cancer

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Background and objectives: Metabolic alterations have been reported to be associated with colorectal cancer (CRC). We aimed to identify plasma and urinary metabolites related to CRC risk and elucidate their mediator role in the associations between modifiable risk factors and CRC.

Methods: Metabolite quantitative trait loci (mQTLs) were derived from two published genome-wide association studies (GWASs) on plasma and urinary metabolome, and summary-level data were extracted for 651 plasma metabolites and 209 urinary metabolites. Genetic associations with CRC were obtained from a large-scale GWAS meta-analysis (100,204 cases; 154,587 controls) and the FinnGen cohort (4,957 cases; 304,197 controls). Mendelian randomization (MR) and colocalization were performed to evaluate the causal role of metabolites on CRC. Druggability evaluation was employed to prioritize potential therapeutic targets. Multivariable MR and mediation estimation were conducted to elucidate the mediating effects of metabolites on the associations between modifiable risk factors and CRC.

Results: Collectively, the current study identified 30 plasma metabolites and four urinary metabolites for CRC. Genetically predicted higher levels of 22 plasma metabolites and two urinary metabolites and decreased levels of eight plasma metabolites and two urinary metabolites were associated with an increased risk of CRC ($P<1.16\times10^{-5}$). Three CRC-related metabolites (sphingomyelin, lactose, mannose) could be modulated by drug interventions. Nine CRC-related metabolites could be affected by 13 modifiable factors (two dietary factors, two gut microbial taxa, five lifestyles, four body measurement factors), and these metabolites mediated the effect of modifiable risk factors (Actinobacteria, BMI, waist-hip ratio, fasting insulin, smoking initiation) on CRC.

Conclusions: This study identified the key plasma and urinary metabolites associated with CRC and elucidated their mediator role in the associations between modifiable risk factors and CRC, which provided new insights into the etiology and potential therapeutic targets for CRC and the etiological pathways of modifiable environmental factors with CRC.

Key words Colorectal cancer; Metabolite biomarker; Metabolome-wide Mendelian randomization; Modifiable risk factor; Drug target

Category: Public Nutrition & Health

基于膳食质量问卷DQQ的低负担膳食质量指标与中国健康饮食指数的比较：2011年中国健康与营养调查结果

Comparison of low-burden diet quality indicators calculated from Diet Quality Questionnaire with Chinese Healthy Eating Index: Results from China Health and Nutrition Survey 2011

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Background: The Chinese Healthy Eating Index (CHEI), calculated from 24-hour dietary recalls, can reflect good adherence to the 2016 Dietary Guidelines for Chinese, however, it is difficult to conduct in a large-scale population survey. Diet quality indicators at low cost and with low technical expertise requirements are urgently needed. The Diet Quality Questionnaire (DQQ) for China is developed based on the framework of Global Diet Project, which takes only five minutes to administer using “yes/no” questions on 29 food groups. To validate whether a suite of low-burden indicators based on the DQQ correlates with the CHEI, and also to understand the relationships of these indicators with different nutritional status.

Methods: Based on the China Health and Nutrition Survey (CHNS) in 2011, dietary data of 14124 participants (aged ≥ 7 years) were categorized into 29 food groups to calculate the Minimum Diet Diversity for Women (MDD-W), Global Dietary Recommendations (GDR) score, and DQQ score; the CHEI was also calculated. Trend tests, spearmen correlation analysis, and logistic regression analysis were used to examine whether three indicators based on DQQ outperform or align closely with CHEI.

Results: The proportion of the population meeting the MDD-W and the median value of the GDR score and DQQ score increased along with the increment of tertiles of CHEI (all Ptrend<0.001). MDD-W correlated moderately (rs=0.51, P<0.001) and GDR score correlated weakly (rs=0.40, P<0.001) with CHEI. The DQQ score was also moderately correlated with CHEI (rs=0.60, P<0.001), while strong correlations were found for women (rs=0.61, P<0.001) and children (rs=0.62, P<0.001). The GDR score, DQQ score, and CHEI were fairly associated with lower odds of abdominal obesity.

Conclusion: The DQQ score aligns closely with the CHEI, indicating the DQQ score derived from 29 food-group data could be a useful indicator of diet quality in a wide scope of the Chinese population.

Key words Diet quality; diet quality questionnaire; minimum diet diversity for women, global dietary recommendations score; Chinese healthy eating index

Category: Public Nutrition & Health

海产品摄入量与心血管疾病发病和死亡的关联研究

Association of seafood consumption with cardiovascular disease among adults in Qingdao, China

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Background and Objectives: The relationship between seafood consumption and cardiovascular disease is controversial, and studies have not considered competing risk events. Our study examined the association between a full range of seafood consumption and cardiovascular disease incidence and mortality on the basis of the Qingdao Diabetes Prevention Program.

Methods and Study Design: We followed up 5285 participants without cardiovascular disease at baseline until December 31, 2021. Cardiovascular disease cases and deaths were identified through record linkage with the Qingdao Cardiovascular Disease Surveillance System and the Qingdao Death Registry, respectively. Information on seafood consumption was obtained using a food frequency questionnaire. We used the Cox proportional hazard model and the competing risk model to evaluate the association between all types of seafood consumption and cardiovascular disease incidence and mortality.

Results: During a median follow-up of 11.4 years, 122 cardiovascular disease cases and 75 deaths occurred. After adjustment for potential confounders, compared with nonconsumers, seafood consumption of 300–500 and >500 g/week was associated with a lower risk of cardiovascular disease incidence [hazards ratio and 95% confidence interval: 0.51 (0.28–0.94) and 0.46 (0.25–0.85), respectively]. However, seafood consumption of >500 g/week had a significantly lower risk of cardiovascular disease mortality [subdistribution hazard ratio and 95% confidence interval: 0.39 (0.17–0.93)], but insignificant in other groups.

Conclusions: Seafood consumption of 300–500 and >500 g/week was associated with a lower cardiovascular disease incidence and mortality. Our findings provide evidence of the recommendations of the 2022 Dietary Guidelines for Chinese residents and may guide the promotion of strategies for cardiovascular disease prevention.

Key words Seafood consumption; Cardiovascular disease; Incidence; Mortality; Cohort study.

Category: Public Nutrition & Health

饮酒对中国2型糖尿病患者血糖控制的影响

The association of alcohol drinking with glycemic control among type 2 diabetic patients in China

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Objective

To investigate the association between alcohol drinking and glycemic control among adult patients with type 2 diabetes (T2D) in regional China.

Methods

In this cross-sectional survey conducted in Nanjing municipality of China in 2018, adult T2D patients were randomly selected from urban and rural communities. The outcome variable was glycemic control status (“controlled well” or “not controlled”) based on assessment criteria recommended by the Guideline for the Prevention and Treatment of Type 2 Diabetes Mellitus in China. The explanatory measure was alcohol drinking (“heavy drinking”, “mild/moderate drinking” or “no drinking”). Mixed-effects regression models were employed to estimate odds ratios (ORs) and 95% confidence interval (95%CI) for examining the associations of alcohol drinking with glycemic control among T2D patients.

Results

Totally, 5663 adult T2D patients were included in the analysis. The glycemic control rate was 39.8% (95%CI 38.5, 41.1) for overall participants, while 41.2% (95%CI 39.7%, 42.7%), 43.9% (95%CI 38.9%, 48.8%), and 34.1% (95% CI 31.5%, 36.7%) for non-drinkers, mild/moderate drinkers, and heavy drinkers, respectively. After adjustment for potential confounders and community-level clustering effect, heavy and mild/moderate alcohol drinkers were at 0.76 (95%CI=0.66, 0.89) and 1.04 (95%CI=0.87, 1.28) times odds to have glycaemia under control than non- drinkers among overall participants. Furthermore, when stratified separately by gender and use of anti-diabetes agents, the scenario within men, either regular or irregular users of anti-diabetes agents was the same as that for overall participants, while the association between alcohol drinking and glycemic control became non-significant among women.

Conclusions

Mild/moderate alcohol drinking was not associated with glycaemia control, but heavy-drinking might have a negative effect on glycemic control among urban and rural T2D patients irrespective of the status of anti-diabetes agent use in regional China. This study has important public health implications regarding the precision intervention on patients’ glycaemia control for community-level T2D management.

Key words Alcohol drinking, glycemic control, type 2 diabetic patients, community-level, Chinese

Category: Public Nutrition & Health

儿童期和幼儿期接触饥荒对成年后慢性肾病的影响

Effects of childhood and infancy exposure to famine on chronic kidney disease in adulthood

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Objective: Chronic kidney disease (CKD) is an increasing contributor to the global disease burden. Malnutrition caused by early exposure to famine can seriously affect the body in adulthood. We aimed to assess whether exposure to famine in infancy and childhood during the Chinese famine of 1959-1962 was associated with abnormal glomerular filtration rate (eGFR) and risk of CKD.

Subjects and methods: A total of 2937 individuals from the Qingdao Diabetes Prevention was included in the current study. They were divided into infant exposed group (1956-1958), child exposed group (1950-1955) and non-exposed group (1963-1971) according to their birth year during the famine period. The estimate glomerular filtration rate was calculated using the Chronic Kidney Disease Epidemiology Collaboration equation（SKD-EPI）. CKD was defined as eGFR is less than 90 mL/min / 1.73 m2.Logistic regression model was used to evaluate the assocaition between famine exposure in early life with prevalence of CKD in adult, adjusting for potential covariates.

Results: The prevalence of CKD in non-exposed group, infant exposed group and child exposed group was 5.1%, 9.7% and 13.6%, respectively. Adjustment for residential areas, BMI, diabetes, hypertension and total cholesterol, the association between famine exposure and eGFR did not alter substantially. Exposure to infant and child famine was associated with 1.68 (OR=1.68, 95CI%[1.10,2.56]) times and 2.49(OR=2.49,95CI% [1.73,3.58]) times for prevalence rate of CKD than nonexposed group, respectively. In the sensitivity analysis，exposure to infant and child famine was associated with 1.98 (OR=1.98, 95CI%[1.54,2.54]) times and 2.53(OR=2.53,95CI% [2.02,3.18]) times for prevalence rate of CKD than nonexposed group, respectively.

Conclusions: Our findings suggest that acute nutritional deficiencies caused by famine exposure in early life are a risk factor for eGFR decline in adulthood, especially in fancy and childhood.Thus,timely identification and intervention can prevent residents suffer from chronic kidney disease (CKD) in the future life.

Key words Famine exposure; Chronic kidney disease ; Adulthood ; Cross-sectional study

Category: Public Nutrition & Health

中老年人机体虚弱、昼夜节律综合征与心血管疾病之间的相关性：一项纵向研究

Association between physical frailty, circadian syndrome and cardiovascular disease among middle-aged and older adults: A longitudinal study

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Background: Physical frailty (PF) and circadian syndrome (CircS) are proposed as novel risks for cardiovascular disease (CVD), but little attention is paid to their combined impact on CVD. This study aimed to investigate the association of PF, CircS and CVD in middle-aged and older adults.

Methods: The sample comprised 8512 participants aged at least 45 years from the China Health and Retirement Longitudinal Study (CHARLS) 2011. PF was examined by the physical frailty phenotype scale. CircS was assessed by the components of the International Diabetes Federation (IDF) MetS plus short sleep duration and depression. The cut-off for CircS was set as ⩾4. CVD was defined as the presence of physician-diagnosed heart disease and/or stroke. A total of 6176 participants without CMM recruited from CHARLS 2011 and were followed up in 2018.

Results: The prevalence of CVD in total populations, neither CircS or PF, PF alone, CircS alone and both CircS and PF were 13.0%, 7.4%, 15.5%, 17.4%, and 30.2%, respectively. CircS was more likely to be PF [OR (95%CI): 2.070 (1.732~2.472)] than those without CircS. Both CircS alone [OR (95% CI): 1.954 (1.663~2.296)], and coexisting CircS and PF [3.508 (2.739~4.494)] were associated with CVD. Longitudinal analysis showed that individuals with both CircS and PF (HR: 1.716, 95%CI: 1.314~2.240) and CircS alone [1.520 (1.331~1.737)] were more likely to have new onset CVD than neither CircS or PF peers.

Conclusion: PF and CircS together are associated with higher CVD risk, which provided new evidence for a strong relation that warrants attention to assessing PF and CircS and in community to promote healthy aging.

Key words physical frailty; circadian syndrome; cardiovascular disease; middle-aged and older adults

Category: Public Nutrition & Health

血糖代谢状态与脑宏观和微观结构的关联

Associations of glucose metabolism status with brain macro- and microstructure

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Background: Evidence linking glucose metabolism status with brain macro- and microstructure is limited and inconsistent.

Objective: To investigate the associations of glucose metabolism status with brain macro- and microstructure in a large population-based study.

Methods and Study Design: This study enrolled 29,251 participants from the UK Biobank. Glucose metabolism status was classified into normal glucose metabolism, prediabetes, type 2 diabetes with HbA1c <7%, and type 2 diabetes with HbA1c ≥7%. Brain macrostructural metrics, including volumes of total and subcortical gray matter, white matter, white matter hyperintensity, cerebrospinal fluid, and brain stem, were measured by 3T brain magnetic resonance imaging. Brain microstructural metrics, including fractional anisotropy and mean diffusivity in white matter tracts, were measured by diffusion tensor imaging. Multivariable linear regression models were used to estimate β values and 95% confidence intervals (CIs).

Results: After multivariable adjustment including demographic and lifestyle factors, medical history, and total intracranial volume, compared with participants with normal glucose metabolism status, those with prediabetes had smaller gray matter volume and most of the subcortical gray matter volumes, and atrophy of total and subcortical gray matter was more pronounced in those with type 2 diabetes (all P-trend <0.05, FDR corrected). For brain microstructure, participants with prediabetes had lower fractional anisotropy values in commissural fibers (β [95% CI]: -0.04 [-0.08, -0.003]). Global and tract-specific microstructural abnormalities of white matter were observed in participants with type 2 diabetes, especially for type 2 diabetes with HbA1c ≥7%, except for fractional anisotropy values in projection fibers (all P-trend <0.05, FDR corrected).

Conclusions: People with prediabetes were associated with brain macro- and microstructural abnormalities, and those with type 2 diabetes were more strongly associated with small gray matter volumes (total and subcortical), and disruption of white matter integrity. These findings suggest that interventions for hyperglycemia at an earlier stage may help to protect brain health.

Key words prediabetes, type 2 diabetes, white matter, gray matter, brain integrity

Category: Public Nutrition & Health

糖尿病和非糖尿病人群长期服用钙补充剂与心血管疾病和死亡风险的前瞻性关联

Associations of Habitual Calcium Supplementation with Risk of Cardiovascular Disease and Mortality in Individuals with and without Diabetes

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Background: Experimental studies suggested that supplemental calcium, but not dietary calcium could abruptly increase blood calcium levels, which may be harmful for cardiovascular health. While the association between calcium supplements and cardiovascular disease (CVD) risk in the general population is debatable, evidence is scarce among people with diabetes who are at higher risk of both abnormal calcium metabolism and CVD.

Objectives: To prospectively examine associations of habitual calcium supplementation with CVD events and mortality in individuals with and without diabetes.

Methods: The main analysis included 434,374 participants from the UK Biobank. Cox proportional hazards regression models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs). Interactions of calcium supplementation with diabetes status were tested on multiplicative and additive scales.

Results: Over median follow-up of 8.1 and 11.2 years, 26,374 incident CVD events and 20,526 deaths were documented, respectively. After multivariable adjustment, habitual calcium supplementation was significantly associated with higher risks of CVD incidence (HR: 1.34 [95%CI:1.14, 1.57]), CVD mortality (HR: 1.67 [95%CI: 1.19, 2.33]), and all-cause mortality (HR: 1.44 [95%CI: 1.20, 1.72]) in participants with diabetes, whereas no significant association was observed in participants without diabetes (HR: 0.97 [95%CI: 0.92, 1.03] for CVD incidence; HR: 1.05 [95%CI: 0.90, 1.23] for CVD mortality; HR: 1.02 [95%CI: 0.96, 1.09] for all-cause mortality). Significant multiplicative and additive interactions were found between habitual calcium supplementation and diabetes status on risks of CVD events and mortality (all P interaction<0.01). In contrast, no significant interactions were observed between dietary or serum calcium and diabetes status.

Conclusions: Habitual use of calcium supplements was significantly associated with higher risk of CVD events and mortality in people with diabetes, but not in people without diabetes. Further studies are needed to balance potentially adverse effects of calcium supplement against likely benefits, particularly among patients with diabetes.

Key words calcium supplements; diabetes; cardiovascular disease; mortality; prospective study

Category: Public Nutrition & Health

健康生活方式与 MAFLD 及其亚型发病风险的研究：东风-同济队列

Associations of combined lifestyle factors with MAFLD and specific subtypes in middle-aged and elderly Chinese adults: The Dongfeng-Tongji Cohort Study

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Background and Aims: Metabolic dysfunction-associated fatty liver disease (MAFLD) is the crucial pathogenesis for intra-hepatic and extra-hepatic diseases, especially in elderly adults, while lifestyle management is the modifiable cost-effective measure for MAFLD prevention. In this study, we aimed to evaluate the association of combined lifestyles with the risk of overall MAFLD and its specific subtypes.

Approach and Results: We conducted a longitudinal study of 23408 middle-aged and elderly individuals (mean age 61.7 years and male 44.5%) recruited in China from 2008 to 2018. Combined lifestyle score (range 0-6) was evaluated by body mass index, smoking, drinking, diet, physical activity, and sleep. Logistic regression models were used to calculate ORs for the risks of overall MAFLD and the specific subtypes, adjusting for demographic, common comorbidities, and metabolic biomarkers. Compared with individuals whose lifestyle score of 0-2 (poor), the ORs (95% CIs) of those with the most favorable lifestyle score of 5-6 (ideal) were 0.62 (0.57-0.68) for overall MAFLD, 0.31 (0.28-0.34) for overall MAFLD with overweight and obesity, 0.97 (0.75-1.26) for MAFLD with diabetes, and 0.56 (0.51-0.62) for MAFLD with metabolic dysregulation (MD). Additionally, the risks of improvement in lifestyle score were associated with lower risk of overall MAFLD (ORs, 0.76; 95%CI, 0.68-0.86), MAFLD with overweight and obesity (ORs, 0.72; 95%CI, 0.63-0.81), and MAFLD with MD (ORs, 0.49; 95%CI, 0.43-0.55).

Conclusions: Our findings suggest that adherence to combined healthy lifestyles was associated with lower risks of overall MAFLD, particularly in individuals with overweight or obesity and MD.

Key words lifestyle, MAFLD, BMI, lifeatyle improvement

Category: Public Nutrition & Health

生命早期双酚 A 暴露联合断乳后高脂饮食对子代小鼠肠道菌群的影响探究

Effect of Early life Bisphenol A Exposure combined with Post-weaning High Fat Diet on gut microbiota of mice

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Purpose

The gut microbiota plays an important role in children's growth and health. However, harmful factors will affect the colonization and development of gut microbiota, including bisphenol A (BPA) and high-fat diet (HFD). Both have nonnegligible effects on gut microbiota, however, the combined effect remains unclear. Thus, we aimed to investigate the combined effect of BPA and HFD on gut microbiota.

Methods

In this study, C57BL/6J mice were exposed to 50 μg or 500 μg BPA/kg body weight (bw)/day from day 6 of pregnancy to the end of lactation. The weaned offspring were randomized to be given HFD and normal diet. Fecal samples were collected at weeks 3, 5, and 13 from offspring mice. 16S rRNA gene sequencing was performed to assess the richness and diversity of gut microbiota. LEfSe evaluated taxonomic composition differences.

Result

In 3 weeks, the lower Shannon and the Chao 1 index indicated a reduction in the α diversity of gut microbiota (P: 0.002~0.004). But no significant association was observed in different BPA doses. In 5 weeks, the Shannon and the Chao 1 index in the BPA group were increasing (P: 0.001~0.071). In 13 weeks, compared with the control group, low-dose BPA exposure caused a lower Shannon index (P=0.009). BPA exposure caused a down-regulation in α diversity. PCOA analysis revealed a distinct gut microbial composition for each group (P<0.05). Analysis of LEfSe revealed that the abundance of beneficial bacteria (lactobacillus , Limosilactobacillus reuteri and Muribaculum) increased after 2 weeks of feeding HFD. But in 13 weeks, the abundance of opportunistic pathogen (lleibacterium, coriobacteria and acinetobacterota) increased in the BPA exposure groups.

Conclusion:

Early-life BPA exposure will not increase the susceptibility of offspring gut microbiota to the adverse effects of long time HFD. But short period exposure of HFD in early life have a positive effect on gut microbiota.

Key words BPA, High fat diet, Combined effect, Gut microbiota

Category: Public Nutrition & Health

膳食脂肪摄入与结直肠癌发生风险的研究进展

Research progress of the relationship between dietary fat intake and colorectal cancer

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Objective

Colorectal cancer (CRC) is one of the most common malignancies threatening human health worldwide. High fat intake has been frequently reported to be involved in CRC development. However, the relationships between different types of dietary fats and CRC remain unclear. This study aimed to investigate the association between different types of dietary fatty acids and the risk of CRC.

Methods

This study reviewed the available literature including prospective cohorts and case-control studies, and summarized the scientific evidence regarding associations of specific dietary fatty acid intakes with the risk of CRC.

Results

Multiple large cohort studies showed that the consumption of saturated fatty acids (SFAs), monounsaturated fatty acids (MUFAs), and polyunsaturated fatty acids ((PUFAs) was not significantly associated with CRC risk. Some studies found that seafood-derived n-3 PUFAs were negatively related to CRC risk, while total fat and palmitoleic acid were positively related to CRC risk. The association between fatty acids and CRC risk might be modified by different factors including sex, region, and food patterns.

Conclusion

SFAs, MUFAs and PUFAs intakes were not associated with the risk of CRC, whereas seafood-derived n-3 PUFAs might decrease the risk of CRC. Further large prospective studies and clinical trials involving more countries and races are warranted to confirm the association between dietary fat intake and CRC.

Key words colorectal cancer; fatty acid; diet

Category: Public Nutrition & Health

老火汤的摄入与慢性病、抑郁的关系

Habitual Cantonese Slow-Cooked Soup consumption is associated with diagnosed non-communicable diseases but inversely associated with depression.

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Objective

In Guangzhou, the prevalence of non-communicable disease (NCDs) is low but increasing rapidly in the past four decades. With recent research on the health effects by a unique diet tradition of Cantonese Slow-Cooked Soup (CSCS) consumption with nourishing ingredients and Chinese herbs cooked for long time coming to popular, the research has gotten a lot of attention. However, the association between NCDs and CSCS is in a controversy.

Methods

A total of 18,280 Cantonese aged over 15 years (mean age 49.36 years old, female vs. male 1:0.83) completed Guangzhou community-level health related survey in 2013-2014. We measured components of diagnosed NCDs (hypertension, type 2 diabetes, dislipidemia, gout), mental health (depression) and metabolic results (waist circumference, blood pressure and fasting blood glucose). Eating habits were evaluated by a frequency questionnaire. Cooking hours for CSCS was investigated as well.

Results

There was 69.2% among surveyed sample reported having a CSCS consumption habit, 36.2% reported they consumed CSCS twice a week, and half consumed CSCS cooked for 2-3 hours. Logistic regression model and general linear regression showed that having a CSCS consumption habit were positively associated with dislipidemia (OR: 1.36,95% CI:1.04,1.78) and gout (OR: 2.31, 95% CI: 1.13, 4.70), but associated with depression negatively (OR: 0.94, 95% CI: 0.93, 0.97). Consumption frequency was found to be a risk factor to waist circumference (OR:1.26, 95% CI: 1.12,1.42). Consuming CSCS cooked for less hours was a protective factor to gout (OR:0.70, 95% CI: 0.52,0.94), but a risk factor to depression (OR:1.02, 95% CI: 1.01,1.03), systolic blood pressure (OR:1.57, 95% CI: 1.26,1.96) and diastolic blood pressure(OR:1.43, 95% CI: 1.24,1.64).

Conclusion

Habitual CSCS consumption is associated with diagnosed NCDs but inversely associated with depression. It is important to educate Cantonese to modify their CSCS consumption habits.

Key words Cantonese Slow-Cooked Soup, NCDs, Depression, Association

Category: Public Nutrition & Health

红细胞膜多不饱和脂肪酸对中老年人骨骼肌流失的影响：一项前瞻性纵向研究

The Impacts of Erythrocyte Membrane Polyunsaturated Fatty Acids on the Skeletal Muscle Loss in Middle-aged and Older Adults: A Prospective Longitudinal Study

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Background

Polyunsaturated fatty acids may have a vital role in maintaining skeletal muscle mass in aged population.

Objective

This study aims to examine the longitudinal association between erythrocyte membrane polyunsaturated fatty acids and the skeletal muscle index, over an average follow-up period of 6.5 years, in a Chinese middle-aged and elderly population.

Methods and Study Design

A total of 1507 participants with mean age of 57.4 years were included in this study. skeletal muscle mass was determined by Dual-energy X-ray Absorptiometry and skeletal muscle index was calculated subsequently. Cis polyunsaturated fatty acids concentration of erythrocyte membrane were detected using Gas-liquid chromatography. Restricted cubic spline was used to evaluate the single effect of polyunsaturated fatty acid on skeletal muscle index and Bayesian Kernel Machine Regression was applied to assess the joint effect of polyunsaturated fatty acids on skeletal muscle index.

Results

Full adjusted restricted cubic spline showed a negative relationship between certain types of polyunsaturated fatty acids including C18:2n-6, C20:4n-6, C22:4n-6, C22:5n-3, total n-6 and total polyunsaturated fatty acids (P: <0.001 - 0.019) with skeletal muscle index decline. Besides, a U-shaped association was observed for other types of polyunsaturated fatty acids (C20:2n-6, C22:6n-3, and total n-3 polyunsaturated fatty acids) (P: 0.001 - 0.011). The ratio of n-6 to n-3 polyunsaturated fatty acids and linoleic acid to α-linolenic acid also exhibited a U-shaped association with skeletal muscle index decline (P: 0.029 - 0.042), with the minimum predictive values observed at a ratio of 3.73 and 123.90, respectively. Besides, full adjusted Bayesian Kernel Machine Regression showed a negative joint effect of total polyunsaturated fatty acids on skeletal muscle index decline, but no significant joint effect was observed for total n-6 or total n-3 polyunsaturated fatty acids.

Conclusion

A greater erythrocyte membrane polyunsaturated fatty acids concentration at baseline may help to reduce the loss of skeletal muscle mass in Chinese middle-aged and elder people during aging.

Key words longitudinal; polyunsaturated fatty acids; skeletal muscle; middle aged; the elderly

Category: Public Nutrition & Health

广州市社区人群膳食质量与血脂的关联性分析

Relationship between dietary quality, determined by CHEI score, and blood lipids in Guangzhou community: A cross-sectional analysis in adults over 30 years old

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Background and aim: Higher quality dietary patterns such as Dietary approches to stop hypetension and Mediterranean dietary patterns have been protectively associated with blood lipids profile.

This study examined whether healthy Chinese dietary pattern, which differ from dietary patterns derived from Western areas, are associated with blood lipids profile among Guangzhou community population.

Methods: A cross-sectional study. Fasting lipid profile were measured, Dietary quality was determined by Chinese Health Eating Sore(CHEI). The CHEI sore was computed based on a 79-item food frequency questionnaire.

Results: Female, Non-smoker, retired person, those with lower average income and those undertaking regular physical activity were more likely to have higher CHEI scores. Every unit increase in total CHEI sore was significantly and inversely associated with triglyceride [-0.069:(-0.082,-0.004)] after adjusting for socio-demographic and lifestyle groups. Score of tubers [-0.043:(-0.136,-0.003)], dark vegetables [-0.064:(-0.107,-0.020)], fruits [-0.019:(-0.039,-0.002)] and eggs [-0.081:(-0.120,-0.041)] were also found to significantly and inversely associated with triglyceride even after adjusting for confounders. while total CHEI score was not significantly associated with Total cholesterol, High density lipoprotein cholesterol, Low cholesterol density lipoprotein cholesterol after adjusting for confounders. Score of whole grains [0.015:(0.003,0.067)] and dairy products [0.021:(0.013,0.029)], nuts and seeds [0.018: (0.010,0.026)], fish and sea foods [0.014:(0.004, 0.023)], cooking oil [0.006: (0.000, 0.012)] and sodium [0.011:(0.000,0.021)] were positively associated with High density lipoprotein cholesterol. While higher sore of grains and cereals [-0.082:(-0.121, -0.042)], vegetables [-0.031:(-0.061, -0.001)], dark vegetables [-0.038:(-0.066, -0.011)] and eggs [-0.030:(-0.055, -0.004)] were associated with lower low density lipoprotein cholesterol level.

Conclusion:These results suggest that higher dietary quality may contribute to better blood lipids profile.

Key words Dietary quality; Chinese Health Eating Index; Blood lipids profile; cross-sectional study;

Category: Public Nutrition & Health

高海拔地区藏族成年人体脂分布与糖尿病风险因素的关联

Association between body fat distribution and diabetes risk factors in Tibetan adults living in high altitude areas

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Background: Body fat distribution had significant impacts on metabolic diseases and the impacts may differ across populations in diverse geographical locations. However, research on this topic was scarce among the Tibetan population residing in the Tibetan Plateau of China, where the average altitude exceeds 2800 meters.

Objectives: This study aimed to examine the association between body fat distribution and diabetes risk factors in Tibetan adults living in high altitude areas, Qinghai, China.

Methods and Study Design: This was a cross-sectional observational study, in which 852 Tibetan adults were included in the analysis. Social-demographic data was gathered by researchers with oral questions. Self-reported ethnicity was used for inclusion. Physical measurements were made by trained staff using calibrated instruments. Dual-energy X-ray absorptiometry (DXA) was used to assess human body fat composition. Compositional data analysis (CoDA) was employed to investigate when total fat mass is constant, the contribution of variation of body fat in different regions, including gynoid fat, android fat, arm fat, and other fat depots to glycated hemoglobin A1 (HbA1c) %, fasting plasma glucose (FBG), and homoeostatic model assessment insulin resistance equation (HOMA-IR) z score changes.

Results: Displacement of equivalent fat mass from android, arm, and other regions into gynoid fat was associated with decreases in HbA1c%, FBG, and HOMA-IR z scores in men and women across subgroups living in 2800 and 4300 meters. Specifically, displacing 1 kg of android fat into gynoid fat was associated with a 0.243, 0.232, and 0.145 decrease in z scores of HbA1c%, FBG, and HOMA-IR among Tibetan adults in Qinghai, respectively.

Conclusions: Gynoid fat was negatively associated with HbA1c%, FBG, and HOMA-IR in Tibetan adults, indicating a protective effect for diabetes risk factors, whereas adiposity in android, arm, and other regions had adverse effects.

Key words body fat distribution, DXA, diabetes, CoDA, high altitude

Category: Public Nutrition & Health

血清维生素D与肌肉减少型肥胖的关系:新型体成分模型的应用
Association of serum vitamin D with sarcopenic obesity: Application of novel body composition models

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Objective Sarcopenic obesity (SO), which has been considered adverse body phenotypes, was defined an individual have both high adiposity and low muscle mass. There may be higher health-related risks for individuals with SO than those with obesity or sarcopenia alone. However, there is no consensus on the definition of SO, and the relationship between SO and vitamin D is unclear. We aimed to explore the association between SO defined by dual energy X-ray novel body composition models and vitamin D status.

Methods 9515 participants above 18 years from 2011 - 2018 National Health and Nutrition and Examination Survey were included in the study. SO was defined by three different novel body composition models (FM/FFM model, TrFM/ASM model and body composition phenotype model). Multinomial logistic regression models and restricted cubic splines were used to analyze the association of vitamin D status and SO.

Results SO was associated with vitamin D deficiency which was a risk factor for SO (OR [95%CI] = 2.37 [1.61 - 3.47], 2.17 [1.48 - 3.17], 2.22 [1.51 - 3.25]). In TrFM/ASM model, vitamin D inadequacy (OR [95%CI] = 1.69 [1.02 - 2.80]) and deficiency (OR [95%CI] = 3.64 [2.13 - 6.22]) were both related to SO after adjusting for all covariates. In body composition phenotype model, vitamin D inadequacy (OR [95%CI] = 1.50 [1.17 - 1.92]) and deficiency (OR [95%CI] = 1.85 [1.48 - 2.33]) also were both related to SO. Additionally, a nonlinear correlation between vitamin D levels and SO in FM/FFM model was also observed (P = 0.0021).

Conclusions There was an association between SO and vitamin D deficiency. The relationship between SO and vitamin D inadequacy was also found in TrFM/ASM model and body composition phenotypes model, which means serum vitamin D needs to be maintained at an adequate level to reduce the potential risk of SO.

Key words Sarcopenic obesity, Body composition, Vitamin D, Dual energy X-ray

Category: Public Nutrition & Health

中国人群的两个队列中与吸烟相关的微生物特征及其与脂肪分布的联系

Distinct microbial signatures associated with cigarette smoking and their links to fat distribution in two Cohorts from Chinese populations

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Background and Objective: The associations of fat distribution with smoking and gut microbiota are not well understood. In this study, we aimed to examine these associations in male Chinese populations.

Methods: We included 2,783 male participants from the WELL-China Cohort and 1,336 male participants from the Lanxi Cohort. Fecal samples were collected between 2015 and 2019 and analyzed using 16S rRNA sequencing. Fat distribution were measured using the dual energy X-ray absorptiometry (DXA). We used the QIIME2 analysis pipeline to identify the associations between smoking status and gut microbiota, and the MaAsLin analysis to identify the distinct microbes in different smoking status. Multivariable linear regression and logistic regression models were applied to investigate the associations between the identified gut microbiota (smoke-microbiota index) and fat distribution.

Result: Cigarette smoking was significantly associated with microbial overall structure ($p<0.05$). Moreover, the smoking-related microbiota identified gut microbiota (smoke-microbiota index) was positively correlated with central obesity, assessed by waist circumference and waist-to-hip ratio and, android fat-related variables from DAX, including trunk fat percentage, trunk-to-legs fat ratio, android fat percentage, and android-to-gynoid fat ratio, but inversely correlated with gynoid fat, such as gynoid fat percentage and legs fat percentage ($p<0.01$). In both cohorts, we observed these results consistently.

Conclusion: Our study suggests that cigarette smoking might play a role in alteration of the gut microbial profile and contribution to central obesity in men. These findings highlight the potential role of the gut microbiome in smoking-related obesity and provide new insights into the harmful effects of smoking.

Key words cigarette smoking, gut microbiome, 16S rRNA, fat distribution, obesity

Category: Public Nutrition & Health

肠道微生物在昼夜节律紊乱引发相关代谢紊乱疾病中的影响

The Effects of Gut Microbiota on Metabolic Disorders Induced by Circadian Rhythm Disturbance

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Along with the rapid development of society, unhealthy lifestyle, such as high-calorie diet, irregular eating and sleeping patterns lead to circadian rhythm disorder of people. Circadian clocks, alignling behavioral and biochemical processes with the 12 h day/12 h night cycle to help the body adapt to periodic changes in the environment, plays an important role in metabolism. By contrast, rhythm disorder can lead to obesity and metabolic disorders. As an important participant in nutrient absorption, gut microbiota undergoes diurnal compositional and functional oscillations that affect metabolic homeostasis. Unhealthy lifestyle not only disturbs central and peripheral circadian rhythms, but also changes the normal composition of intestinal microbiota and their secretion of metabolites. Ultimately, all of these changes lead to metabolic disorders. For example, shift work and chronic jet lag disturb the circadian clock. Mimicking the jet lag situation in mice for 8 weeks, study shows that jet lag mice featured an abrogation of bacterial rhythms on nutrients metabolism with a reduced number of oscillating bacterial taxonomic units. The time-shifted mice also exhibited enhanced weight gain and exacerbated glucose intolerance as compared to mice maintained on normal circadian rhythmicity. Giving the Time Restrict Feeding (TRF), the light-phase-fed group shows that most cycling OTUs appeared a phase shift of about 12 h upon modification of feeding times and maybe directly connected with obesity. Moreover, High-fat diet (HFD) introduce abnormal composition of intestinal microbiome and oscillating rhythm. With the microbiome changing, the diurnal oscillation of associated metabolites such as short chain fatty acid (SCFA) butyrate、unconjugated bile acids will also change and influence metabolism. SCFA trigger the release of GLP-1(colon), leptin (fat) and insulin (pancreas). These hormones, along with short-chain fatty acids, enter the systemic circulation and interact with skeletal muscle to influence lipid, carbohydrate, and protein metabolism.

Key words unhealthy life style; gut microbiota; circadian rhythm; metabolic disturbance; obesity

Category: Public Nutrition & Health

中老年人群饮食来源的B族维生素摄入量与睡眠质量的关联性研究

Intake of B vitamins and sleep quality in middle-aged and older adults: the HealthyDance study

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Background: The B vitamins are known as cofactors involving the enzymatic reactions in the conversion process of serotonin to melatonin, a hormone that supports healthy sleep. However, data directly linking these B vitamins intake from dietary sources to sleep quality are sparse.

Objectives: To examine the association of the intake of B vitamins with sleep status in middle-aged and older adults.

Methods and Study Design: We performed a cross-sectional study with participants from the HealthyDance study, a cohort of community-dwelling adults aged ≥45 years who frequently participated in square dance at baseline. Nutrient intake was obtained through a validated food frequency questionnaire. The lowest quintile was used as the reference category. Sleep quality was assessed using the Pittsburgh sleep quality index standard questionnaire. Multivariable logistic regression was performed to assess the relationship between dietary B vitamins consumption and sleep quality.

Results: A total of 2333 participants (mean age 62.3±6.2, 89.9% females) were included in this study, and the prevalence of poor sleep quality was 33.6%. Compared with the lowest quintile group of dietary B vitamins intake, the highest quintile group had a lower prevalence of poor sleep quality. After adjustment for potential confounders, a higher intake of total B vitamins (odds ratio [OR] for highest vs. lowest quintile: 0.68, 95% confidence interval [CI]: 0.51-0.90, p for trend <0.05), VB6 (OR for highest vs. lowest quintile: 0.59, 95% CI: 0.44-0.79, p for trend <0.05), VB12 (OR for highest vs. lowest quintile: 0.62, 95% CI: 0.46-0.85, p for trend <0.05), folate (OR for highest vs. lowest quintile: 0.59, 95% CI: 0.44-0.79, p for trend <0.05) were associated with a lower odds of poor sleep quality.

Conclusions：A higher intake of dietary B vitamins was associated with better sleep quality in Chinese middle-aged and older adults.

Key words B vitamins, diet, sleep quality, the HealthyDance study

Category: Public Nutrition & Health

城镇化藏族成年人的炎症相关饮食模式和肥胖风险：一项纵向研究

Inflammatory-Related Dietary Patterns and Obesity Risk in Urbanized Tibetan Adults: A Longitudinal Study

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Objective: The alarmingly growing prevalence of obesity and its complications pose a tremendous burden of non-communicable diseases (NCDs) on individual and public healthcare systems worldwide. Diet plays an important role in modulating inflammatory response and development. We aimed to identify inflammatory-related dietary patterns (DPs) and explore their associations with obesity among urbanized Tibetan adults.

Methods: Between 2018 and 2022, 1826 subjects were enrolled using an open cohort design, and 514 of them were followed up in 2022. Height, weight and waist circumference were measured and used to define overweight, general obesity and central obesity, respectively. DPs were derived using reduced rank regression based on a 41-item Food Frequency Questionnaire using high-sensitivity C-reactive protein and prognostic nutritional index as inflammatory response variables. Altitude levels were classified as either high or ultra-high. Mixed effect models were used to determine the associations.

Results: Two dietary patterns (DPs) were identified in this study. DP-1 was characterized by high consumption of sugar-sweetened beverages, savory snacks, and poultry, and low intake of tsamba. DP-2 was characterized by high intake of poultry, pork, animal offal, and fruits, and low intake of butter tea. Participants in the highest tertiles (T3) of both DPs had increased risks of overweight and obesity (DP-1: OR=1.37, 95% CI: 1.07, 1.77; DP-2: OR=1.48, 95% CI: 1.18, 1.85) compared to those in the lowest tertiles (T1). Moreover, participants in T3 of DP-2 had an increased risk of central obesity (OR=2.25, 95% CI: 1.49, 3.39) compared to those in T1. Subgroup analyses revealed that the positive association between DP-1 and overweight/obesity risk was only observed in high altitude, while no such effect was observed for DP-2.

Conclusions: Inflammatory-related DPs were associated with increased risks of overweight, obesity, and central obesity.

Key words Keywords: inflammatory-related dietary patterns; reduced rank regression; overweight and obesity; central obesity; Tibetan Plateau

Category: Public Nutrition & Health

胰岛素抵抗的经验性饮食指数和经验性膳食炎症模式与代谢相关脂肪肝的关联研究

Associations of empirical dietary index for insulin resistance and empirical dietary inflammatory pattern with metabolic dysfunction-associated fatty liver disease

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Background and objectives: Insulin resistance and inflammation play a pivotal role in the development of metabolic dysfunction-associated fatty liver disease (MAFLD), while the role of insulin-resistant or pro-inflammatory diet in MAFLD remains unclear. The aim of the study was to investigate the associations of dietary index and pro-inflammatory dietary pattern with MAFLD.

Methods: Our study included participants from the Lanxi urban cohort and the Gongshu district of WELL-China cohort. Fatty liver was diagnosed by abdominal ultrasound scan. Empirical dietary index for insulin resistance (EDIR) and empirical dietary inflammatory pattern (EDIP) were derived using reduced rank regression to identify food groups most predictive of homeostatic model assessment for insulin resistance (HOMA-IR), C-reactive protein (CRP) and white blood cells (WBC) in these two cohorts. Odds ratios (ORs) and 95% confidence intervals (CI) were estimated using logistic regression. The above analyses were performed for each cohort separately.

Results: Of the 2,296 participants in the Lanxi urban cohort, 841 (36.6%) were diagnosed with MAFLD. The EDIR was comprised of eight food groups: three were positively associated with HOMA-IR and five were inversely associated. The EDIP was comprised of eight food groups: three were positively associated with CRP and WBC and five were inversely associated. The multivariable-adjusted ORs for participants in the highest tertile, compared to those in the lowest tertile, were 1.51 (95% CI: 1.05-1.27, P_{trend} = 0.003) for EDIR and 1.59 (1.31-1.94, P_{trend} < 0.001) for EDIP. Moreover, the effects were stronger among individuals aged 50 years or older. The observed results can be validated in the Gongshu district of WELL-China cohort.

Conclusions: People with higher adherence to EDIR and EDIP were associated with increased risk of MAFLD in two independent cohorts. Our findings suggested insulin resistance and inflammation may be a potential mechanism linking dietary patterns and MAFLD.

Key words dietary pattern; insulin resistance; inflammation; metabolic dysfunction-associated fatty liver disease; reduced rank regression

Category: Public Nutrition & Health

北京市儿童青少年酒类广告的暴露程度及广告营销策略
Exposure Of Children and Adolescents to Alcohol Advertising on Television in Beijing, China

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Background and Objectives

Evidence suggests that children and adolescents exposed to alcohol advertising are at a higher risk of early initiating alcohol use and consuming more alcohol. This study aimed to explore the extent and nature of television alcohol advertising to children and adolescents in Beijing, China.

Methods and Study Design

We selected the five most popular television channels among children and adolescents aged 3-18 years in Beijing, including two channels for general audiences and three for children and adolescents. Television broadcasts were recorded for eight randomly selected days over three months, excluding public holidays and school holidays, between October 19, 2020, and January 17, 2021. Recordings were done from 6:00 am to 00:00 am each day. The collected data were coded and analyzed using the International Network for Food and Obesity/Non-communicable Diseases Research, Monitoring and Action Support protocol.

Results

Of the 13,864 advertisements recorded in 720 hours of recorded programming, 321 (2.32%) were alcohol advertisements, and 5,055 (36.46%) were food and non-alcohol beverage advertisements. All alcohol advertisements were from two channels for general audiences, which promoted spirit alcohol brands or products. The two general audience channels displayed an average of 32 and 7 alcohol advertisements per day, respectively. During peak viewing times, each channel aired about two to three times as many alcohol advertisements per hour as other times ($P<0.001$). All alcohol advertisements used persuasive marketing strategies, with brand benefit claims (95.64%) being the most commonly used strategy, followed by advercation (73.21%).

Conclusions

Children and adolescents may still be highly exposed to alcohol advertising on television in Beijing, despite restrictions on the number of alcohol advertisements by the Advertising Law and the Regulation on Broadcasting of Radio and Television Advertisements. Urgent action is required to enact and enforce regulations to protect children and adolescents from alcohol advertising on television.

Key words Advertising; Alcohol; Children and adolescents; Television; Persuasive marketing

Category: Public Nutrition & Health

不同体重状况和体脂分布的儿童血浆代谢物变化

Variations in Plasma Metabolites in Children with Different Weight Statuses and Body Fat Distributions

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Objectives: This study aimed to examine the variations in plasma metabolites among Chinese children aged 6 - 11 years with different weight statuses and body fat distributions.

Methods: This cross-sectional study enrolled 426 healthy children, comprising 185 girls and 241 boys. The subjects' weight statuses were categorized as underweight, normal weight or overweight/obese based on body mass index. Dual-energy X-ray absorptiometry was used to determine body fat content and regional fat distribution. Plasma metabolites were analyzed using targeted metabolomic technologies.

Results: A total of 200 metabolites were accurately quantified. 27 differential metabolites were identified in participants of different weight status with variable importance in the projection value greater than 1 and false discovery rate adjusted p value less than 0.05. Furthermore, we used least absolute shrinkage and selection operator regression with internal validation to discover 18 metabolites that were associated with body mass index. After adjusting for potential covariates and multiple test correction, multiple linear regression analyses revealed that methylmalonic acid, l-glutamine, glycine, erythorbic acid, and acetylglycine were all negatively associated with body mass index, body fat content, and regional body fat distribution (β: -8.59×10^{-1} - -5.55×10^{-5}, p_{FDR}: < 0.001 - 0.042). Conversely, pyroglutamic acid, l-valine, l-tyrosine, l-leucine, l-glutamic acid, l-carnitine, l-alanine, and isovalerylcarnitine were all positively related with the above mentioned measures (β: 8.78×10^{-5} - 1.55, p_{FDR}: < 0.001 - 0.043). In Kyoto Encyclopedia of Genes and Genomes analysis, the top five significantly enriched pathways included “Phenylalanine, tyrosine and tryptophan biosynthesis”, “D-Glutamine and D-glutamate metabolism”, “glycine, serine and threonine metabolism”, “phenylalanine metabolism”, and “Alanine, aspartate and glutamate metabolism”.

Conclusions: Certain plasma metabolite concentrations are related to body mass index and body fat distribution. These metabolic signatures present novel intervention approaches to improve weight status in children.

Key words Plasma metabolites; Weight status; Body mass index; Body fat distribution; Children

Category: Public Nutrition & Health

性别认知对中国大学生健康膳食行为的影响：基于潜类别分析

The Impact of Gender Perceptions on Healthy Dietary Behaviors among Chinese University Students: A Latent Class Analysis

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As China enters the second phase of the nutrition transition, the "triple burden" of malnutrition (insufficient caloric intake, micronutrient deficiencies, and excessive nutrient intake leading to overweight and obesity) emphasizes the need to understand dietary behavior patterns. This study re-examines the factors influencing healthy dietary behavior among Chinese people from a gender roles perspective, offering a unique insight compared to previous research focusing on individual nutritional knowledge, economic status, and environmental factors.

Using 2020 data from local university students in Shanghai, this study employs a Latent Class Analysis (LCA) model based on students' consumption frequency of 20 food items, categorizing their dietary behavior into omnivorous, health-conscious, and picky eating groups. It also analyzes the influence of gender roles and other factors on students' adoption of these three dietary patterns by sex.

Contrary to previous findings that men are less likely to engage in healthy behavior, women are more prone to picky eating. Female students with more traditional gender role beliefs are less likely to adopt healthy dietary patterns. The societal and cultural emphasis on a slim figure for women and their internalization of this expectation may significantly contribute to traditionally-minded female students deviating from healthy diets.

The university stage is crucial for establishing healthy behaviors. To promote healthy diets, attention must be given to the impact of socio-cultural factors on dietary patterns while advocating for gender equality in society.

Key words Healthy dietary behaviors; Gender perceptions; Chinese university students; Latent Class Analysis; Sociocultural factors

Category: Public Nutrition & Health

多组学联合分析沙棘熊果酸对饮食肥胖小鼠肠道菌群及代谢产物的影响

Multivariate analysis of the effext of seabuckthorn usolic acid in intestinal flora and metabolities in obese mice

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Objective This study aims to explore the relationship between intestinal flora and metabolites of Mongolian obese children. Methods Mongolian children in Tongliao, Inner Mongolia were selected as obese group and 15 children with normal weight were selected as normal group. The fecal samples of two groups of children were collected, the intestinal microbes were detected by 16S rDNA technique, and the diversity and difference of intestinal flora between the two groups were analyzed. The metabolites with obvious differences between the two groups were screened by liquid chromatography-mass spectrometry, and the enrichment analysis pathway was predicted.Results The relative abundance of Bacteroides and Firmicutes in feces of obese children was lower than that of normal children (P<0.05), while Actinomycetes and Proteobacteria were higher than that of normal children (P<0.05). There were significant differences between obesity group and normal group in 7 dominant genera (P<0.05), among which 4 genera were down-regulated and 3 genera were up-regulated. Here were differences among 12 metabolites (P<0.05), the contents of 6 metabolites such as tyrosine and 4- hydroxyproline decreased, while the contents of 6 metabolites such as ribolactone and 4- cholestene -3 ketone increased.After the analysis of differential metabolites enrichment, it was found that the changes of metabolic pathways mainly focused on the synthesis of steroid hormones, phenylalanine, tyrosine and tryptophan.According to the correlation analysis between different bacteria and different metabolites, Alistipes was negatively correlated with 4-cholesterin-3 ketone, Bacteroides and Alistipes with citrulline, Blautia with ribonucleic acidlactone, and Pseudobutyrivibrio with 4-cholesterin-3 ketone were positively correlated. Conclusion There are differences in the structure of intestinal flora and fecal metabolic spectrum between normal-weight and obese Mongolian children, and the changes of metabolic pathways mainly focus on the synthesis of steroid hormones, phenylalanine, tyrosine and tryptophan, while citrulline, 4-cholestene-3 ketone and riboselactone may become biomarkers of obesity in Mongolian children.

Key words Mongolian children; Obesity; Intestinal flora; Metabonomic

Category: Public Nutrition & Health

不同膳食模式和代谢综合征及其组分的关系：基于一项中国藏族成人的队列研究

Association between dietary patterns and metabolic syndrome and its components: a cohort study of Tibetan adults in China

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Background: Little is known about the longitudinal association between dietary patterns (DPs) and metabolic disorders in Tibetans who live in high-altitude areas.

Methods: We constructed the first open cohort with 1832 Tibetan adults. The Food frequency questionnaire survey and anthropometric and biomarker measurements were used in 2018 and in 2022. Factor analysis was conducted to identify major DPs. The mixed-effect model was used to examine the associations between DPs and metabolic syndrome (MetS) and its components.

Results: The MetS prevalence was 30.1% (32.3% in men and 28.3% in women). Three different DPs were identified: modern DP (pulses, poultry, offal, and processed meat), urban DP (vegetable, refined grain, beef/mutton, and eggs), and pastoral DP (Tibetan cheese, tsamba, butter/milk tea, and desserts). Participants within the third tertile of the urban DP had a 3.42-fold (95% CI 1.65-7.10) higher risk of MetS than those with the 1st tertile. Modern DP was positively associated with elevated blood pressure (BP) and elevated triglycerides (TAG) while it was inversely associated with low HDL-C (OR 0.71, 95%CI 0.56-0.90). The urban DP was associated with a higher risk of low HDL-C (OR 2.36, 95%CI 1.83-3.04), but a lower risk of impaired fasting blood glucose (FBG). The pastoral DP was a risk factor for impaired FBG (OR 1.42, 95%CI 1.06-1.90), but protective against central obesity (OR 0.57, 95%CI 0.35-0.92) and elevated BP (OR 0.64, 95%CI 0.43-0.96).

Conclusion: Among Tibetan adults, DPs were associated with MetS and its components. Urban DP is the risk factor of MetS. Tailored intervention should be implemented.

Acknowledgment: The study was supported by the Key Project of Research, Development and Transformation in Qinghai Province (2023-QY-204), the National Scientific Foundation China (NSFC, grant No. 82103846), and the Key Project of Science and Technology in Qinghai Province (2021-NK-A3).

Key words blood pressure; blood glucose; dietary pattern; high altitude; lipids; metabolic syndrome; obesity; Tibetans

Category: Public Nutrition & Health

中文版儿童饮食行为问卷的验证及其与学龄前儿童肥胖的关联

The Chinese version of the Child Eating Behavior Questionnaire: validation, and association with obesity in preschool children

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Objective: The study aims to evaluate the construct validity of the Chinese CEBQ in preschoolers and explore the relationships between eating behaviors and obesity.

Method: Parents of 3-6-year-old children completed the Chinese version of the CEBQ, obtained through a translation-back-translation process, to evaluate preschool children's eating behaviors. The construct validity was tested using confirmatory factor analysis (CFA). Multiple linear regression and logistic regression were employed to assess the relationships between eating behaviors and anthropometric indicators.

Results: The modified 8-factor model showed an acceptable fit with comparative fit index = 0.900, Tucker - Lewis index = 0.884, root mean square error of approximation = 0.058, and standardized root means square residual = 0.069. Logistic regression revealed that preschoolers with higher scores in enjoyment of food (OR = 1.751, 95% CI = 1.130-2.757, P = 0.014), desire to drink (OR = 1.485, 95% CI = 1.040-2.126, P = 0.029), and food responsiveness (OR = 1.934, 95% CI = 1.289-2.945, P = 0.002) showed a significantly higher risk of overweight and obesity. The opposite relationships were found in satiety responsiveness (OR = 0.467, 95% CI = 0.312-0.684, P < 0.001), slowness in eating (OR = 0.352, 95% CI = 0.245-0.491, P < 0.001), and emotional undereating (OR = 0.623, 95% CI = 0.435-0.877, P = 0.008).

Conclusion: This study presented an acceptable fit for the Chinese CEBQ based on the CFA and showed correlations between eating behaviors and obesity, which provided a reasonable tool to assess the eating behaviors of preschoolers in China.

Key words preschool children; overweight and obesity; CEBQ; Chinese version; CFA

Category: Public Nutrition & Health

糖尿病患者叶酸代谢物与慢性肾脏疾病的关系:NHANES 2011-2018 数据集分析

Relationship of folate metabolites with chronic kidney disease in diabetic patients: A Cross-sectional analysis of the NHANES 2011-2018 dataset

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Abstract:

Background: There were many studies explored the relationship between folate and health while the effects of folate on the diabetes mellitus patients are still not clear. This study aims to explore the possible effect of the metabolites of folate on CKD in diabetic patients.

Methods: Anthropometrics data of diabetic patients from 2011 to 2018 were collected from NHANE database. Ordinal logistic regression was used to determine the potential effect of the metabolites of folate on the severity of CKD. The spearman correlation was used to identify the relationship between the total folate intake and the amounts of metabolites of folate. The receiver operating characteristic (ROC) curve analysis was performed to determine the optimal cut-off value for reduced estimated glomerular filtration rate (eGFR).

Results: Among the 2,542 diabetic patients analyzed in this study, 1774 (69.79%) were clinically diagnosed stage I and II patients of CKD. Univariate and multivariate analyses showed that high concentration of 5-mTHF (5-Methyltetrahydrofolate) is associated with the decreased severity of CKD and unmetabolized folic acid/folate, while high Mefox is associated with the increased severity of CKD ($P<0.05$). Intake of total folic acid and folate can increase the amount of those four metabolites. The ROC of eGFR showed that Mefox had the highest AUC (0.798).

Conclusions: Several metabolites of folate are significantly associated with the severity of CKD in diabetic patients. Self-reported folate supplementation is associated with a higher 5-mTHF concentration in these patients compared to other metabolites detected in these patients.

Key words Chronic kidney disease, diabetes, folate, folate metabolites

Category: Public Nutrition & Health

超加工食品消费与2型糖尿病患者心血管疾病风险的关联：英国生物银行的调查结果

Association of ultra-processed food consumption with risk of cardiovascular disease among individuals with type 2 diabetes: Findings from the UK Biobank

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Background and Objectives: Among patients with diabetes, who have modified nutritional behavior and a higher risk of cardiovascular disease (CVD), the influence of ultra-processed foods (UPFs) on CVD remains unknown. To evaluate the association between UPF intake and the risk of CVD among individuals with type 2 diabetes (T2D) and further examine the potential biological pathways linking the association.

Methods and Study Design: This study included 5,405 participants with T2D providing at least one 24-h dietary recall from the UK Biobank study. UPFs were defined using the NOVA classification, which is widely used to classify foods based on the degree of processing. Incident CVD was ascertained through self-report, primary care records, hospital in-patient records, and death register records. Multivariable cox proportional hazards regression models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for CVD outcomes. Mediation analyses were used to estimate the mediating effects of 14 biomarkers relating to renal function, lipid profile, inflammation, blood pressure, and body weight.

Results: During a median of 11.7 years of follow-up, 1,089 incident CVD events occurred, including 829 coronary heart disease (CHD), 225 stroke, and 310 heart failure events. In the multivariable-adjusted models, a 10% increase in the proportion of UPFs was associated with higher hazards of overall CVD (HR: 1.10; 95% CI: 1.04, 1.15), CHD (HR: 1.10; 95% CI: 1.04, 1.16), heart failure (HR: 1.14; 95% CI: 1.05, 1.25), but not stroke (HR: 1.01; 95% CI: 0.90, 1.12). Cystatin C, HDL-C, apolipoprotein A, C-reactive protein, and body mass index collectively explained 26.9% (12.8%, 48.5%) of the association between UPF intake and overall CVD.

Conclusions: Higher UPF intakes were associated with increased hazards of CVD among individuals with T2D, and the associations were partly mediated through worsening biomarkers of renal function, lipid metabolism, inflammation, and body weight.

Key words Cardiovascular disease; Mediation; Metabolic biomarkers; Type 2 diabetes; Ultra-processed foods.

Category: Public Nutrition & Health

代谢综合征人群中膳食纤维摄入量与心脏代谢性疾病的关联：前瞻性研究

Association of dietary fiber intake and cardiometabolic disease in metabolic syndrome populations: A prospective study

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Objective: Dietary fiber is known to have protective effects against obesity, type 2 diabetes, cardiovascular disease and the metabolic syndrome. In this study, we investigated whether dietary fiber intake and its changes in the gut microbiome associated with the risks of having cardiometabolic disease in metabolic syndrome populations.

Participants: The present study included 2296 participants with metabolic syndrome from the Well-China cohort study, and 1172 participants with metabolic syndrome from the Lanxi cohort study. Over an average 3.9 year follow-up period, we detected 117 and 113 individuals with onset of cardiometabolic disease from the Well-China cohort and Lanxi cohort, respectively.

Results: In the fully adjusted models, a higher dietary fiber intake was associated with decreased onset of cardiometabolic disease (fiber intake ≥ 7.39: HR, 0.62; 95%CI, 0.42-0.92) in Well-China cohort, although no significant association was found in Lanxi cohort (HR, 0.6; 95%CI, 0.27-1.35). Meta-analysis of Well-China and Lanxi cohorts showed that, compared with lowest fiber intake group, the higher group had 38% lower risk of having cardiometabolic disease (HR, 0.62; 95%CI, 0.43-0.88). In microbiota analysis, the fiber related microbiota score, which implied high dietary fiber intake caused changes of gut microbiome, was inversely associated with cardiometabolic disease morbidity (P trend=0.017) in Well-China cohort.

Conclusions: Our results suggest that in metabolic syndrome populations, higher fiber intake could significantly reduce cardiometabolic disease risks, and fiber related microbiota changes also associated with lower risk of having cardiometabolic disease.

Key words Keywords: dietary fiber; cardiometabolic disease; gut microbiota; metabolic syndrome

Category: Public Nutrition & Health

江苏省居民营养健康知识知晓率调查情况及影响因素分析
The awareness rate of nutrition and health knowledge and its influencing factors in Jiangsu Province, China

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Background and Objectives: China has both undernutrition and overnutrition, and chronic diseases aggravated by unreasonable diets, which are largely caused by the low level of nutrition and health literacy of individuals. This study was aimed to grasp the knowledge level of nutrition and health in Jiangsu Province and provide scientific basis for nutrition intervention policy formulation.

Methods: A multi-stage sampling method was adopted to select research objects in 13 cities of Jiangsu Province. The descriptive statistic was used to illustrate the characteristics of nutrition and health knowledge level of Jiangsu residents. And logistic regression applied to explore its influencing factors.

Results: A total of 4683 people joined the investigation on the awareness rate of nutrition and health knowledge from Mar 2021 to Jun 2021 were included. The total health awareness rate was 23.89%, among which the qualified rate of the food hygiene part was higher (73.03%), the qualified rate of the food selection part and the dietary guideline part was lower (11.94% and 17.17%). Southern and central areas of Jiangsu are higher than northern areas. It was associated with sex, age, and education level. Conclusions: Nutrition and health knowledge training especially for food choices and dietary guideline part for the 35-49 age group in northern areas should be strengthened.

Key words nutrition and health knowledge; characteristics; influencing factors

Category: Public Nutrition & Health

全孕期持续高水平体力活动与早产风险的关联：中国医科大学出生队列研究

Sustained high-level physical activities throughout pregnancy and the risk of preterm birth: China Medical University Birth Cohort Study

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China Medical University

Abstract

Objectives: Physical activity (PA) during pregnancy is a potentially modifiable risk factor to prevent preterm birth (PTB). However, whether a sustained high level of PA across three trimesters protects women from PTB remains unclear. This study aimed to examine the protective association of a sustained high level of PA throughout pregnancy with PTB.

Methods: This observational study was based on the China Medical University Birth Cohort Study, in which 1538 women were included during early pregnancy and three follow-ups were conducted. PA was assessed for each trimester via the Pregnancy Physical Activity Questionnaire (PPAQ). PTB was diagnosed from medical records, while subtypes were diagnosed by experienced gynecologists. The protective association of a sustained high level of PA throughout pregnancy with PTB was assessed by multivariable logistic regression models.

Results: In the final analysis, the incidence of PTB, iatrogenic preterm birth (IPTB), and spontaneous preterm birth (SPTB) was 12.03%, 9.17%, and 2.86%, respectively. A higher prenatal cumulative physical activity score (the number of trimesters that the intensity of maternal physical activity is in the highest tertile) across three trimesters significantly correlated with a lower risk of PTB (a score of 3 vs. a score of 0: OR = 0.24; 95% CI: 0.11–0.54, **P** for trend <0.001) and IPTB (a score of 3 vs. a score of 0: OR = 0.23; 95% CI: 0.09–0.59, *P* for trend <0.001) in a dose-response-dependent manner, but not with a lower risk of SPTB.

Conclusions: Women with sustained high levels of PA across pregnancy were at the lowest risk of PTB and IPTB. These results support the American College of Obstetricians and Gynecologists' guideline and further highlights the importance of sustained PA to PTB.

Key words Preterm birth; Physical activity; Birth cohort; Iatrogenic preterm birth; Spontaneous preterm birth

Category: Public Nutrition & Health

孕期体力活动与胎儿生长发育的关联：中国医科大学出生队列研究

Trimester-specific association of physical activity during pregnancy with fetal growth in the China Medical University Birth Cohort Study

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Objectives: Fetal growth disorders adversely affect pregnancy and later-life outcomes. We aimed to examine the trimester-specific association of physical activity during pregnancy with fetal growth, as this association has not been established.

Methods and Study Design: We analyzed 1526 mother-neonate pairs participating in the China Medical University Birth Cohort. The Pregnancy Physical Activity Questionnaire (PPAQ) was used to assess the physical activity status of women during each trimester. Small for gestational age (SGA) and large for gestational age (LGA) were defined according to the INTERGROWTH-21st birthweight standards and estimated fetal weight (EFW) was based on ultrasound measurements.

Results: Overall, 99/1526 (6.5%) and 773/1526 (50.7%) newborns were SGA and LGA in the present study. Higher total physical activity throughout pregnancy was associated with a lower risk of SGA (odds ratio [OR]: 0.63, 95% confidence interval [CI]: 0.40-0.98, *P* for trend: 0.039). We detected a negative correlation between physical activity in the second trimester and SGA (OR: 0.58, 95% CI: 0.34-0.995, *P* for trend: 0.046) after adjusting for all covariates. Physical activity in the second trimester was also negatively correlated to fetal growth restriction (FGR; EFW below the 10th percentile) (OR: 0.45, 95% CI: 0.25-0.81, *P* for trend: 0.007).

Conclusions: Our results suggested that the second trimester is a sensitive window for the effect of physical activity on fetal growth. Higher levels of physical activity during that window were associated with a lower risk of SGA and FGR during the second trimester.

Key words Fetal growth; Physical activity; Small for gestational age; Large for gestational age; Estimated fetal weight

Category: Public Nutrition & Health

汉族和蒙古族膳食模式与糖尿病风险的关联差异：一项中国横断面研究

Han and Mongolian Differences in Dietary Patterns and Risk of Diabetes: Evidence from A cross-sectional study in China

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Objectives: This investigation aimed to identify the main dietary patterns among Han and Mongolian populations in China and explore the relationships between these patterns with diabetes and its components.

Methods and Study Design: This cross-sectional survey was conducted in Fuxin city, Liaoning Province, China, in 2021. 2,862 participants were recruited to assess dietary intake using a semiquantitative food frequency questionnaire (FFQ). Dietary patterns were identified using principal components analysis. Multivariable logistic regression was applied to investigate the associations between dietary patterns and diabetes. To quantify the magnitude of mediation, we estimated the proportion of the association between dietary patterns and diabetes mediated by obesity.

Results: Four dietary patterns were identified in total participants: “Meat Pattern,” “Protein-sweets pattern,” “Traditional Chinese pattern,” and “Staple food pattern.” In all populations, the protein-sweets pattern was associated with a lower risk of diabetes (P for trend: 0.046). The traditional Chinese pattern was positively associated with the risk of diabetes (OR: 3.88, 95%CI: 2.79-5.38). For the staple food pattern, a negative correlation was observed with the risk of diabetes (OR: 0.26, 95%CI: 0.19-0.36). In the stratified analysis, the protein-sweets pattern was negatively associated with diabetes only among the Han (OR: 0.64, 95%CI: 0.48-0.99). The traditional Chinese pattern and the staple food pattern were associated with diabetes among both Han and Mongolian. Moreover, BMI mediated the association of the protein-sweets pattern (Proportion mediated: 9.58%) and traditional Chinese pattern (Proportion mediated: 3.51%) with diabetes. Waist circumference (Proportion mediated: 17.54%) and abdominal obesity (Proportion mediated: 11.24%) mediated the association of the traditional Chinese pattern with diabetes.

Conclusions: We suggested that the meat pattern and the traditional Chinese pattern should be reduced in both Han and Mongolian populations while they should all follow the staple food pattern more often. For the Han, the protein-sweets pattern may also reduce diabetes risk.

Key words Dietary patterns; Diabetes; Han; Mongolian

Category: Public Nutrition & Health

嗜热链球菌 MN-ZLW-002 通过脑肠轴介导减轻 APP/PS1 小鼠的认知功能障碍

Live and heat-inactivated Streptococcus thermophilus MN-ZLW-002 mediate the gut-brain axis alleviating cognitive dysfunction in APP/PS1 mice

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Aim: To explore the possibility of using *S. thermophilus* MN-ZLW-002 to regulate the gut-brain axis and improve cognitive function in mice. **Methods**: Wild-type mice and the APP/PS1 mice were divided into the control, model, the low-dose live probiotics treatment (AL) group, the high-dose live probiotics treatment (AH) group, the low-dose heat-inactivated probiotics treatment (IL) group, and the high-dose heat-inactivated probiotics treatment (IH) group treated with steriled saline, 8.33×10^9 CFU/kg.bw/d or 1.67×10^{10} CFU/kg.bw/d live or heated-inactivated *S. thermophilus* MN-ZLW-002. After intervention 3 months, mice were subjected to behavioral tests. **Results**: Compared with the model groups, the AH and IH groups had shorter latencies of Morris water maze on the test day ($p<0.05$). Compared with the control group, the model and AL groups had higher Shannon index ($p<0.05$). Compared with the control group, the AL group had a higher Simpson index ($p<0.05$). Compared with the control group, the model, AL and IL groups had significantly higher levels of astrogliosis ($p<0.05$). In contrast, compared to the model group, the AH group had a significantly lower level of astrogliosis ($p<0.05$) . Compared with the control group, the AL and IL groups had significantly higher IL-6 levels in the serum ($p<0.05$), while the model, AH, AL, IH, and IL groups had significantly lower LPS levels in the serum ($p<0.05$). **Conclusion**: These results indicated that different forms and doses of the same strain, S. thermophilus MN-002, can partly improve cognitive functions in the AD model mice via the gut-brain axis.

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Key words Brain function, gut microbiota, probiotics

Category: Public Nutrition & Health

天津地区孕期膳食与母乳低聚糖含量的相关性分析

Vitamins, vegetables and metal elements are positively associated with breast milk oligosaccharide composition among mothers in Tianjin, China

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Background: Human milk oligosaccharides are a group of breast milk carbohydrates that do not exist in conventional foods, but exert pivotal benefits for breastfed infants. The influence of maternal diet, on breastmilk Human milk oligosaccharides composition has not been well characterized.

Objectives: We investigated associations between dietary nutrient intake and Human milk oligosaccharides concentrations in a general pregnant and postpartum population.

Methods: A total of 385 breast milk samples from 277 mothers were collected. Baseline maternal characteristics and dietary patterns were collected using food frequency questionnaires. Six different Human milk oligosaccharides were detected in mothers' milk at 5 different postpartum stages: 2′-fucosyllactose, 3-fucosyllactose, lacto-N-tetraose, lacto-N-neotetraose, 3′-sialyllactose and 6′-sialyllactose. Secretor phenotype was assigned based on 2′-FL concentrations in milk samples. Nutrient intake was calculated from the food frequency questionnaire data based on a food composition table, and the correlation between nutrients and Human milk oligosaccharides were analyzed using a linear mixed-effects model with stage and secretor type as the random effect.

Results: Out of 82 dietary nutrients analyzed, there were 13 principal components identified by principal component analysis after energy adjustments using the residual method. The linear mixed-effects model identified plant nutrients, vitamins and vegetables as positive predictors of 3-FL level; the principal components representing vitamins are positive predictors for 2′-FL level and the sum of 2′-FL and 3-FL; tocopherol and metal elements are positive predictors for 3′-SL level; and metal elements is a positive contributor for the sum of all the 6 Human milk oligosaccharides; milk and lactose intake is a positive predictor of LNT levels and the sum of LNT and LNnT.

Conclusions: Vegetables, vitamins and metal elements are dietary components positively associated with Human milk oligosaccharides concentrations. This is the first study to report the potential benefits of dietary intake of vegetables, vitamins and metal elements for enhancing Human milk oligosaccharides.

Key words Human milk oligosaccharides; diet; vegetable, vitamin, nutrients

Category: Public Nutrition & Health

多层面干预中父母和儿童依从性对肥胖相关结局的影响:一项整群随机对照试验

The Effects of parent and child Compliance on Obesity-related Outcomes in a Multifaceted Intervention: A Cluster Randomized Controlled Trial

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Background and Objectives Compliance is important for obesity intervention studies, but there were few studies evaluating compliance. This study is to analyze the influence of parent and child compliance on the obesity-related outcomes of children.

Methods and Study Design The study participates were from a cluster randomized clinical trial (the Diet, ExerCIse and CarDiovascular hEalth (DECIDE)-Children study) conducted in three socioeconomically distinct Chinese areas. The study included 684 student-parent pairs in the intervention arm. Parental compliance was recorded in the mobile App background. Children's compliance (diet and exercise behavior scores, 35 times in total) was recorded in the "Behavior Monitor" of the mobile App. Group-based trajectory models were applied to draw distinct compliance trajectories. Linear mixed models were used to estimate the effect of compliance on obesity-related outcomes (anthropometric and physical fitness indicators).

Results The highest quartile of parents' compliance had a significant reduction in children's body mass index (BMI) (β: -0.30, 95% CI: -0.49, -0.12) , BMI Z score (β: -0.13, 95% CI: -0.20, -0.05), waist circumference (β: -1.02, 95% CI: -1.73, -0.31), body fat percentage (BF%) (β: -0.77, 95%CI: -1.48, -0.07), and improvement in physical fitness compared to the lowest quartile. Children's compliance improved only children's BF% (β: -0.78, 95%CI: -1.49,-0.08) but promoted most measures of physical fitness. Joint models showed that the effect of parental and children's compliance were independent, high compliance of both parents and children had the most significant impact on BF% reduction (β: -1.09 95% CI: -1.75, -0.43), and fitness improvement (Run: β: -3.29, 95% CI: -6.03, -0.55. Jump: β: 2.79, 95% CI: 0.08, 5.51. Rope: β: 7.35, 95% CI: 2.49, 12.20).

Conclusions Parental compliance and children's own compliance had independent effects on childhood obesity-related outcomes, suggesting the importance of comprehensive obesity intervention.

Key words Obesity; Intervention; Compliance; Children; Parent

Category: Public Nutrition & Health

营养干预结合运动指导对体脂率超标人群减脂效果的影响

Effect of nutritional intervention combined with exercise instruction on fat loss in people with excess body fat percentage

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Objective: To study and analyze the effect of nutritional intervention combined with exercise guidance on fat loss and changes in body composition in people with excessive body fat percentage.

Methods: A total of 46 medical staff with excessive body fat rate and body composition measured in the Department of Nutrition of our hospital in September 2022 were selected as the research objects. The intervention was based on nutrition science and exercise guidance, supplemented by staged energy restricted diet for two months. Body weight, total body water (TBW), protein, minerals, body fat mass (BFM), limb fat mass, trunk fat mass, fat-free mass (FFM), limb fat free mass, trunk fat free mass, skeletal muscle mass (SMM), percent body fat (PBF), body mass index (BMI), basal metabolic rate (BMR), waist-hip Ratio (WHR), obesity degree (OD), appendicular skeletal muscle mass index (SMI), fat-free mass index (FFMI), fat mass index (FMI), and Inbody health score (IS) were evaluated before and after intervention, and assessed the intervention effect.

Results: After the intervention, TBW, minerals, FFM, trunk fat-free mass, BMR and IS were significantly higher than those before the intervention ($P < 0.05$), and BFM, PBF, limb fat mass and FMI were significantly lower than those before the intervention ($P < 0.05$). There were no significant differences between the other body composition indexes.

Conclusion: Nutritional intervention and exercise guidance for medical staff with excessive body fat percentage can effectively reduce fat, improve their basal metabolism, increase muscle mass, and improve their overall health status. In addition, it also provides a feasible reference method for improving the health status of people with excessive body fat rate, which may be worthy of wide dissemination.

Key words body fat percentage, fat loss, nutritional intervention, exercise guidance, restricted diet

Category: Public Nutrition & Health

高密度脂蛋白与心脑血管疾病风险关联在糖尿病与非糖尿病患者中的差异

Differences in HDL-related Coronary Heart Disease Risk between Individuals with and without Diabetes

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Background: High-density lipoprotein (HDL) could lose its atheroprotective functions (e.g., reverse cholesterol transport, anti-inflammation) in the presence of diabetes. We sought to examine associations of HDL cholesterol (HDL-C) and HDL particle (HDL-P) subclasses with risk of coronary heart disease (CHD) stratified by diabetes.

Methods and Study Design: We included 393 516 participants (20 691 diabetes and 372 825 non-diabetes) with HDL-C measurements, and a subset of 108 071 (5730 diabetes and 102 341 non-diabetes) participants with HDL-P measurements from UK Biobank. Restricted cubic splines cooperated with Cox model were used to estimate associations of HDL with CHD.

Results: During a median follow-up of 13.0 years, 3398 (16.4%) and 24 772 (6.6%) incident CHD events occurred among diabetes and non-diabetes, respectively. HDL-C showed inverse association with CHD among non-diabetes, whereas a U-shaped association among diabetes. Compared to individuals with normal HDL-C (40th - 60th percentile, 1.32 - 1.51 mmol/L), those in the top percentile (95th, >2.16 mmol/L) had lower CHD risk among non-diabetes (Hazard Ratio, 0.79; 95% confidence interval, 0.73-0.86), but higher risk among diabetes (1.38, 1.02-1.88). As for HDL-P, there was an inverted U-shaped association for very large HDL-P and a linear and negative association for large HDL-P among non-diabetes; however, among diabetes, linear and positive association was found for very large HDL-P, and null association for large HDL. Inverse associations were found for medium HDL-P and small HDL-P both in diabetes and non-diabetes.

Conclusions: Very high HDL-C levels were associated with lower CHD risk in individuals without diabetes, but higher risk in patients with diabetes. Furthermore, smaller HDL-P was negatively, whereas very large HDL-P was positively associated with CHD risk in patients with diabetes.

Key words Coronary heart disease, diabetes, high-density lipoprotein cholesterol, high-density lipoprotein subclasses, cohort study.

Category: Public Nutrition & Health

夹江叠鞘石斛马铃薯代餐粉的研制及血糖生成指数研究

Study on the development of meal replacement powder of Dendrobium chryseum in jiajiang with potato and its glycemic index

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Background Type 2 diabetes has become an important public health problem all over the world. For the prevention and treatment of type 2 diabetes, it is a research hotspot to select high quality carbon water and effective natural products as raw materials for the development of low GI meal substitute powder. **Objective** In this study, we made full use of the hypoglycemic effect of *Dendrobium chryseum* in jiajiang and the high-quality carbohydrate characteristics of potatoes to develop a low-GI meal substitute powder. **Method** On the basis of the previous research on the main components and functions of *Dendrobium chryseum* in Jiajiang and related pre-experiments, taking sensory score and estimated glycemic production index (Expected glycemic index, eGI) as the core evaluation index, single factor and response surface experiments were used to further optimize the development process of meal substitute powder of *Dendrobium chryseum* in Jiajiang with potato, and its GI value and quality were determined and evaluated according to the national standard. **Results** The best technological formula of a group of meal replacement powder of *Dendrobium chryseum* in jiajiang with potato was obtained, and it was confirmed that it was a low GI food, and its quality evaluation met the food safety. **Conclusion** A low GI meal substitute powder (GI value 43.88) was successfully developed with *Dendrobium chryseum* in Jiajiang as the characteristic raw material. The quality of the product meets the standard of the food substitute food group stipulated by the Chinese Nutrition Society, and the substitute meal powder has good solubility, freeze-thaw stability and wet sinkability, and has a good potential for market development.

Key words Dendrobium chryseum; Meal replacement powder; Process optimization; GI value; quality evaluation

Category: Public Nutrition & Health

体质指数在无糖饮料与打鼾关联中的中介效应分析

Mediating effect of body mass index on the association between sugar-free beverage and snoring

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Background and Objectives: Dietary factors and obesity have been associated with snoring. This study aims to investigate the association between sugar-free beverages and snoring, and to explore the potential mediating effect of body mass index z score on the association in Chinese school-age children.

Methods and Study Design: In 2021, a school-based project named "Evaluation and Monitoring on School-based Nutrition and Growth in Shenzhen" was conducted among a total of 5153 primary and secondary school students in Shenzhen. The study included students from grade 4 to grade 12 who were also under 18 years. Multivariate logistic regression analysis was used to evaluate the association between sugar-free beverages and snoring. The mediating effect of body mass index z score on the association was also explored by using the bruceR package in R software(version 4.2.3).

Results: The prevalence of snoring in children and adolescents in Shenzhen was 28.3% (921/3260), and the median consumption of sugar-free beverages was 16.67 ml/d. The odds ratio of snoring in tertile 3 of sugar-free beverages intake was 1.21 (95% confidence interval: 1.01-1.45) compared to tertile 1. A mediating effect of body mass index z score was found on the association between tertile 3 of sugar-free beverages intake and snoring when compared to tertile 1. The proportion of the mediating effect in the total effect was 18.4%.

Conclusions: Habitual high-dose consumption of sugar-free beverages could increase the risk of snoring, and the body mass index may partially mediate the association. Thus, it is crucial to restrict the consumption of sugar-free beverages and to control the development of obesity in the prevention and management of snoring and related diseases.

Key words Sugar-free beverage; Body mass index; Obesity; Snoring; Mediating effect

Category: Public Nutrition & Health

南极磷虾油改善肥胖小鼠的肌肉衰减

Krill oil attenuates obesity-induced skeletal muscle atrophy in mice

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Background: Obesity is associated with skeletal muscle mass loss and physical dysfunction, leading to other clinical problems and poor quality of life. Krill oil (KO), a novel source of dietary n-3 long-chain polyunsaturated fatty acids mainly bound to phospholipids, has shown to be beneficial in ameliorating obesity and obesity-induced metabolic syndromes. However, the effect of KO on obesity-induced skeletal muscle atrophy is still unclear. Methods: The male C57BL/6J mice were fed a high-fat diet (HFD) for 12 weeks to induce obesity, and then were intragastric administration with 400 mg/kg·bw KO once a day for an additional 6 weeks. Results: The results showed that KO treatment reduced body weight, fat accumulation and serum pro-inflammatory cytokines in HFD-induced obese mice. Importantly, KO treatment attenuated obesity-induced skeletal muscle atrophy, as evidence by preserving skeletal muscle mass, average myofiber cross-sectional area and grip strength in HFD-fed mice. KO administration also mitigated obesity-induced ectopic lipid deposition and inflammatory response in skeletal muscle. Additionally, KO treatment decreased phosphorylation of NF-κB p65 and increased phosphorylation of FoxO3a, and then down-regulated MAFbx and MuRF1 protein levels in skeletal muscle from HFD-fed mice. The results also manifested that KO administration improved obesity-induced impaired muscle protein synthesis via activating PI3K/Akt pathway. Furthermore, KO treatment enhanced muscle mitochondrial biogenesis in HFD-induced obese mice via activating PGC-1α pathway. Conclusions: Collectively, KO might be developed as a potential supplement or therapeutic agent for the prevention and treatment of obesity-induced skeletal muscle atrophy.

Key words krill oil; obesity; skeletal muscle atrophy; inflammation; protein turnover; mitochondrial biogenesis.

Category: Public Nutrition & Health

美国卫生保健从业者的大便失禁与食品不安全之间的关系：2005-2010 年全国健康和营养检查调查分析

The relationship between bowel leakage and food insecurity in United States Health Care Practitioner(HCP): an analysis of 2005-2010 National Health and Nutrition Examination Survey

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This study aimed to investigate the association between fecal incontinence and food insecurity using a nationally representative sample of US HCP. Our another aim was to examine the role of diet by assessing dietary differences between participants with and without fecal incontinence and between food-insecure HCP with and without fecal incontinence.This study analyzed data from the NHANES, a nationale series of cross-sectional health surveys. Fecal incontinence was defined as accidental leakage of stool within the last 30 days. Food insecurity was assessed using the household food security measure created by the US Department of Agriculture. Dietary data from the NHANES dietary interviews titled “Individual Foods, First Day” and “Individual Foods, Second Day,” which estimate the foods and drinks consumed in the preceding 24 hours, were pooled. The association between fecal incontinence and food insecurity was analyzed using logistic regression after controlling for patient characteristics.805 HCP were included, representing the all US HCP,and 30.3% had fecal incontinence. There was no significant difference in diet between HCP with and without fecal incontinence ($p>0.05$). Food-insecure HCP in the overall sample reported higher carbohydrate and sugar intake and lower fiber and alcohol intake (all $P<0.05$). Among food-insecure HCP, those with fecal incontinence had higher calorie and total fats intake than those without fecal incontinence; there was no significant difference in other dietary components ($p>0.05$). There was a significant association between food insecurity and fecal incontinence, such that HCP with food insecurity had higher odds of fecal incontinence after adjusting for patient characteristics and diet (odds ratio, 1.73; 95% confidence interval, 1.14－2.56; $P=0.005$).Food insecurity was associated with fecal incontinence even after accounting for diet. Understanding the role of social determinants of health in fecal incontinence symptomatology and treatment is important to potentially alleviate symptom burden and improve the quality of life in at-risk populations.

Key words bowel leakage;fecal incontinence;food insecurity;social determinants of health

Category: Public Nutrition & Health

COVID-19 感染前后中国人群营养补充剂摄入的调查研究

Intake of nutrient supplements in Chinese population: Comparison between before and after COVID-19 infection

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Background

A nutritional supplement is taken by mouth and usually contains one or more dietary ingredients. Intake of supplements is common health behaviors nowadays. However, a rare study unfolded the differences of nutritional supplement intake including the types and amount before and after COVID-19 infection. This study investigated the nutrient supplements intake differences before and after the COVID-19 infected in Chinese population.

Methods

This cross-sectional study recruited 1,380 participants between January 1st to February 20th, 2023 (i.e., the late stage of the COVID-19 pandemics). Demographics (i.e., age, gender, marital status, educational level, co-morbidity, smoking and drinking habits, nutrients supplements intakes habits) and nutrition status (measured by Mini-Nutrition Assessment-Short Form, MNA-SF) were collected through online professional questionnaire link. COVID-19 symptoms were assessed by COVID-19 Symptoms Index (CNI)1 which has been validated. Paired T test was used to compute the group difference.

Results

Of those 1,380 respondents, only 1,000 (72.5%) were analyzed because for they had been infected by COVID-19. The average age was 36.1 (SD 6.0), and only 6.5% of them were hospitalized during infection. The prevalence rate of nutrient supplements intakes before COVID-19 infection was 43.7%, and vitamin C (34.2%), probiotics (30.5%), calcium (30.3%), multiple vitamins and mineral supplements (27.2%) were the top 4 micronutrients before COVID-19 infected. All nutrient supplements (i.e., vitamin C (t=12.06), vitamin B (t=10.31), vitamin D (t=10.10), multiple vitamins and mineral (t=10.43), protein powder (t=9.00), probiotics (t=10.00), Coenzyme Q10 (t=7.36), Fish oil (t=7.88), calcium (t=10.61), Zinc and selenium (t=8.24); $p<0.001$) were significantly increased after our participants have infected by COVID-19.

Conclusion

Although currently little evidence that high-dose nutrient supplements of micronutrients will cure or speed up recovery of COVID-19, Chinese population were prone to intake more kinds and dosage of nutrient supplements during COVID-19 infected.

Key words Nutrients supplements; COVID-19 infection; Chinese population

Category: Public Nutrition & Health

关于工作场所员工健康生活方式状况评估的预试验研究

Assessment of healthy lifestyle behaviours in workplace employees: A pilot study

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Background: Evidence shows that about 80% of cardiovascular disease and one-third of cancer deaths can be prevented by healthy lifestyle behaviours. Workplaces play a unique role in promoting healthy lifestyle for employees.

Objectives: This pilot study aimed to assess the status quo of lifestyle behaviours among workplace employees and provide baseline for the following health promotions in the workplace.

Methods: The study was conducted in a steelworks in Xiangtan city of Hunan Province in February 2023. Thirty workers were randomly selected as participants. A questionnaire including demographic information and lifestyle behaviours was interviewed and body weight and height were measured by trained researchers. Healthy Lifestyle Index Score (HLIS) composed of five components (smoking, alcohol consumption, physical activity, healthy diet and Body Mass Index (BMI)) was calculated to comprehensively assess the employee's lifestyle status.

Results: The mean age was 38.7 ± 7.0 years and 63.3% were males. Workers in the production workshops (blue-collars) and in the office (white-collars) accounted for 63.3% and 36.7%, respectively. The mean overall HLIS score (total score: 0-20) was 12.94 ± 3.49 , while the component scores were 4.49 ± 3.21 for smoking (total score: 0-7), 4.22 ± 0.70 for alcohol consumption (total score: 0-4.6), 1.30 ± 0.93 for physical activity (total score: 0-2.6), 1.38 ± 0.98 for diet (total score: 0-2.8) and 1.55 ± 1.04 for BMI (total score: 0-3). Women scored higher than men (15.60 vs 11.39, $p < 0.001$). No significant difference of HLIS was found between age groups (<40 vs ⩾40 years old: 12.97 vs 12.88, $p = 0.951$) or work types (white-collars vs blue-collars: 13.33 vs 12.71, $p = 0.644$).

Conclusions: Workplace employees had a medium healthy lifestyle index score and health promotion was still needed, especially on smoking, physical activity, healthy diet and BMI.

Key words Lifestyle behaviours; Healthy lifestyle index score; Workplace employees

Category: Public Nutrition & Health

中国成年居民膳食模式与血清尿酸关系的研究

Association between dietary patterns and serum uric acid among Chinese adults

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Objective: The present study aimed to identify dietary patterns and explore their associations with serum uric acid among Chinese adults.

Method: There were 10505 adults aged 18 and older from the China Health and Nutrition Survey (CHNS) in 2018. Dietary patterns were identified using factor analysis of data from consecutive three 24 h dietary recalls. Blood samples were collected in the morning after an overnight fast. Serum uric acid (UA) was measured in third-party laboratories.

Results: We identified four dietary patterns: traditional northern (high intakes of wheat and other cereals), modern pattern (high intakes of milk, fruits and cakes), traditional southern (high intakes of vegetables, legume, pork and rice), and meat pattern (high intakes of poultry, fish, organ meat and other meat). The traditional northern pattern was inversely associated with UA (β=-9.91; 95% CI -11.42, -8.39; P<0·0001). The traditional southern pattern was significantly associated with higher UA (β=1.97; 95% CI 0.24, 3.69; P=0.0252). The meat pattern was positively associated with UA (β =6.81; 95% CI 5.24, 8.38; P<0·0001).

Conclusions: We identified three dietary patterns that are significantly associated with UA. This information is important for developing interventions and policies addressing hyperuricemia prevention among Chinese adults.

Key words dietary patterns, serum uric acid, adults

Category: Public Nutrition & Health

加工红肉和未加工红肉与非酒精性脂肪肝风险的相关性：一项系统评价和剂量反应 meta 分析

Association between processed and unprocessed red meat consumption and the risk of non-alcoholic fatty liver disease: A systematic review and dose-response meta-analysis

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Objection: Our meta-analysis was aimed at determining the association between red meat consumption and the risk of Non-alcoholic Fatty Liver Disease (NAFLD), as well as the dose-response association.

Methods: A systematic search of CENTRAL, Pubmed, Embase, web of science and Scopus was conducted from inception to February 2022 with relevant keywords. All observational studies reported were included if the exposure of interest was red meat consumption, the outcome of interest was the risk Non-alcoholic Fatty Liver Disease (NAFLD), and odds ratios (ORs) or risk ratios were provided or could be calculated. Random-effects meta-analysis were used to pool the effect sizes. Linear and non-linear dose response were performed to estimate the dose-response relationships between red meat intake and NAFLD risk.

Results: A total of 10 studies were included in this review. The meta-analysis indicated that there was a significant association between red meat (OR=1.25; 95% CI:1.08 to 1.44; I 2=79.4%, p＜0.001), processed red meat(OR=1.20, 95%CI: 1.04 to 1.37; I 2=34.9%, p=0.162) and unprocessed red meat (OR=1.36, 95%CI: 1.04 to 1.78; I 2=83.0%, p=0.001) with the risk of NAFLD. Moreover, in the dose-response analysis, we found a significant linear dose-response association between processed red meat intake and NAFLD. Each 25-gram increment of processed red meat intake per day was associated with a 11.1% higher risk of NAFLD (OR: 1.11 95%CI: 1.01 to 1.22, p=0.029), and a non-linear association between unprocessed meat intake and NAFLD (p=0.003 for non-linearity).

Conclusion: Our findings suggested that red meat, both processed and unprocessed, has a positive association with the risk of NAFLD and contributes to a significantly increased risk of developing incident NAFLD even when taken in small amounts.

Key words red meat; processed red meat; unprocessed red meat; incidence; non-alcoholic fatty liver disease

Category: Public Nutrition & Health

高糖饮料饮食引起的2型糖尿病的全球趋势和预测

Global trend and prediction of type 2 diabetes mellitus attributable to diet high in sugar-sweetened beverages

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Background:

The evidence of global trends in the burden of type 2 diabetes mellitus (T2DM) attributable to diet high in sugar-sweetened beverages (SSB) remains limited. We aimed to provide a comprehensive estimation of the global trend of T2DM attributable to diet high in SSB, and associations with age, period, and birth cohort between 1990 and 2019.

Methods:

We retrieved age-standardized disability adjusted life years (DALY) rates and mortality rates estimates from the Global Burden of Disease Study 2019. We reported the annual percentage change in DALY and mortality rates of T2DM attributable to diet high in SSB, globally and stratified by sex and sociodemographic index. Age-period-cohort modeling was used to assess the associations between age, period, and birth cohort and T2DM. Moreover, we predicted DALY rate and mortality rates of T2DM attributable to diet high in SSB by running Nordpred age-period-cohort analysis.

Results:

In 2019, age-standardized T2DM-related DALY attributable to diet high in SSB was 1.13 (95% UI: 0.99-1.27) per 100,000 population, and DALY rates increased from 1990 to 2019 (0.95% annually); while the age-standardized mortality rates fluctuated during this period. Women generally had lower DALY and mortality rates than men. The countries with a high sociodemographic index had the highest age standardized DALY rate, whereas countries with a low sociodemographic index had the highest age-standardized mortality rate in 2019. There was the increased DALY rate with age group. Increasing period and cohort risks for DALY rate were generally found, indicating deterioration in DALY rate. The overall DALY rate and mortality rates are predicted to increase 24.75% and 3.02% from 2020 to 2044, respectively.

Conclusions:

The global burden of T2DM attributable to diet high in SSB is a growing health problem. Action is needed to enhance the prevention of T2DM attributable to diet high in SSB.

Key words type 2 diabetes mellitus; sugar-sweetened beverages; disability adjusted life years; mortality

Category: Public Nutrition & Health

运动、睡眠和帕金森病关系的队列研究

Physical Activity and Sleep Pattern in Relation to Incident Parkinson’s Disease: A Cohort Study

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Background: How physical activity (PA) and different sleep traits and overall sleep pattern interact in the development of Parkinson’s disease (PD) remain unknown.

Objective: To prospectively investigate the joint associations of PA and sleep pattern with risk of PD.

Methods: Included were 339,666 PD-free participants from the UK Biobank. Baseline PA levels were grouped into high, medium and low levels according to guidelines recommendations. Healthy sleep traits (chronotype, sleep duration, insomnia, snoring, and daytime sleepiness) were scored from 0 to 5 and were categorized into “ideal sleep pattern” (≥3 sleep scores) and “poor sleep pattern” (0-2 sleep scores).

Results: During a median of 11.8 years of follow-up, 1,966 PD events were identified. The PD risk was lower in participants with high level of PA (HR=0.73; 95 % CI: 0.64, 0.84) compared to those with low level of PA, and participants with ideal sleep pattern also had a lower risk of PD (HR=0.78; 95% CI: 0.69, 0.87) compared to those with poor sleep pattern. When jointly investigating the combined effect, participants with both high PA and ideal sleep pattern had the lowest risk of incident PD (HR= 0.55; 95 % CI: 0.44, 0.69), compared to those with low PA and poor sleep pattern; notably, participants with high PA but poor sleep pattern also gained benefit on PD risk reduction (HR= 0.74; 95 % CI: 0.55, 0.99).

Conclusion: Individuals with both high PA level and ideal sleep pattern had the lowest PD risk.

Key words Parkinson's disease, Sleep, Physical activity

Category: Public Nutrition & Health

应对压力能力不足可导致女性膳食质量下降

Insufficient capacity to cope with stress leads to a decreased dietary quality in female

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Backgrounds and objectives: Previous studies had found the effects of stress on eating behaviors. The aim of this study was to explore the effects of perceived stress on dietary quality by genders in Chinese adults.

Methods: The subjects aged 18~59 years were from the China Health and Nutrition Survey. Perceived stress was assessed by 10-item perceived stress scale (PSS-10) with a score ranging 0-40. Dietary quality was evaluated by Chinese Dietary Guidelines Index(CDGI) ranging 0-110. With community regarded as level 2, and individual as level 1, two-level mixed effect model was used to analyze the effects of PSS-10 score on CDGI, and two-level mixed effect structural equation modeling was used to explore the effects of distress factor score and coping stress factor score on dietary quality respectively.

Results: This study involved in 2515 males and 3165 females. The CDGI significantly varied among different communities with 43.74 for males and 46.14 for females averagely. 20.17% for males and 22.64% for females of the total variations of CDGI derived from communities ($P_{males}<0.001$, $P_{females}<0.001$). After adjusting for confounders, there were no effects of PSS-10 score, distress factor score and coping stress factor score on CDGI in males. After adjusting for confounders, CDGI in the highest tertile of PSS-10 score group was 1.64 lower than that in the lowest tertile group in females ($P=0.001$). The distress factor score was not associated with CDGI (standardized $\beta=-0.164$, $P=0.488$), while the coping stress factor score was significantly negative with CDGI (standardized $\beta=-0.834$, $P<0.001$) in females. CDGI in the highest tertile of coping stress factor score group was 4.36 lower than that in the lowest tertile group ($P<0.0001$).

Conclusions: There was no association between perceived stress and dietary quality in males. The perceived stress, especially the insufficient ability to cope with stress, was negatively associated with dietary quality in females.

Key words perceived stress, dietary quality, distress, coping stress capacity, structural equation modeling

Category: Public Nutrition & Health

壳聚糖和壳寡糖减轻高蛋白饮食诱导的大鼠便秘并调节其血清代谢产物

Chitosan and chitosan oligosaccharide alleviate high-protein-diet-induced constipation and regulate serum metabolites in rats

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Background and Objectives: The prevention and treatment of constipation is a need for worldwide public health. It has been reported that high-protein-diets (HPDs) could increase the gastrointestinal burden and lead to constipation. The present study was designed to explore the improvement of chitosan (CTS) and chitosan oligosaccharides (COS) on constipation induced by HPDs.

Methods and Study Design: Male SD rats were divided into: (1) normal control (Blank group), (2) 5% CTS diet (CTS group), (3) 5% COS diet (COS group), (4) 50% WPI diet (WPI group), (5) 5% CTS and 50% WPI diet (CTS+WPI group), and (6) 5% COS and 50% WPI diet (COS+WPI group) for 2 days.

Results: The results of in vivo experiments fully proved that CTS and COS could effectively relieve constipation and regulate the serum metabolites in rats as indicated by LC-MS/MS analysis, especially during COS treatment. Furthermore, short-chain fatty acids (SCFAs), as major metabolites of CTS and COS fermentation by gut microbiota, were also promoted to alleviate HPD-induced constipation. In addition, CTS and COS could decrease the concentration of ammonia in serum and down-regulate the levels of H2S and indole.

Conclusions: In summary, the present study revealed that CTS and COS could produce SCFAs, ameliorate the development of HPD-induced constipation in rats, recover the levels of metabolites, and improve metabolic pathways. The present study provides novel insights into the potential role of CTS and COS in treating HPD-induced constipation.

Key words Chitosan, Oligosaccharide, High-protein-diet, Constipation, Metabolites, SCFAs

Category: Public Nutrition & Health

膳食摄入一碳代谢相关营养素，叶酸代谢相关基因多态性与宫颈病变严重程度的相关性

Correlation of dietary intake of one-carbon metabolism-related nutrients, genetic polymorphisms involved in folate metabolism with severity of cervical lesions

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Objective The present study aimed to analyze the associations between the severity of cervical lesions and dietary one-carbon metabolism-related nutrients, and explored the interaction between these nutrients and genetic polymorphisms involved in folate metabolism related to cervical lesions. Method The study was composed by 35 women presenting low-grade squamous intraepithelial lesion (LSIL), 35 participants presenting high-grade squamous intraepithelial lesion (HSIL) and 35 women with cervical squamous cell carcinoma (CSCC). Dietary intakes were evaluated using a semi-quantitative 75-item food frequency questionnaire through face-to-face interviews. To analyze the joint implications of genes involved in folate metabolism, we calculated genetic risk score (GRS). Ordinal logistic regression analysis were used to evaluate the association. Results After adjusting for potential confounding factors, ordinal regression analyses revealed a significant association between higher intake of folate (OR: 0.406, 95% CI: 0.180, 0.914), Vitamin B6 (OR: 0.406, 95% CI: 0.183, 0.901) and the severity of cervical lesions, compared with low nutrients consumption. However, there were no significant associations between cervical lesions severity and the dietary intake of vitamin B12, methionine, betaine, total choline, and methyl-donor index. As for the choline subgroups, it showed that free choline intake was inversely correlated with the severity of cervical lesions ($P < 0.05$). Conversely, the relationship for sphingomyelin, phosphatidylcholine, phosphocholine, glycerol phosphoryl choline were not observed (all $P > 0.05$). A Stratified analysis by genetic risk score (GRS) showed that the protective effects of folate, Vitamin B6, free choline, phosphocholine on cervical lesions were more evident for individuals with the lower frequency of genetic polymorphisms involved in folate metabolism. Conclusion Increased intakes of folate, vitamin B6 and free choline are independently associated with a lower risk of cervical lesions. Genetic polymorphisms involved in folate metabolism might modify the inverse associations between one-carbon metabolism-related nutrients and the severity of cervical lesions.

Key words dietary intake, cervical lesions, cervical cancer, one-carbon metabolism, gene polymorphism

Category: Public Nutrition & Health

中国成年人视屏时间与脑卒中的关系：中国健康与营养调查数据分析

Association Between Screen Time and Stroke Among Chinese Adults: Analysis of the Data from China Health and Nutrition Survey

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Background and Objectives: We aimed to explore the independent associations of screen time and the risk of stroke among Chinese adults based on the China Health and Nutrition Survey (CHNS).

Methods and Study Design:

Data on Chinese adults aged > 40 years from CHNS in 2004-2009 were selected. 4587 individuals were included in 2009, including screen time and the risk of stroke. Simultaneously, we traced the previous screen time to 2004 for those with outcome measures in 2009 (n=2100). Basic information, lifestyle and screen behavior were obtained through face-to-face interviews and self-completed questionnaire. Anthropometric data collected included blood pressure, body weight, height, hip circumference, waist circumference. Fasting blood was obtained for measurements of lipid and glucose levels. Cross sectional analysis and cohort analysis were both performed using multivariate logistic regression.

Results: Of all participants, 3004 (65.49%) participants spent more than 2 hours per day on screen time. Taking the men who spent less than 2 hours on screen per day as reference, the crude OR of the high risk of stroke was 1.53 (95% CI = 1.20-1.96) for the men who spent 2-3 hours per day on screen and 2.37 (95% CI = 1.79-3.16) for the men who spent more than 3 hours per day on screen. This difference remained significant after adjusting for age, smoking, the education level, energy intake and physical activity. No association was observed among women. However, in the cohort analysis with screen time in 2006 as the independent variable, the association between screen time and stroke risk was found both in men (OR, 1.97 [95% CI, 1.26-3.10]) and women (OR, 1.47 [95% CI, 1.01-2.13)]).

Conclusions: We found that the high screen time was associated with an increased stroke risk, which was pronounced in men, warranting a universal need to limit screen time in order to improve health.

Key words screen time; stroke; sedentary behavior; energy intake; physical activity

Category: Public Nutrition & Health

拟微球藻多糖通过调节肠道屏障功能改善酒精性肝损伤

Nannochloropsis polysaccharides ameliorate alcoholic liver injury via modulation of intestinal barrier function

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The aim of the present study was to investigate the mechanism of Nannochloropsis polysaccharides (NPS) on preventing alcoholic liver disease (ALD). C57BL/6J mice were fed a liquid alcohol diet to induce ALD and treated with NPS (200 mg/kg.bw and 400 mg/kg.bw) for 5 weeks. NPS treatment significantly attenuated alcoholic liver injury in mice model. The proportion of gram-negative bacteria and lipopolysaccharides levels were significantly lower in NPS group than in model group. The abundance of Akkermansiaceae and Lactobacillaceae were higher in NPS group than in model group, whereas the abundance of Prevotellaceae was lower in NPS group than in model group. NPS protected against ethanol-induced gut leakiness by upregulating tight-junction proteins expression. Furthermore, NPS intervention inhibited body inflammation by upregulating the expression of Fmo5 and PPAR-α to further downregulating the expression of NF-κB. The present results revealed that NPS alleviated the alcoholic liver injury might via mediating the gut-liver axis.

Key words Nannochloropsis polysaccharides, alcoholic liver injury, intestinal barrier, gut flora, Fmo5

Category: Public Nutrition & Health

夜间食模式和体脂之间的关系 中国大学生

Association between Night Snacking Patterns And Body Fat Among Chinese College Students

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Abstract

Background: Night snacking may result in significantly lower lipid oxidation and increased adiposity. College represents a key transition to adulthood for many adolescents, but there are associated concerns about health and behaviour. There is growing evidence suggests that a potential association between the timing of energy intake and obesity and college students may consume poor quality diets. Night snacking is relatively common among Chinese college students.

Objectives: Nighttime snacking has been identified as a risk factor for metabolic syndrome and obesity. The purpose of this study was to investigate the association between post-dinner snacking and body fat.

Methods and Study Design: College students were recruited through posters and Apps in this cross-sectional study. A questionnaire was used to assess nighttime snacking patterns, reasons, and food choices, while body composition analysis was performed to measured body fat. Multiple linear regression analysis was conducted to examine the association between nighttime snacking and body fat percentage.

Results: Half of the students reported consuming night snacks once or twice a week, with hunger being the most common reason cited. The majority of these snacks consisted of fruits and dairy products. Multiple linear regression models demonstrated that frequency of night snacking was a significant determinant of body fat, indicating a direct association between consumption of such snacks and risk for obesity. Conclusions: Reducing intake of night snacks should be considered as one of the strategies to combat overweight and obesity among college students.

Key words Night snacking food types Body fat Obesity College students

Category: Public Nutrition & Health

鱼油使用与糖尿病患者慢性肾病风险的关联

Association between fish oil use and the risk of chronic kidney disease among diabetic patients

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Background and Objectives

Evidence regarding whether fish oil is associated with the onset of chronic kidney disease (CKD) in diabetes was limited. The aim of this cohort study was to investigate the association between fish oil use and the risk of developing CKD among patients with diabetes, and further detect the mediation effect of blood biomarkers.

Methods and Study Design

In this prospective cohort study, we included 24,497 patients with diabetes from the UK Biobank. Cox proportional hazards regression models were conducted to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for CKD risk, with rate advancement period (RAP) calculated to quantify and communicate the impact of fish oil on the risk. In addition, we also used mediation analysis to assess the mediating role of biomarkers.

Results

Among 24,497 patients with diabetes from the UK Biobank, 7,122 individuals reported habitually taking fish oil supplements. 3,533 CKD cases occurred during a median of 12.2 years of follow-up. In the fully adjusted model, the use of fish oil supplements was significantly and inversely associated with the incidence of CKD (HR: 0.90; 95% CI: 0.83-0.97), which was mediated by the plasma levels of hemoglobin A1c (HbA1c), high-density lipoprotein cholesterol (HDL-C) and c-reactive protein (CRP). Participants who used fish oil supplements showed the same risk of CKD events as fish oil non-users approximately 3 years later.

Conclusions

Our findings support the beneficial role of fish oil use in preventing CKD among patients with diabetes, which may be mediated by plasma levels of HbA1c, HDL-C and CRP.

Key words diabetes; kidney disease; fish oil; follow-up; UK Biobank

Category: Public Nutrition & Health

睡眠时间短是不规律的早餐导致超重/肥胖的主要原因

Short sleep duration is the main reason for irregular breakfast to cause overweight/obesity

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To evaluate association between the duration of sleep and the regularity of breakfast and overweight/obesity, among graduate students. A total of 1178 students were identified from a survey in Qingdao city, China. We used body mass index (BMI), waist circumference (WC), and waist-to-hip ratio (WHR) to define overweight/obesity levels. Chi-square test, Pearson correlation test, and logistic regression were applied to test association among overweight/obesity, sleep duration, sleep onset time, and breakfast regularity. Pittsburgh sleep quality index was used to assess the overall sleep quality of the study subjects. Mediation effect and Sobel test were used to analyze the effect of sleep duration on breakfast regularity and overweight/obesity. Only 34.1% of the population ate breakfast every day, and eating breakfast 1-3 times per week was associated with a higher risk of overweight/obesity (BMI: OR=2.183, 95%CI: 1.369,3,481; WC: OR=2.101, 95%CI: 1.232,3,583; WHR: OR=2.108, 95%CI: 1.331,3,337). The effects of all types of Usual Breakfast Consumption Frequency on overweight/obesity were fully mediated by sleep duration ($p<0.05$). In particular, the subjects exercised outdoors more than five times per week slept longer ($p<0.05$). It was found that the effect of regularity of breakfast on overweight/obesity was mediated by the duration of sleep, and the effects of frequency of outdoor exercise per week were different according to Sobel test ($p<0.05$).

Key words students, overweight, obesity, sleep duration, breakfast

Category: Public Nutrition & Health

吃早餐与抑郁：DII 的中介作用

Eating Breakfast and Depression: The Mediating Role of Dietary Inflammatory Index

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Background: Depression is a significant, pervasive, global public health problem, associated with many factors, such as diet, social factors, and lifestyle habits. Dietary Inflammation Index (DII) was calculated to compare the inflammatory potential of different population diets. Few studies have focused on the relationship between eating breakfast, DII and depression.

Objective: We aimed to evaluate the association between eating breakfast, DII and depression, and to verify the mediating role of DII on the effect of eating breakfast on depression.

Methods: 21,865 participants from the National Health and Nutrition Examination Survey (NHANES) from 2007 to 2018 were included in this study. Binary logistic regression and mediated effect analysis were conducted to analyze the associations between eating breakfast, DII and depression. Dietary inflammation was divided into pro-inflammatory diet and anti-inflammatory diet according to the DII.

Results: Both pro-inflammatory diet and skipping breakfast were risk factors for depression. After adjusting for covariables, compared with participants reporting breakfast in both recalls, reporting breakfast in one recall had a higher OR 95%CI (1.54(1.20, 1.98)) of depression. These associations in stratified analysis and sensitivity analysis without cardiovascular diseases (CVD) and diabetes were robust. DII mediated the association between eating breakfast and depression, the proportion of participants who reported breakfast in one recall and no recall was 26.15% and 26.67%, respectively.

Conclusions: Skipping breakfast may increase the risk of depression by raising DII. And our study supported the essential role of regular breakfast and the anti-inflammatory diet in reducing the risk of depression.

Key words dietary inflammatory index; eating breakfast; depression; mediating effect; NHANES

Category: Public Nutrition & Health

江苏省中老年人在外就餐情况及与血压的关系研究

Study on the relationship between eating out and blood pressure among middle-aged and elderly people in Jiangsu Province

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Background: With the development of economy and the improvement of people's living standards, the proportion of people eating out in Jiangsu province has increased significantly, and eating out has gradually become a common dietary behavior of residents. Eating out often reduces the quality of diet and increases the risk of overweight, obesity and chronic diseases.

Methods: A total of 2771 samples were collected in chronic diseases and nutrition monitoring in Chinese adults in 2015, the survey subjects were selected by multi-stage cluster random sampling. Personal questionnaires on chronic diseases and nutrition were collected by inquiry survey, and blood pressure was measured by electronic sphygmomanometer.

Results The percentage of people aged 45-59 eating out was higher than people aged over 60. The percentage of male eating out is higher than female. Urban residents eat out more than those in rural areas. Residents in southern Jiangsu have a higher rate of eating out than those in other areas. The highly educated, high-income, the more often eat out. The prevalence rate of hypertension in people over 45 years old eating out was higher than the non-eating out group. The systolic blood pressure and diastolic blood pressure of those aged 60 years or older who ate out were higher than those of the non-eating out group. The diastolic blood pressure of those aged 45-59 years was higher than that of the eating out group. Eating out is a risk factor for high blood pressure.

Conclusion The proportion of middle-aged and elderly residents eating out increases in Jiangsu province, and the prevalence of hypertension is higher among those who eat out. Measures and policies should be utilized to help middle-aged and elderly people to make healthier choices with health education.

Key words Eating out; Hypertension; Middle-aged and elderly people

Category: Public Nutrition & Health

中国成人衰老过程中膳食炎症与认知功能下降的关系：一项20年的前瞻性研究

Dietary inflammation and decline of cognitive function during aging in Chinese adults: a 20-year prospective study

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Background and Objectives: Few studies have assessed the longitudinal effects of dietary inflammation on cognitive function in Chinese adults. The aims of this study are firstly to describe the changes of cognitive function along with age, and then identify the effects of dietary inflammation on the changes of cognitive function.

Methods and Study Design: The subjects of this study derived from the China Health and Nutrition Survey, who participated in at least 3 waves between 1997 and 2018. Dietary inflammation index(DII) was used to assess the dietary inflammation. Cognitive function was evaluated objectively from four domains which were immediate memory, delayed memory, attention and calculation, with a total score ranging 0-4. Given the hierarchy of repeated measurements, three-level random slope models were used to analyze the effects of DII on cognitive function score and on the change of it.

Results: 1930 adults aged 55 to 79 years were involved in this study, with an average follow-up of 3.7 years. The cognitive function score had a linear declined trend along with age, and significantly varied among different communities (P<0.001) and individuals (P<0.001), with an average of 2.46 points. After adjusting for gender, education, smoke, energy supply-require ratio, hypertension, diabetes mellitus, myocardial infarction, stroke and urbanization index, both of the rate of decline in cognitive function scores with age (P=0.001), and the negative impact of DII on cognitive function score (P=0.010) significantly varied among different communities. For every 10 years of age increase, the cognitive function score decreased by 0.32 points (P<0.001). The cognitive function score in the highest tertile of DII was averagely 0.06 points lower than that of the lowest tertile group (P=0.041).

Conclusions: The cognitive function had a declined trend during aging in Chinese adults, and dietary inflammation was associated with decreased cognitive function.

Key words diet, inflammation, cognitive function, prospective, aging

Category: Public Nutrition & Health

美国老年人中内脏脂肪指数与认知能力的关系

The association between visceral adiposity index and cognition in U.S. elderly people

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Background and Objectives: The associations between visceral adiposity and cognition remain controversial. We aimed to explore the association of visceral adiposity index (VAI) and cognition among elderly people.

Methods and Study Design: A total of 1100 eligible participants (≥60 years of age) of the National Health and Nutrition Examination Survey (NHANES) 2011-2014 were included. Logistic regression analyses with enter method were conducted to examine the associations between VAI and the prevalence of low cognitive performance. The marginal impact of VAI on cognitive function was calculated by stratified analysis according to sex, education levels and diabetes condition.

Results: After adjustment for the potential confounding factors, the weighted multivariate adjusted ORs (95% CI) of low cognitive performance in DSST cognitive decline were 0.51 (0.28, 0.93) for the second quartile and 0.37 (0.16, 0.87) for the highest quartile versus the lowest quartile of VAI (P for trend=0.0556). Higher VAI was associated with better cognition after multivariable adjustment in men (ORQ4 vs. Q1 0.34, [95%CI 0.14-0.82]) but not in women. The positive association between VAI and global cognitive scores was only found in participants with higher education level (ORQ4 vs. Q1 0.40, [95%CI 0.16-0.97]). And the weighted multivariate adjusted ORs (95% CI) of low cognitive performance were 0.19(0.04-0.91) for the highest quartile versus the lowest quartile of VAI among people with diabetes.

Key words visceral adiposity index, cognition, obesity, NHANES

Category: Public Nutrition & Health

新型冠状病毒疫情对全球儿童青少年膳食习惯的影响：系统综述与 meta 分析

The impact of the COVID-19 pandemic on the dietary habits of children and adolescents worldwide: A systematic review and meta-analysis

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Background: COVID-19 pandemic indirectly affects health by affecting dietary behavior according to the economy and food availability. The dietary habits formed during childhood and adolescence could have long-lasting effects on dietary habits and health in adulthood.

Objectives: We aimed to perform a systematic review and meta-analysis to compare the change in dietary behaviors during and before the COVID-19 pandemic.

Methods and Study Design: We conducted a comprehensive search of studies published up to April 17, 2023, on PubMed, Embase, and Web of Science. The cohort studies comparing the dietary behaviors among the population aged 5–24 years during and before the COVID-19 pandemic were included. Two reviewers independently extracted data and assessed the quality of the studies. A meta-analysis was performed, and mean difference (MD) or standard mean difference (SMD) with 95% confidence intervals (CIs) were used to present the dietary behavior change for continuous data. For categorical data, risk ratios (RRs) and 95% CIs were calculated to assess the probability of having a particular dietary behavior during the COVID-19 pandemic. Studies with low heterogeneity were estimated using a fixed-effects model; otherwise, the random-effects model was applied.

Results: A final of 41 studies were selected for inclusion. The risk of insufficient intake of fruits or vegetables was lower (RR=0.90, 95% CI: 0.85 to 0.95) among young adults aged 20–24 years during the COVID-19 pandemic, and their alcohol consumption decreased (SMD=-0.22, 95% CI: -0.41 to -0.03). However, the risk of binge drinking increased (RR=1.20, 95% CI: 1.03 to 1.39) among adolescents.

Conclusions: Our study found that the COVID-19 pandemic has led to changes in dietary habits among adolescents and young adults. Specifically, increased binge drinking among adolescents is a concerning trend that requires further attention. Long-term cohort studies are necessary to monitor the lasting effects of the pandemic on dietary behaviors, particularly among adolescents.

Key words COVID-19, dietary habits, adolescents, young adults, meta-analysis

Category: Public Nutrition & Health

新加坡华人中星球健康饮食，基因风险与认知障碍的关联

Adherence to the planetary healthy diet, genetic risks, and cognitive impairment in Chinese adults living in Singapore

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Background and objective:

To explore the association between the planetary healthy diet (PHD) and cognitive impairment among Chinese adults, and to further evaluate whether the APOE ε4 allele could modify this association.

Methods:

The cohort study included 16,736 individuals from the Singapore Chinese Health Study. Dietary intakes were collected using a 165-item semiquantitative food frequency questionnaire at baseline (1993–1998). The continuous PHD score was developed based on intakes of 14 food components. Cognitive impairment was ascertained by the Singapore-modified Mini-Mental State Examination at follow-up 3 visits (2014–2016). A subset of 9,313 participants were evaluated for APOE genotypes. Logistic regression models were used to estimate the odds ratios (ORs) and 95% confidence intervals (CIs), with adjustment of potential confounders.

Results:

We identified 2,397 (14.3%) cases of cognitive impairment among 16,736 participants. Compared to participants in the lowest quintile of PHD score, the multivariable-adjusted OR and 95% CI of cognitive impairment for participants in the highest quintile were 0.72 (0.62, 0.83) (P-trend <0.001). Each 1-SD increment in the PHD score was associated with an 11% lower risk of cognitive impairment (OR: 0.89, 95% CI: 0.85, 0.93). Of the 9,313 participants with APOE genotyping data, 1,399 (15.0%) carried the APOE ε4 allele. Each 1-SD increment in the PHD score was associated with a 11% lower risk of cognitive impairment in participants without the APOE ε4 allele (OR: 0.89, 95% CI: 0.83, 0.96), but not in participants carrying the APOE ε4 allele (OR: 1.04, 95% CI: 0.89, 1.23; P-interaction =0.043).

Conclusions:

This study suggested that adherence to the PHD pattern in midlife was inversely associated with the late-life risk of cognitive impairment in Chinese adults. Additionally, there was a significant interaction between the APOE ε4 allele and the PHD pattern, and the association was significant in participants without the APOE ε4 allele, but not in APOE ε4 allele carriers.

Key words the EAT-Lancet planetary healthy diet, the APOE ε4 allele, cognitive impairment, Chinese adults, cohort

Category: Public Nutrition & Health

糖尿病和糖尿病前期患者中服用鱼油补充剂与冠心病发生风险的关联：一项前瞻性队列研究

Association of Fish Oil Supplementation with Risk of Coronary Heart Disease in Diabetes and Prediabetes Individuals: A Prospective Cohort Study

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OBJECTIVE:

Evidence on whether and how dietary fats protect against coronary heart disease (CHD) among individuals with impaired glucose metabolism remains unclear. We aim to examine the association of habitual fish oil supplementation with incident CHD among patients with prediabetes and diabetes.

RESEARCH DESIGN AND METHODS:

Overall 47,663 participants with prediabetes and 22,146 with diabetes were enrolled from UK Biobank and followed up until the end of 2020. Individuals diagnosed with CHD or cancer at baseline were excluded. Habitual use of fish oil was assessed by repeated questionnaires. Cox proportional hazard models were applied to calculate hazard ratios (HRs) and 95% confidence intervals (CIs).

RESULTS:

During a mean follow-up of 10.9 years, 4304 and 3294 CHD cases were documented among prediabetes and diabetes patients, respectively. After full adjustment, the multivariable-adjusted HRs (95% CI) of CHD were 0.91 (0.85-0.98) and 0.87 (0.80-0.95) for users of fish oil supplements compared with non-users among the participants with prediabetes and diabetes, respectively. We also observed that the protective association of fish oil use with CHD risk was significantly mediated by serum C-reactive protein (CRP) levels among prediabetes individuals and cholesterol of very-low-density lipoprotein (VLDL-C) among diabetic patients at baseline. The inverse associations were consistent in the analyses stratified by potential confounders.

CONCLUSIONS:

Fish oil supplementation was associated with lower subsequent CHD risk which was mainly mediated by lowering inflammation and VLDL-C among adults with prediabetes and diabetes, respectively. Our findings support the beneficial role of habitual use of fish oil supplements in preventing CHD among individuals with impaired glucose metabolism.

Key words fish oil supplement, coronary heart disease, diabetes, prediabetes

Category: Public Nutrition & Health

中老年人肌肉减少症和体圆指数与心血管疾病的关系：一项来自CHARLS的队列研究

Associations of sarcopenia and body-roundness index with cardiovascular disease among middle-aged and older adults: A longitudinal study from CHARLS

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Aim: The aims of this study were to explore the relationships between sarcopenia, BRI and CVD among elderly adults in China and to determine whether coexistence of sarcopenia and high BRI was associated with a significantly heavier health burden..

Methods: The study used three waves of data from the China health and retirement longitudinal study (CHARLS) in 2011, 2015 and 2018. A total of 6152 participants aged 45 or above were classified into the following groups: neither sarcopenia or high BRI, sarcopenia only, high BRI only, and both sarcopenia and high BRI. Sarcopenia was defined according to the Asian Working Group for Sarcopenia 2019 criteria. CVD was defined as the presence of physician-diagnosed heart disease, diabetes and/or stroke. The associations of BRI and sarcopenia with CVD risk were explored using Cox proportional hazards regression models.

Study Design: prospective cohort study.

Results: During the 7 years follow-up, 2385 cases (38.8%) with incident CVD were identified. Longitudinal results demonstrated that compared to neither sarcopenia or high BRI, high BRI only (HR:1.22, 95%CI: 1.09, 1.37), and both sarcopenia and high BRI (HR: 1.49, 95%CI: 1.08, 2.07) were associated with higher risk of CVD. In the subgroup analysis, individuals with both sarcopenia and high BRI were more likely to have new onset stroke (HR: 1.93, 95%CI: 1.12, 3.32) and increased risk of multimorbidity (HR: 2.15, 95% CI: 1.14, 4.04).

Conclusions: Coexistence of sarcopenia and high BRI was associated with higher risk of CVD. Early identification and intervention for sarcopenia and BRI not only allows the implementation of therapeutic strategies, but also provides an opportunity to mitigate the risk of developing CVD.

Key words Sarcopenia; Body-roundness index; BRI; Cardiovascular disease; CHARLS.

Category: Public Nutrition & Health

孕前植物性膳食模式与妊娠期糖尿病风险的前瞻性队列研究

The association between plant-based dietary patterns and risk of gestational diabetes mellitus in the China Birth Cohort Study-Xi'an

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Background and Objectives

Evidence on plant-based dietary patterns in relation to glucose homeostasis among pregnant women remain sparse. We prospectively examined the association of plant-based dietary patterns before pregnancy with gestational diabetes mellitus (GDM) risk and blood glucose levels.

Methods and Study Design

3,476 pregnant women aged 18 years and older prior to 15^{+6} weeks of gestation from the China Birth Cohort Study-Xi'an were included. Four plant-based dietary patterns (overall plant-based diet index [PDI], healthful PDI [hPDI], unhealthful PDI [uPDI], and pro-vegetarian diet index) were calculated based on 18 food groups from a validated food frequency questionnaire. GDM was ascertained through the 75-g 2-h oral glucose tolerance test in the mid-pregnancy. Log-binomial or modified Poisson regression models were used to estimate the relative risks (RRs) and 95% confidence intervals (95%CIs) for GDM across plant-based diet categories. Regression coefficients (β) and 95%CIs were reported for the association of plant-based diet index with fasting blood glucose (FBG), 1-h postload blood glucose (PBG) and 2-h PBG.

Results

613 participants developed GDM during the subsequent pregnancy. In multivariable-adjusted analyses, participants in the highest tertile of PDI had 28% lower risk of GDM compared with those in the lowest category (RR:0.72, 95%CI:0.60-0.87; P_{trend}=0.001). The risk of GDM significantly decreased by 11% for each SD increment of PDI. A similar pattern of association with GDM was also observed for hPDI and pro-vegetarian diet. A higher uPDI was not associated with an increased risk of GDM (RR:1.18, 95%CI:0.95-1.46; P_{trend}=0.14). Moreover, higher PDI reduced level of FBG, 1-h PBG and 2-h PBG, whereas hPDI and pro-vegetarian diet decreased FBG and 1-h PBG levels only.

Conclusions

Greater adherence to plant-based diet was associated with lower risk of GDM. Our findings provide evidence that considering the quality of plant foods is important for the prevention of GDM.

Key words cohort study; dietary patterns; gestational diabetes mellitus; plant-based diet index; pro-vegetarian diet index.

Category: Public Nutrition & Health

膳食指南依从性与认知功能的相关性研究

The correlation between dietary guidelines compliance and cognitive function

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Objective: The objective of this study was to investigate the associations between dietary guidelines compliance and cognitive function and mild cognitive impairment in middle-aged and elderly Chinese.

Methods: The data of this study based on the Lifestyle and Healthy Aging of Chinese Square Dancer Study. According to the Chinese Food Guide Pagoda (2022), the compliance dietary pagoda score was constructed, with the score ranging from 0 to 45 points. A battery of neuropsychological tests including Auditory Verbal Learning Test, Verbal Fluency Test, Digit Symbol Substitution Test, and Trail Making Test-B were used to assess the cognitive function, and the overall Z-scores reflected the overall cognitive function. MCI was determined according to the Petersen criteria. Multiple linear regression analysis and logistic regression analysis were used to evaluate the association between dietary guidelines compliance and cognitive performance.

Results: A total of 2263 participants aged 55 and above were included, with a mean age of 63.38±5.03 and a mean compliance dietary pagoda score of 31.08±5.56. In the fully adjusted model, compared with the lowest quartile, the highest quartile was associated with better overall cognitive function, with the linear partial regression coefficients (95%CI) of 0.19 (0.12, 0.26). The highest quartile was also associated with a 33% lower odds of mild cognitive impairment prevalence (odds ratio, OR=0.67, 95% CI: 0.47, 0.96), and a 5-point increment in score was associated with a 12% lower odds of mild cognitive impairment (OR=0.88, 95% CI: 0.78, 0.98, P=0.025).

Conclusion: In this study, higher compliance dietary pagoda score was associated with better cognitive function and a lower odds of mild cognitive impairment. The results showed that higher dietary guidelines compliance was associated with better cognitive performance.

Key words The Chinese Dietary guidelines; Cognitive function; Mild cognitive impairment; Middle-aged and elderly people

Category: Public Nutrition & Health

肥胖易感和肥胖抵抗人群的肠道微生物特征：来自大型社区队列研究的结果

Gut microbial features of the obesity-prone and obesity-resistant participants: results from a large community-based cohort study

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Background and Objectives

Despite living in the same environment, some people are at risk of obesity while others remain thin. In this study, we investigated whether the gut microbiota is different in people who are obesity prone (OP) and obesity resistant (OR).

Methods and Study Design

The present study included 118 participants from the Lanxi cohort study. Total energy intake and physical activity were categorized as high, medium and low. Those with a BMI < 24 kg/m 2 in the low physical activity and high energy intake groups were defined as the OR group (n=48). Those who were overweight/obese in the high physical activity and low energy intake groups were defined as the OP group (n=70). Fecal samples were subjected to 16S rRNA profiling to assess the gut microbiota of participants in the OP and OR groups.

Results

The overall composition of the gut microbiota at the phylum level showed a decrease in the abundance of Bacteroidetes and an increase in Proteobacteria in the OP group compared to the OR group. Alpha diversity showed no significant differences between the two groups. Principal Coordinate Analysis (PCOA) based on Unifrac distance showed that there were significant differences between the two groups (p=0.018). LEfSe analysis showed that Pseudescherichia and Enterobacter were relatively more abundant in the OP group at the genus level, and Caproicibacter, Flintibacter and Phocaeicola were relatively more abundant in the OR group. Metabolism-related pathways, including lipid metabolism, amino acid metabolism and energy metabolism, were increased in the OR group according to PICRUSt2 analysis.

Conclusions

Our results suggest that significant differences in gut microbiota composition were observed between the OP and OR groups, and the credible predominant differential flora may provide a new method to prevent weight gain or promote weight loss.

Key words Obesity-prone; obesity-resistant; gut microbiota; energy intake; physical activity

Category: Public Nutrition & Health

正常体重肥胖的肠道菌群改变及这种变化对心血管代谢健康的影响：结果来源于两个独立的队列研究

Alteration in the gut microbiota of normal weight obesity and its impact on cardiometabolic health: results from two independent cohort studies

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Background: Evidence regarding the association of gut microbiota with normal weight obesity (NWO) and its impact on cardiometabolic diseases (CMD) is scarce. We aim to investigate alterations in the gut microbiota of the NWO and evaluated whether this alteration influenced cardiometabolic health in two independent cohorts.

Methods: This study included 3620 and 1847 adults from Wellness Living Laboratory (WELL)-China and Lanxi cohorts, respectively. NWO was defined as normal body mass index (BMI) but increased body fat percentage (BFP). The gut microbiota of stool samples was detected by 16S rRNA gene sequencing. We evaluated the relationship between microbiota dysbiosis (diversity, relative abundance, and predicted pathway) and NWO. We constructed the healthy microbiome index (HMI) and examined its association with CMD. Finally, we assessed the correlation between dietary and lifestyle factors and NWO-related genera. These analyses were independently conducted in above two cohorts.

Results: Participants with NWO had decreased gut microbial richness and altered overall composition, compared to the normal weight lean (NWL) group. After adjusting for potential confounders, nine and fourteen gut microbial genera were significantly associated with NWO in WELL-china and Lanxi cohorts, respectively. Seven genera: Clostridia_UCG-014, Christensenellaceae_R7_group, Coprococcus, Fusobacterium, Ruminococcus gnavus, Phascolarctobacterium, and Ruminococcus torques overlapped in both two cohorts. The novel-created HMI significantly decreased the risk of

hypertension, dyslipidemia, and metabolic syndrome, OR (95%CIs) was 0.92 (0.85-0.99), 0.87 (0.81-0.94) and 0.89 (0.80-0.98) respectively. Moreover, we found the genera that were favorable for NWO were consistently correlated with healthy dietary and lifestyle factors in two independent cohorts.

Conclusions: In these two independent cohorts, we found gut microbiota dysbiosis among participants with NWO and this alteration play a role in the pathogenesis of CMD. Our results highlighted the potential for specific gut microbiota to alter fat distribution and further improve cardiometabolic health in participants with normal BMI but higher disease risk.

Key words Normal weight obesity; Body fat percentage; Gut microbiota; Cardiometabolic diseases

Category: Public Nutrition & Health

减盐行为干预对血压和尿钠的影响：随机对照试验的荟萃分析

Effects of a salt reduction behavioral intervention on blood pressure and urinary sodium excretion: a meta-analysis of randomized controlled trials

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Hypertension is one of the most common cardiovascular diseases and excessive sodium intake is a major risk factor. Many studies aiming at measures to reduce salt intake, such as integrated lifestyle interventions and health education, are currently available, but the effectiveness of studies of behavioral interventions based solely on salt reduction is unclear. This meta-analysis investigated the effects of a behavioral intervention based on salt reduction on blood pressure and urinary sodium excretion.

A search of the published literature was conducted using the Cochrane Central Register of Controlled Trials, EMBASE, PubMed and Web of Science. Study and intervention characteristics were extracted for the descriptive synthesis and study quality was assessed. As a result, a total of 4634 participants were represented in ten studies including 3763 adults and 871 children. Interventions included the provision of salt restriction spoons or devices, salt reduction education, self-monitoring devices for urinary sodium, and salt reduction cooking classes. Meta-analysis results showed that the salt reduction behavioral intervention significantly reduced SBP (-1.17 mmHg, 95%CI -1.86 to -0.49), DBP (-0.58 mmHg, 95%CI -1.07 to -0.08) and urinary sodium excretion (-21.88 mmol/24 hours, 95%CI -32.12 to -11.64).

The results found that behavioral change interventions based on salt reduction can reduce salt intake levels and low blood pressure levels. However, interventions require other salt reduction interventions in combination.

Key words salt; behavioral intervention; blood pressure; urinary sodium excretion; meta-analysis

Category: Public Nutrition & Health

学生饮食行为与超重肥胖的关系：一项横断面研究

The relationship between dietary behavior and overweight and obesity among students: a cross-sectional study

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Background and Objectives: The epidemic of overweight and obesity in children and adolescents has been an important public health problem worldwide. We conducted this study to investigate the prevalence of overweight and obesity among students in Ningbo, and to explore the relationship between the students' dietary behavior and overweight and obesity.

Materials & methods: A population-based cross-sectional study of school-aged children was conducted. A total of 7299 students have been recruited. The height and weight of the participants were measured, and a questionnaire was used to investigate their dietary behavior. Logistic regression models were used to investigate the relationship between dietary behavior and overweight and obesity. Age, gender, area, grade, sleep duration, and physical activity were adjusted in the multivariate regression models.

Results: The rates of overweight and obesity among students in Ningbo are 16.14% and 9.88%, respectively. The results showed that the frequency of eating breakfast and consuming fried food, fresh vegetables, and fruits was not significantly associated with overweight (P>0.05). Regular consumption of sugary beverages was found to be associated with a higher risk of overweight compared to students who never consumed (OR=1.256, 95% CI: 1.023-1.542, P=0.029). Then, the research indicated that skipping breakfast was considered a risk factor for obesity (OR=2.102, 95% CI: 1.087-4.065, P=0.027). After adjusting for age, gender, area, and grade and continuing to adjust for sleep duration and physical activity, the results showed that students who eat fried food at least once a day have a higher risk of obesity (OR=1.494, 95% CI: 1.050-2.125, P=0.026; OR=1.516, 95% CI: 1.065-2.158, P=0.021, respectively).

Conclusion: Regular consumption of sugary beverages was a risk factor for overweight. Frequent consumption of fried food and skipping breakfast can be a marker for identifying obesity in students.

Key words overweight; obesity; dietary behavior; students; risk factor

Category: Public Nutrition & Health

农村成年人饮食频率与二型糖尿病的关联：一项大规模的横断面研究

Association between meal frequency and type 2 diabetes mellitus in rural adults: a large-scale cross-sectional study

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Background: Diet frequency may potentially influence metabolic health. However, general population-based evidence on the association between meal frequency and type 2 diabetes mellitus (T2DM) remains limited and inconclusive. Thus, this study aimed to investigate the association between meal frequency and T2DM in rural area.

Methods: A total of 29,405 qualified participants were enrolled from the Henan rural cohort study. Data on meal frequency were collected through a validated face-to-face questionnaires survey. The distribution of total weekly meal frequency in the analyzed sample ranged from 14-21 times/week. So, total weekly meal frequency was divided into three groups of 14-15 times/week, 16-20 times/week, and 21 times/week. Then the breakfast, lunch, and dinner frequency were classified into 0-2 times/week, 3-6 times/week, and 7 times/week. Logistic regression models were utilized to explore the association between meal frequency and T2DM. Stratified analyses of different gender, age, BMI, smoking status, drinking status, high-fat diet, high-salt diet, vegetable and fruit intake were performed to estimate the robustness of the results.

Results: Compared with 21 times per week meal frequency group, the adjusted odds ratios (ORs) and 95% confidence intervals (95%CIs) were 0.75 (0.58, 0.95) and 0.70 (0.54, 0.90) for 16-20 times/week group and 14-15 times/week group, respectively. For the analysis of the three meals, significant associations were only found between dinner frequency and T2DM. Compared with 7 times per week dinner group, the ORs(95%CIs) were 0.66 (0.42, 0.99) and 0.51 (0.29, 0.82) for the group with 3-6 times/week and 0-2 times/week. Additionally, stratified analyses showed a significant association between meal frequency and T2DM among participants with healthy habits.

Conclusions: Reduced meal frequency especially dinner frequency was associated with lower prevalence of T2DM, which suggests that an adequate reduction in meal frequency per week may have a role in decreasing the risk of T2DM.

Key words Meal frequency; Dinner frequency; Type 2 diabetes; Rural population; Stratified analysis.

Category: Public Nutrition & Health

基于随机对照研究的川菜系中国心脏健康膳食成本分析

Does a modified antihypertensive Sichuan diet cost more? Analysis from the Chinese heart-healthy diet trial

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Background and Objectives: Adherence to a healthy diet like DASH is important to the prevention and control of hypertension. But high-quality healthy diets can be more expensive, which could act as a barrier. Thus, this study aims to determine whether the Chinese heart-healthy diet (Sichuan cuisine version) (CHH diet-SC) is more expensive than the conventional Sichuan diet, and explore the nutrients that mainly affect the cost of Sichuan diet .

Methods and Study Design: The cuisine-based Chinese heart-healthy diet (CHH) study is a multicenter, parallel-group, single-blinded, randomized feeding trial to evaluate the efficacy in lowering blood pressure of the CHH diet. The present study analyzed the cost of the 4-week intervention diets in Sichuan center representing the southwestern China of the CHH diet study based on the actual intakes of daily meals and retail food prices collected during the trial. Ridge regression analysis was performed to explore the most important nutrients in determining the diet cost.

Results: The CHH diet-SC was more expensive than the control diet (￥27.87±2.41 vs￥25.18±2.79, P<0.001), and the incremental cost-effectiveness ratio for 1 mm Hg SBP reduction was ￥0.32. The amount and expenditure of dairy products, fruits, soybeans and nuts, whole grains and mixed beans were higher of the CHH diet-SC compared to the control diet (P<0.001). Vitamin B_1, vitamin B_6, vitamin C, magnesium, and phosphorus were positively correlated with the cost of Sichuan diet (P<0.05).

Conclusions: The CHH diet-SC derived from Sichuan cuisine for lowering blood pressure cost more than conventional Sichuan diet, partly due to the high intake and expenditure of specific food groups. Nutrients including vitamin B_1, magnesium and phosphorus were strongly correlated with the cost of Sichuan diet, which could be a direction to further implement to reduce the cost of CHH diet-SC.

Key words diet; CHH diet; food costs; monetary costs; Sichuan cuisine

Category: Public Nutrition & Health

同型半胱氨酸在甜菜碱与代谢综合征关联中的作用

The role of plasma homocysteine on the association between serum betaine and metabolic syndrome

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Background and Objective

Previous studies have explored associations between betaine and metabolic syndrome, but few have considered the effects of homocysteine on them. Our objective was to explore the associations among betaine, homocysteine and the risk of metabolic syndrome.

Methods

This cross-sectional study included 2129 residents aged 40 to 80 years in the Guangzhou Nutrition and Health Study. Serum betaine and plasma homocysteine concentrations was determined by high-performance liquid chromatography-tandem mass spectrometry. The diagnosis of metabolic syndrome was ascertained according to the criteria of International Diabetes Federation. Logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals (95% CIs). Mediation analysis was used to explore the possible role of homocysteine on the associations between betaine and metabolic syndrome.

Results

Serum betaine levels were negatively associated with the prevalence risk of metabolic syndrome. Compared with participants in the bottom quartile of serum betaine, those in the highest tercile had lower risk of metabolic syndrome, with an adjusted OR of 0.62 (95% CI: 0.48－0.79). In terms of the components of metabolic syndrome, higher serum betaine levels were associated with the better waist circumference, systolic blood pressure, diastolic blood pressure, fasting blood glucose, triglyceride and high-density lipoprotein cholesterol levels. Mediation analysis found that plasma homocysteine mediated the association between serum betaine and metabolic syndrome. Betaine reduced the risk of metabolic syndrome (β = －0.100, P < 0.001) and the levels of blood pressure, fasting blood glucose and triglyceride, with the mediation of lowering plasma homocysteine.

Conclusions

Serum betaine was negatively associated with the risk of metabolic syndrome with the mediation of lowering plasma homocysteine.

Key words betaine, homocysteine, metabolic syndrome, mediation analysis

Category: Public Nutrition & Health

营养支持促进糖尿病足溃疡的愈合：案例研究

Nutritional Support Improves the Healing of Diabetes Foot Ulcers: A Case Report

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Diabetic foot ulcers (DFUs) are the most striking complications of diabetes mellitus. In this case we report a 63-years-old man who has had type 2 diabetes and liver cirrhosis for many years. The patient presented left DFUs of grade III. He has received standard wound care including infection control and surgical debridement from podiatric surgeons in the past three months. Nevertheless, the DFUs were not improved. The patient's serum albumin (ALB) and prealbumin (PAB) were very low, 22.5 g/L and 110 mg/L respectively. While total bilirubin (TBIL) was 48.76 μmol/L, indicating the occurrence of hypoalbuminemia probably due to liver cirrhosis and inflammation. Therefore, optimizing the patient's nutritional status is an essential part of the wound care. We use Beaulab® SCP marine fish compound peptides, a patent-pending blend of purified short peptides (Average M.W. 500 Dalton, Tekwon Ltd.), for enteral nutritional support to promote wound healing process. Results showed that after two weeks' nutritional intervention with 0.4g/kg/d SCP, the PAB level increased significantly to 230 mg/L. The level of TBIL dropped back to 20.16 μmol/L. Granulation tissue formation was observed in the third week. At the end of the fourth week the ulcer constriction was obvious. After two months, the patient's DFUs was nearly completely healed. Previously, we reported that orally administered SCP notably downregulated uncontrolled inflammatory responses, and conferred substantial protection from endotoxin-induced acute hepatic damage. (Wang et al. J Food Biochem 2021; 45: e13618). Compared with other protein nutrients, the purified compound peptide SCP, in addition to serving as a more efficient nitrogen source, directly participating in protein metabolism and correcting malnutrition in patients with liver cirrhosis, may also reduce inflammation by modulating immune responses, thereby promote wound healing.

Key words Diabetic foot ulcers; Fish oligopeptides; Liver cirrhosis; Nutritional support

Category: Public Nutrition & Health

中国成人对食药物质的知信行：一项在线横断面调查

Knowledge, attitudes, and practices (KAP) regarding food-medicine dual-purpose substances(FMS) among adults in China: a cross-sectional online survey

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Objective: To evaluate the KAP related to FMS among adults in China, so as to provide the basis for both perfect related regulations and to provide people with scientific advice on FMS consumption.

Methods: Participants were invited through a convenience sampling strategy in 2020. A cross-sectional online survey on FMS perception and consumption was conducted via the Wenjuanxing e-questionnaire platform, which consist of basic social-demographic information of the respondents and KAP on FMS.

Results: A total of 2815 respondents were recruited for this study. 72.65% of the respondents realized that there was a clear list of FMS , yet only 18.44% knew the specific quantity of FMS . Respondents' identification of FMS showed an accurate response rate of 22.74% . Educational level was the factor associated with participants' knowledge of FMS . In terms of current level of knowledge of FMS , scores of 6 and above were over 70.00%, and their confidence in FMS-related knowledge scored 6 and above was around 80.00% by self-assessment . Supermarkets, e-commerce platforms, pharmacies had become the main ways for respondents to buy FMS. The concerns of the respondents were 43.76% for quality, 16.64% for contain FMS ingredients, 15.14% for the price, etc. when buying FMS. Among the FMS they had ever consumed, the two most frequently consumed FMS are yam (35.27%) and wolfberry (15.89%).40.6% of consumers hope that the government can increase publicity and conduct more popular science activities, 18.29% hope that the government can strengthen supervision .

Conclusions: The substantial knowledge of FMS among adult respondents in China wasn't optimistic, yet they expressed positive attitudes towards knowing and consuming FMS, and there is a high need for labeling and consumption. There is a desire to strengthen the research and policy promulgation on FMS , actively popularize FMS and guide residents to consume FMS scientifically.

Key words FMS; KAP; Consumption; Food labels

Category: Public Nutrition & Health

1岁婴幼儿25羟维生素D水平及影响因素
Analysis of 25(OH)D Levels and Influencing Factors in 1-Year-Old Infants and Toddlers in Wuxi, China

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Objective: To investigate the 25(OH)D levels in 1-year-old infants and toddlers and analyze the influencing factors.

Methods: A total of 441 infants and toddlers who underwent physical examinations in the Child Health Department of Wuxi Maternal and Child Health Hospital from January 2016 to June 2018 were collected as research subjects. Relevant data information during pregnancy and after childbirth was collected using a questionnaire survey, and information at the time of the infants' birth was collected through the maternal and child health system. Finger blood samples were collected to measure serum 25(OH)D concentrations, and statistical analysis was performed using SPSS 20.0 software.

Results: The survey found that the 25(OH)D concentration in 1-year-old infants and toddlers in this region was 66.48 ± 19.17 nmol/L. Univariate analysis showed that there were statistically significant differences in factors such as infant gender, maternal history of diabetes, whether vitamin D was supplemented during the first trimester of pregnancy, whether the child had been ill within 1 year, 1-year-old weight, and maternal 25(OH)D concentration during pregnancy (P<0.05). Multivariate logistic regression analysis revealed that the occurrence of illness within 1 year (OR=0.598, 95% CI: 0.343~0.998), 1-year-old weight (OR=0.841, 95% CI: 0.841~0.998), and serum 25(OH)D concentration during pregnancy (OR=0.854, 95% CI: 0.804~0.912) were influencing factors for serum 25(OH)D concentration in 1-year-old infants and toddlers.

Conclusion: Serum 25(OH)D concentrations in infants and toddlers within 1 year may be influenced by their own illnesses, weight, and maternal serum 25(OH)D levels during pregnancy.

Key words Infants and toddlers; 1-year-old; influencing factors; logistic analysis

Category: Public Nutrition & Health

膳食质量不佳与中国40岁及以上成年人的精神障碍症状有关：一项基于全国人群的横断面研究

Suboptimal diet quality is associated with mental symptoms among adults aged 40 years and over in China: a nationwide population-based cross-sectional study

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ObjectivesIn previous studies, dietary patterns have been linked to mental symptoms. However, few studies have examined the association of overall dietary quality with anxiety and depressive symptoms in the Chinese population. The study aimed to assessed the relationship between dietary quality and anxiety and depression symptoms among Chinese adults over 40 years.Methods

Between 2017 and 2019, a population-based, cross-sectional survey was carried out in China based on the National Cohort of Esophageal Cancer (NCEC). Uniformed and laptop-based questionnaires collected the demographic characteristics and food data. Additionally, anxiety and depression symptoms were measured using the Generalized Anxiety Disorder seven and the Patient Health Questionnaire nine. The dietary quality of the adults was evaluated using the revised Diet Balance Index 2016 (DBI-16).Results

73737 eligible participants were recruited for this study over the survey period. 17.6% and 13.7% of residents suffer from anxiety and depression symptoms, respectively. The DBI-16 indicates that participants with anxiety or depression symptoms had a higher level of inadequate food intake (LBS) and unbalanced food intake (DQD) than those without anxiety or depression. Specifically, they were more likely to have an inadequate intake of cereals, meat products, fish/shrimps, eggs, vegetables, fruits, and soybean products ($p<0.05$). The logistic regression models showed LBS and DQD were positively linked with anxiety and depression symptoms, and the correlation increases as inadequate intake and unbalanced dietary levels grow. On the contrary, excessive food intake (HBS) was significantly negatively correlated with symptoms of anxiety and depression. Moreover, a one-score increase in diet variety was associated with 8% lower odds of anxiety and 6% lower odds of depression symptoms, respectively.Conclusion

The overall diet quality of adults aged 40 years and over in China is poor. Dietary imbalance, inadequate intake of plant foods and low dietary diversity may increase anxiety and depressive symptoms.

Key words Chinese diet balance index-16; dietary quality; anxiety; depression; dietary diversity

Category: Public Nutrition & Health

性别和肥胖影响全氟烷基物质与肌肉质量之间的关系：NHANES 2011-2018

Sex and obesity influence the relationship between Perfluoroalkyl Substances and Muscle Mass: NHANES 2011-2018

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Abstract: Per- and polyfluoroalkyl substances (PFAS) are a characteristic group of endocrine-disrupting compounds, predominantly ingested through food and water. The association between PFAS exposure and obesity has been substantiated currently, however, available data regarding their effects on muscle mass remain insufficient. To investigate the effects of PFAS exposure on muscle mass, we performed a cross-sectional analysis of data from 1029 adolescents and 3274 adults in the National Health and Nutrition Examination Survey (2011-2018). Muscle mass was measured by Dual-energy X-ray Absorptiometry, and seven PFAS compounds in serum were quantitatively analyzed using online solid-phase extraction high-performance liquid chromatography-tandem mass spectrometry. Weighted multiple linear regression and weighted quantile sum (WQS) regression models were used to examine the relationship between PFAS exposure and muscle mass index(MMI, kg/m^2) while stratifying for age, sex, and obesity. Regression analyses demonstrated an inverse relationship between PFAS exposure and muscle mass after adjusting for potential covariates. Adults with higher serum concentrations of Perfluorodecanoate (PFDeA), perfluorooctanoate (PFOA), and perfluorooctane sulfonate (PFOS) accumulated less muscle mass (eg, -0.172 [95% CI: -0.275, -0.070] kg/m^2 of total muscle mass per doubling of PFOS). These correlations were particularly pronounced in adult females and obese subjects, displaying significant negative associations in the lower extremity, right arm, trunk, and entire body muscle, such as in adult females (eg, -0.259 [95% CI -0.417, -0.102] per doubling of kg/m^2 PFOS) and obese individuals (eg, -0.405 [95% CI -0.623, -0.187] kg/m^2 per doubling of PFOS). The outcomes of WQS regression analyses were consistent with weighted linear regression analyses. Our study suggests that exposure to PFAS, either individually or in combination, is associated with decreased muscle mass at specific body sites, with sex and obesity serving as influencing factors. Therefore, reducing PFAS to an appropriate level may contribute to minimizing the health risk caused by PFAS.

Key words Perfluoroalkyl and poly-fluoroalkyl substances; Muscle mass; Weighted quantile sum; Endocrine disrupting chemicals; Obesity

Category: Public Nutrition & Health

老年人细胞内水分与身体总水分的比例与肌肉力量和躯体功能的关联——一项横断面研究

Association of the ratio of intracellular water to total body water with muscle strength and physical performance in older adults-a cross-sectional study

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Abstract:

Background and Objectives: The ratio of intracellular water to total body water, which is positively associated with muscle strength and physical performance in older adults, has attracted broad attention. Nevertheless, it is unclear whether the positive association of the ratio of intracellular water to total body water with muscle strength and physical performance is attributed to improvements in muscle mass or muscle quality. This study aimed to analyze whether the ratio of intracellular water to total body water was associated with muscle strength and physical performance, independent of muscle mass.

Methods and Study Design: This cross-sectional study recruited 401 adults aged ≧60 years in four communities in Luzhou City, China, from January to August 2020. Appendicular skeletal muscle mass and the ratio of intracellular water to total body water were measured using a bioelectrical impedance analysis device. Muscle strength was measured by hand grip strength; physical performance was assessed by gait speed. Multivariate linear regression was adopted to analyze association of the ratio of intracellular water to total body water with muscle strength and physical performance.

Results: The ratio of intracellular water to total body water was inversely correlated with age, frailty and sarcopenia, positively associated with HGS and gait speed whether adjusted for age, sex, and appendicular skeletal muscle mass. Among subjects stratified by appendicular skeletal muscle mass, those who had a higher ratio of intracellular water to total body water had significantly greater muscle strength and physical performance in both sexes.

Conslusions: The ratio of intracellular water to total body water has a positive association with muscle strength and physical performance, independent of ASM. This could provide an approach to muscle quality assessment and an innovative idea for improving prediction models of muscle strength and physical performance.

Key words intracellular water; muscle strength; physical performance; muscle quality; sarcopenia

Category: Public Nutrition & Health

武汉地区绿化、空气污染和居住饮食环境对妊娠期体重增加的影响:一项横断面研究

Contribution of Greenness, Air pollution, and Residential Food Environment to Excess Gestational Weight Gain: A Cross-sectional Study in Wuhan, China

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Objectives: We aimed to explore the association of greenness, air pollution, and residential food environment exposures with EGWG, and estimate their combined effects on EGWG.

Method: This population-based on a cross-sectional study of 51,507 pregnant women with individual-level residential address data in the Wuhan Maternal and Child Health Management Information System. Multiple urban environmental exposures, including residential greenness, air pollution, and residential food environments, were investigated in this study. Generalized linear mixed regression models were utilized to explore the relationships between greenness, air pollution, and residential food environmental exposure, and EGWG; and the combined effects were further estimated by cluster analysis and principal components analysis (PCA).

Result: In single exposure models, Each IQR increase in NDVI500-m was associated with a 2.6% (95% CI: 0.8-4.3) lower odds for EGWG. We only found a significant association between convenience store density within the 250m buffer zone (OR=1.029 and 95% CI: 1.005,1.054) and EGWG. In terms of air pollution, SO2, PM10, and PM2.5 were significantly associated with a higher prevalence of EGWG and higher gestational weight gain (GWG), with (OR=1.162 and 95% CI: 1.116,1.209; OR=1.120 and 95% CI: 1.084,1.157; OR=1.172 and 95% CI: 1.141,1.205, respectively) per IQR increase; Higher levels of NO2, CO and O3 were associated with lower prevalence of EGWG, with (OR=0.950 and 95% CI: 0.908,0.995; OR=0.927 and 95% CI: 0.900,0.954; OR=0.946 and 95% CI: 0.918,0.976, respectively) per IQR increase.Compared to healthy urban environment clusters, clusters with high levels of air pollution, high-density residential food environment and low levels of residential greenness were associated with higher odds of EGWG (OR=1.104, 95% CI: 1.025, 1.188).

Conclusion: This study emphasizes that exposure to high levels of air pollution, high-density residential neighborhood food environments, and low levels of residential greenness is a neighborhood obesogenic environment for pregnant women.

Key words Keywords: Greenness; Air pollution; Residential food environment; Excessive gestational weight gain;

Category: Public Nutrition & Health

COVID-19 大流行下的冷链食品： 中国的供应和管理现状
Cold-chain Food under the COVID-19 Pandemic: Current Supply and Management in China

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The coronavirus disease 2019 (COVID-19) pandemic has started a new epoch in the world. Although the rate of COVID-19 infection via contaminated cold-chain food is low, current studies indicate cold-chain food provides a suitable environment for the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) for long-time survival and long-distance spread globally, which poses as a threat to public health, especially in China. We summarized recent new regulations/guidelines issued for cold-chain foods in China and analyzed the results of SARS-CoV-2 nucleic acid testing on the surface of a considerable number of cold-chain foods and their internal or external packaging, with the aim of exploring the risk of cold-chain foods being contaminated with SARS-CoV-2, combined with the import trades and local demand to analyze new challenges, possibilities, and countermeasures for food safety management. We found that appropriate regulatory measures in China have contributed to reducing the risk of virus transmission from cold-chain food, ensuring food safety and economic development but have also potentially impacted import trade and consumption of certain food categories, with aquatic products being the most severely affected in a short time duration. Food safety management and distribution of cold-chain food have been improved. However, long-term impacts should be further assessed.

Key words SARS-CoV-2; COVID-19; cold-chain food; food safety; China

Category: Public Nutrition & Health

血清 25-羟基维生素 D 与中老年女性缺血性脑卒中复发的关联性研究

Association between serum 25-hydroxyvitamin D and recurrent ischemic stroke in middle-aged and elderly women

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Background and Objectives: Evidence for the association between vitamin D and risk of recurrent ischemic stroke remains limited. Thus, we aimed to assess the association between serum 25-hydroxyvitamin D (25(OH)D) level and risk of recurrent ischemic stroke in middle-aged and elderly women (age ⩾45 years) with a history of ischemic stroke, and to identify the optimal 25(OH)D level in relation to lowest recurrent ischemic stroke risk.

Methods and Study Design: Data from the nationwide prospective United Kingdom Biobank were used for analyses. Primary outcome was time to first ischemic stroke recurrence requiring a hospital visit during follow-up. We used Cox proportional hazards regression model with restricted cubic splines to explore 25(OH)D level in relation to recurrent ischemic stroke. The dose-response relationship between 25(OH)D and recurrent ischemic stroke risk was also estimated, taking the level of 10 nmol/L as reference.

Results: A total of 512 participants (mean age: 60.1 years) with a baseline ischemic stroke were included for analyses. There were 16 (3.1%) recurrent ischemic stroke events documented during a mean follow-up of 7.7 years. Using Cox proportional hazards regression model with restricted cubic splines, a quasi J-shaped relationship between 25(OH)D and risk of recurrent ischemic stroke was found, where the lowest recurrent ischemic stroke risk lay at the 25(OH)D level of approximate 60 nmol/L. When compared with 10 nmol/L, a 25(OH)D level of 60 nmol/L was significantly associated with a 50% reduction in the recurrent ischemic stroke risk (hazard ratio = 0.50, 95% confidence interval: 0.31 - 0.80).

Conclusions: Based on data from a large-scale prospective cohort, we found a quasi J-shaped relationship between 25(OH)D and risk of recurrent ischemic stroke with the lowest risk at around 60 nmol/L. These results may provide some insights into the optimal vitamin D status recommendation for recurrent ischemic stroke prevention.

Key words vitamin D; recurrent ischemic stroke; 25-hydroxyvitamin; middle-aged and elderly women; stroke prevention

Category: Public Nutrition & Health

辅食添加时间与随后腹泻发生风险的关联

Association between the timing of complementary foods introduction and subsequent infant diarrhea

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Objective: We aimed to explore the associations of complementary foods (CF) introduction timing with subsequent infant diarrhea and its duration.

Methods: This study embedded in Tongji Maternal and Child health Cohort (TMCHC) study. The information on CF introduction and infant diarrheal illness was collected at 6 and 12 months postpartum. Infants were assigned to three groups: 1) <5 months of age (n=723), 2) 5-5.9 months of age (n=2292), and 3) ≥6 months of age (n=2111) according to the timing of CF introduction. The incident of diarrhea was limited to the diarrhea occurred after the CF introduction. Cox regression models were used to estimate the HRs (95%CIs) of infant subsequent diarrhea according to timing of CF introduction. Logistic regression models were used to estimate the ORs (95%CIs) of infant recent diarrhea (occurred within 1.5 months following the introduction of CF), later diarrhea (occurred after 1.5 months of the introduction of CF), and diarrhea duration according to timing of CF introduction.

Results: A total of 5126 infants were involved in the final analysis. The prevalence of diarrhea among infants was 16.8%. When compared to infants in ≥6 months group, the aHR was 1.46 (95%CI: 1.14-1.87) for <5 months group and was 1.25 (95%CI: 1.03-1.52) for 5-5.9 group after adjustment for potential confounders. The results remained significantly when outcome was limited in recent diarrhea (aOR: 1.98; 95% CI: 1.41-2.77 for <5 months group; aOR: 1.87; 95% CI: 1.33-2.63 for 5-5.9 group). Both infants in <5 months group and 5-5.9 months group were had increased risk of diarrhea lasts less than 7 days (aOR: 1.73; 95% CI: 1.17-2.55 for <5 months group; aOR: 1.35; 95% CI: 1.00-1.84 for 5-5.9 months group).

Conclusion: Introducing complementary foods before the age of 6 months is associated with an increased risk of infant diarrhea in the short term.

Key words complementary foods; infant diarrhea; diarrhea duration; infant diarrhoea; diarrhoea duration; TMCHC

Category: Public Nutrition & Health

中国30岁以上妊娠妇女孕期增重与新生儿出生体重过重的关系

Maternal age-specific association between gestational weight gain and large infant birthweight in Chinese women aged 30 years and older

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Background and objectives: The relationship between excessive gestational weight gain and large infant birthweight has been documented in numerous studies, however, such evidence is scarce in women with older age, which is already a risk factor for adverse perinatal outcomes including large infant birthweight. Considering that the number of women who delay childbearing until or beyond 30 years has increased after the relaxation of the one-child policy, this study aimed to investigate the maternal age-specific association between gestational weight gain and large infant birthweight in Chinese women older than 30.

Methods and study design: A prospective cohort including 19,854 mother-child dyads was conducted in Southwest China between 2019 and 2022. Logistic regression was performed to assess the association of gestational weight gain above and below the 2009 Institute of Medicine guidelines with macrosomia and large-for-gestational-age, stratified by maternal age (31-34 years and ≥35 years).

Results: In both maternal age groups, excessive and insufficient gestational weight gain was associated with increased and decreased odds of large infant birthweight, respectively. After stratified by pre-pregnancy body mass index, the protective effect of insufficient gestational weight gain on large infant birthweight was not observed in overweight/obese women aged 31-34 years. Moreover, among overweight/obese women, the impact of excessive gestational weight gain on the risk of macrosomia (odds ratio, 95% confidence intervals: 31-34 years 2.72, 1.89-4.02; ≥35 years 1.59, 1.13-2.27) and large-for-gestational-age (odds ratio, 95% confidence intervals: 31-34 years 2.18, 1.68-2.88; ≥35 years 1.71, 1.30-2.25) was stronger in women aged 31-34 years.

Conclusions: The association between gestational weight gain and large infant birthweight might differ according to maternal age, and more attention should be paid to women aged 31-34 years. Maternal age should be considered when establishing pregnancy weight guidelines or nutritional plans.

Key words gestational weight gain, older maternal age, body mass index, macrosomia, large-for-gestational-age.

Category: Public Nutrition & Health

中国人群正常体重肥胖与糖尿病风险增加有关:一项前瞻性队列研究

Normal weight obesity is associated with increased risk of diabetes in Chinese people: a prospective cohort study

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Background and Objectives

While several studies have linked normal weight obesity (NWO) and diabetes, the association between them remains controversial. We aimed to evaluate the risk of developing diabetes in Chinese population with NWO.

Methods and Study Design

This 3-year population-based cohort study was based on the China Health and Nutrition Survey(CHNS). A total of 7410 subjects who participated in both 2015 and 2018 wave of CHNS, and without diabetes in 2015 were included. Body fat percentage (BF%) was measured by bioelectrical impedance analysis. NWO was defined as subjects with a normal BMI (18.5-23.9 kg/m2) and an excess BF% (≥ 24% in men; ≥ 33% in women).

Results

Of 7410 individuals, 2874 individuals were normal weight non-obese (NWNO), 802(10.8%) were NWO, 652 were overweight non-obese (OWNO), and 3082 were overweight obese (OWO). During a follow-up of 3.0 years, 499 (6.7%) individuals developed diabetes. Multiple Cox regression analyses indicated that, compared with NWNO people, the adjusted hazard ratios (95% CI) of diabetes in NWO, OWNO and OWO people were 1.592(1.156-2.193), 1.599(1.141-2.242) and 1.889(1.514-2.357), respectively. When stratified by gender and age, NWO was associated with an increased risk of diabetes only in male and people 65 and above. In addition, we found an adjusted dose-response association(P=0.0013) between BF% and risk for diabetes in male with a normal BMI using restricted cubic spline functions.

Conclusions

Chinese people with NWO are at increased risk of developing diabetes, especially in men and people aged 65 years and older. Dose-response association between BF% and risk of diabetes remain even when BMI is normal.

Key words normal weight obesity; body fat; diabetes; Chinese people; cohort study

Category: Public Nutrition & Health

人群减盐干预模式探索-中国疾控中心Resolve减盐项目

Exploration of the implementation mode of population salt reduction interventions——China CDC-Resolve Salt Reduction Program

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Background and Objectives: The cooking salt of Chinese residents has declined, but sodium intake has increased, salt intake is still much higher than the recommended <5 grams per person per day. Salt reduction is a cost-effective chronic disease intervention but there is still a lack of salt reduction intervention mode that are in line with China's national conditions and can be promoted.

Methods and Study Design: By summarizing the effective salt reduction interventions applicable to key places (communities, enterprise and public institution, schools, canteens/restaurants, supermarkets, etc.) and key populations in these places, based on the SHAKE strategy, the concept of healthy supportive environment construction and the CHLA platform, the research team developed the intervention implementation mode in each place and carried out pilot application in Hunan and Zhejiang Province to evaluate the feasibility and replicability of these interventions.

Results: “3.2.1 mode” for community salt reduction, “Culture-LAKE mode” for enterprise and public institution salt reduction, “CLASS mode” for school salt reduction, 4S mode for canteens/restaurants salt reduction and “CNS mode” for supermarket salt reduction were developed. Based on the implementation mode, the salt reduction interventions of communities, enterprise and public institutions, schools including advocacy, distribution tools, training and lectures, on-site activity and other activities were successfully carried out in eight districts/counties (Wuling, Hanshou, Shigu, Qiyang in Hunan Province, Liandu, Yunhe, Luqiao, Tiantai in Zhejiang Province), canteens/restaurants and supermarkets salt reduction interventions were carried out in four of eight above districts/counties. National team also carried out comprehensive publicity. A series of technology plans, materials, standardized training courseware and an association standard “Behavior guidelines for salt reduction at home” were developed from this study.

Conclusions: Carrying out population salt reduction measures based implementation mode for various places is acceptable and it can provide a basis and reference for national promotion and implementation of salt reduction activities.

Key words Salt Reduction; Implementation mode; Health Education; Supportive Environment

Category: Public Nutrition & Health

机器学习方法识别柑橘类水果摄入的生物标志物和与生化指标之间的关系：非靶向代谢组学研究

Machine learning identifying biomarkers of citrus fruit intake and its association between biochemical indicators: an untargeted metabolism analysis

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Background Citrus fruits is one of the most popular fruits all around the world. With the increase in citrus fruit production and the advancement of storage and processing technology, citrus fruits have become an important source of dietary nutrition for the Chinese people. Citrus fruits are rich in many beneficial phytochemistry substances, such as proline betaine, limonin, pectin, etc., as well as vitamin A, C and E and various mineral elements. Among them, there are more than 170 antioxidant nutrients, which are natural antioxidants. In addition, consuming citrus fruits can also reduce the risk of developing cancers and has anti-inflammatory effects.Objectives Identifying specific metabolites of citrus fruit consumers, and explore the association between these metabolites and biochemical indicators in order to explain the health effect of consuming citrus fruit in metabolomic level.Methods and study design The population was from China Health and Nutrition Survey 2015, 500 participants from Hunan and Guizhou was completed dietary survey and collected serum sample, of which 126 reported having citrus fruits recently during the research. Untargeted metabolomic analysis of serum was using Ultrahigh Performance Liquid Chromatography-Mass Spectrum(UPLC-MS).We conducted three machine learning methods to identify the specific metabolites between citrus fruit consumers and non-consumers. Then we use Pearson partial correlation analysis with covariate correction to discover the association between metabolites and biochemical indicators.Results We have identified 16 metabolites including β-cryptoxanthin(OR=1.43, 95%CI=1.04-2.06) , proline betaine(OR=1.66, 95%CI=1.27-2.23) and N-methylhydroxyproline(OR=1.27, 95%CI=1.04-1.61) are differential metabolites between citrus fruit consumers and non-consumers. β-cryptoxanthin is possitively correlated with HDL-C and nagatively correlated with Triglycerides and high-sensitivity C-reactive protein(hs-CRP). Proline betaine and N-methylhydroxyproline are positively correlated with hs-CRP.Conclusion β-cryptoxanthin , proline bataine and N-methylhydroxyproline are possibaly biomarkers of citrus fruit intake. The health effect of consuming citrus fruit may associated with metabolic pathways interactions of these metabolites.

Key words Citrus fruit, Consumer, Biochemical indicator, Machine learning, Metabolomics

Category: Public Nutrition & Health

新冠疫情期间家庭饮食、家庭环境、父母焦虑与儿童营养状况的关系

the Relationship Between Family Diet, Family Environment, Parent Anxiety and Children`s Nutrition Status during the COVID-19 Pandemic

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The COVID-19 prevention measures during the pandemic changed the weight of children and the family environment. Both malnutrition and obesity existed among children. The study aimed at analyzing the nutritional status of Chinese children and the relationship with the family diet, family environment, and parental anxiety during the COVID-19 pandemic to provide a basis for further intervention.

7645 primary and secondary school students from five schools in Chengdu, China, and their parents were included in this study. Changes in the family’s diet and condition of frailty, overweight, and obesity of children during the two waves of follow-up surveys were assessed using paired chi-square tests. The effects of changes in family diet during the outbreak on the nutrition status of children were analyzed using multiple logistic regression, analysis of the effects of family environment and parental anxiety on childhood obesity using generalized estimation models.

The prevalence of frailty and obesity decreased from 11.64%and 11.60% in wave 1 to 4.96% and 10.50% in wave 2, and the rate of overweight increased from 13.11%in wave 1 to 13.73% in wave 2. Children whose families reduced consumption of staple foods during the COVID-19 were more likely to be frail, and families increased consumption of sugary drinks, take-out or meal delivery services, living in towns, family environmental barriers, and parental anxiety were risk factors for overweight obesity. Mother's education level in middle and high school and low age were protective factors for overweight obesity.

The physical environment of the family, the emotions of family members, and children's perceptions of the family's soft environment can influence children's eating behaviors, children's nutritional intake, and frailty and obesity in children under public health emergencies, and family-based dietary interventions may be effective. Parents can increase consumption of healthy foods and improve the family environment, which improve their growth.

Key words Children's Nutrition Status, Family Diet, Family Environment, Parent Anxiety, COVID-19 Pandemic

Category: Public Nutrition & Health

妊娠期体重增加模式及其对新生儿出生体重的影响：一项基于人口的队列研究

The pattern of gestational weight gain and its effects on neonatal birth weight: a population-based cohort study

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Background

Inappropriate gestational weight gain (GWG) is associated with poor birth outcomes in newborns. The purpose of this study was to investigate weight gain in different gestational periods and the gestational weight gain (GWG) pattern in relation to the risk of delivering LGA and SGA infants.

Methods

A prospective cohort of 3175 pregnant women was made in the analyses. Odds ratio (OR) and 95% confidence intervals of delivering SGA and LGA births in relation to gestational weight during different stages were evaluated via logistic regression analysis. Potential trajectories of maternal weight and GWG were identified by trajectory analysis. The relationship between different trajectory groups and the risk of delivering LGA and SGA babies was analyzed by logistic regression.

Results

Excess weight gain in the second and third trimesters increase the risk of delivering LGA infants (OR=1.896, P<0.001; OR=1.491, P=0.001). Excess weight gain in the second trimester was a protective factor for delivering SGA infants (OR=0.632, P=0.021). Three distinct weight trajectories were identified, and the moderate and high GWG were risk factors for LGA (OR=1.497, P=0.005; OR=2.952, P<0.001) and protective factors for SGA (OR=0.433, P<0.001; OR=0.325, P=0.001), respectively. Four distinct trajectories were identified and two growth models were founded as risk factors for the appearance of LGA (OR=2.613, P=0.000; OR=4.419, P=0.000), but only an increase in the second half of pregnancy was a protective factor for the appearance of SGA (OR=0.418, P=0.004).

Conclusions

The results show that it is best to maintain appropriate weight gain during the second trimester of pregnancy, which minimizes the occurrence of adverse birth outcomes.

Key words Gestational weight gain, Pattern, PROCTRAJ, Large for gestational age, Small for gestational age.

Category: Public Nutrition & Health

产前微量营养素补充是否对子代血压有益?基于中国西部农村随机对照试验的14年随访研究及一项meta分析

Whether antenatal micronutrient supplementation having benefit on offspring blood pressure? A 14-year follow-up of a randomized controlled trial in China and meta-analysis

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Objectives

Antenatal micronutrient supplementation improves birth outcomes, which has been shown to be associated with offspring blood pressure (BP). We aimed to examine the effects of antenatal micronutrient supplementation on adolescent BP.

Methods

We followed adolescents born to women who participated in a cluster randomized, double-blinded controlled trial of antenatal micronutrient supplementation conducted between 2002 and 2006. All pregnant women from each village in two rural counties in western China were randomized to take a daily capsule of folic acid (FA), folic acid plus iron (IFA), or multiple micronutrients (MMN). We assessed adolescent systolic and diastolic BP using validated electronic sphygmomanometer in 2016, which were then transferred into BP percentiles by adolescent age and height. We examined the effects of antenatal micronutrient supplementation on adolescent BP percentiles using generalized estimation equation. In addition, a meta-analysis was conducted after identifying similar trials that followed offspring and assessed their BP.

Results

Among 4488 singleton births eligible for long-term follow-up, 2118 (47.2%) adolescents aged 10-14 were followed, with 59.1% being male and a mean age of 11.71 (SD, 0.87) years. After adjusting for covariates, the MMN relative to FA group was associated with a 2.71 (95% CI -5.13, -0.28) point and a 2.56 (95% CI -4.99, -0.13) point lower systolic and diastolic BP percentile, respectively. The similar association was observed when comparing MMN to IFA. The corresponding adjusted mean differences were -1.32 (95% CI -4.13, 1.49) and-1.64 (95% CI -4.14, 0.86) points for systolic and diastolic BP percentile, respectively. In the meta-analysis including four trials with 5903 offspring, although the similar benefits of MMN relative to FA or IFA were observed, all the confidence intervals crossed the null point.

Conclusions

Antenatal micronutrient supplementation may exert some benefits on offspring blood pressure. Individual patient data meta-analysis should be pursued for addressing possible confounding and heterogeneity and identifying modifiers.

Key words Antenatal micronutrient supplementation, offspring Blood pressure

Category: Public Nutrition & Health

美国成年人血清脂肪酸模式与抑郁的关联性研究：基于 NHANES 数据

Association of Serum Fatty Acid Pattern with Risk of Depression in U.S. Adults: Analysis of NHANES 2011-2012

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Background: Exposure to different concentrations of fatty acids (FAs) may have an impact on depression. However, previous studies using individual FAs may not reflect the performance of mixtures of various fatty acids, and the associations of FA patterns with depression remain unclear.

Method: We conducted the cross-sectional analysis in 792 adults aged 18 years and older with available serum FAs and depression screening data in National Health and Nutrition Examination Survey (NHANES) 2011–2012. Serum concentrations of thirty FAs were measured using gas chromatography-mass spectrometry. Depression was assessed using the Patient Health Questionnaire-9. Principal component analysis was used to derive serum FA patterns. The relatedness between serum FA patterns and the risk of depression in the whole population and different subgroups was tested using survey-weighted logistic regression.

Results: Four serum FA patterns were identified. Individuals in the high tertile of 'high EPA and DHA; low DTA and DPA' pattern score had 0.46 (95% CI: 0.22, 0.93) lower odds of developing depression compared to individuals in the lowest tertile after adjusting for confounders. The risk of depression was increased in the population with the highest tertile of 'low capric acid and lauric acid; high GLA and SDA' pattern (OR: 2.45, 95% CI: 1.24, 4.83). These associations were vastly different when analyses were stratified by sex, race, body mass index status, age levels, smoking status and alcohol use. The other serum FA patterns were not significantly associated with depression risk.

Conclusions: Serum FAs patterns were related to depression, and the associations were different between subgroups and relied on specific FAs patterns.[1] [2] These findings may have important implications for using the co-administration of multiple FAs as a mitigation measure against depression in specific populations.

Key words fatty acids; depression

Category: Public Nutrition & Health

基于出生队列的母亲孕期体重状态对子代在出生时、学龄期及青少年早期体格发育影响研究

Longitudinal associations between maternal gestational weight and physical growth at birth, mid-childhood and early adolescence: a birth cohort

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Background and Objectives

Maternal adiposity during pregnancy has been identified as predictors of offspring physical growth. We aimed to explore whether this relationship has changed over time.

Methods and Study design

We used a birth cohort data from a randomized controlled trial of antenatal micronutrient supplementation in rural western China (ISRCTN08850194). Maternal weight and height were collected during the first, second and third trimester, and weekly weight gains during second and third trimester were calculated and classified following the Institute of Medicine recommendation. Offspring length/height and weight were standardly assessed at birth, mid-childhood (age 7-10 years) and early adolescence (age 10-14 years), which were then converted into z-scores (length-/height- and body mass index-for-age and sex z score) using the INTERGROWTH-21st and WHO growth standards, respectively. We conducted generalized linear models to examine the associations of maternal weight status during pregnancy with BAZ and HAZ at birth, mid-childhood and early adolescence, respectively, with adjustments for common covariables.

Results

A total of 586 mother-offspring pairs were analyzed and most are boys (60%). Per kg/m2 increase of maternal BMI during first trimester was associated with offspring higher BAZ. The adjusted mean differences (aMD) were 0.06 (95% Confidence Interval [CI] -0.004, 0.12) at birth, 0.07 (95% CI 0.03, 0.11) at mid-childhood, and 0.11 (95% CI 0.06, 0.17) at early adolescence. In addition, maternal excessive weight gain during second and third trimester was associated with higher HAZ at birth, mid-childhood and early adolescence. The corresponding aMD was 0.15 (95% CI -0.24, 0.54), 0.27 (95% CI 0.002, 0.55) and 0.48 (95% CI 0.21, 0.75), respectively.

Conclusions

Maternal adiposity during pregnancy had long-lasting impacts on offspring BAZ and linear growth, and the association strength tended to become stronger as they grow older.

Key words birth cohort, gestational weight, physical growth, longitudinal association

Category: Public Nutrition & Health

老年人手机使用、社会支持、健康老龄化和抑郁的关系
Mobile Phone Usage, social support, Attitude to Aging, and Depressive Symptoms among Older Adults

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Background: Little is known about mobile phone problem use (MPPU) among older adults. This study investigated critical factors affecting MPPU and filled the gap between social support and MPPU in older people.

Methods: A cross-sectional study was conducted in community (n = 376) with questionnaires of Multidimensional Scale of Perceived Social Support (MSPSS), Geriatric Depression Scale (GDS-15), Attitudes to Aging Questionnaire (AAQ) and Mobile Phone Problem Use Scale (MPPUS).

Results: 80.9 % of older people used smartphones and spend less than three hours on mobile phone per day. MPPU was affected by social support (β = 0.16, P = 0.041), AAQ-psychosocial loss (β=1.11, P<0.001), AAQ-psychological growth (β = 0.51, P = 0.021), GDS-15 (β = 0.56, P = 0.036). The relationship between social support and MPPU was partially mediated by attitudes to psychosocial loss and physical change.

Conclusion: Almost half of older adults have MPPU. Positive social support may weaken depressive symptoms and physical change, which may increase MPPU in turn.

Key words mobile phone problem use; attitudes to aging; social support; depressive symptoms; older adults

Category: Public Nutrition & Health

中国西南地区18-75岁居民食品安全相关行为的横断面研究
Food safety-related practices among residents aged 18-75 in Southwest China: A cross-sectional study

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Objectives: Good food safety practices are essential to minimizing food-borne diseases. The present study explored the food safety-related practices of residents during the early phase of COVID-19 in Southwest China and its impact factors.

Methods and study design: Residents aged 18-75 years from Guizhou, Yunnan, Sichuan, and Chongqing, China, were included in our study. The convenience sampling method was used to select participants, and face-to-face surveys were adopted in households and communities to collect data. Descriptive statistics for all survey questions, including sociodemographic characteristics of respondents and weighted percentages were obtained and the log-binomial regression was used to assess the influencing factors of food safety-related practices.

Results: Overall, 7,848 respondents from four regions were involved. The food safety-related practices were poor between males and females, whereas the former performed poorer practices than the latter (70.5% vs. 68.0%, respectively). Paying attention to nutrition labels when shopping for prepackaged foods was the worst practice. Age, ethnicity, region, occupation, education level, and income were demonstrated as the impact factors of food safety-related practices. In addition, compared to males, women were more likely to acquire relevant knowledge from social media, family members/friends, books/newspapers/magazines, experts, and food sales staff ($p < 0.05$). However, no statistical difference in gender was observed for channels to obtain relevant knowledge from radio/TV.

Conclusion: Men had poorer food safety-related practices than women in Southwest China. Findings indicate that future food safety education should adopt different strategies for different populations, especially for men. The mainstream media in improving food safety practices needs to be applied further in the near future.

Key words food safety-related practices; Southwest China; gender; residents

Category: Public Nutrition & Health

维生素D3改善青少年游泳运动员血清25羟维生素D水平的研究

Vitamin D3 Enhanced Serum 25(OH)D without Physical Performance in Adolescent Swimmers

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Objective To investigate the effect of vitamin D supplementation on serum 25(OH)D and muscle strength in adolescent swimming players. Methods 42 swimming players (n=42, age=12.85±2.15), were randomly divided into vitamin D3 supplementation group (VDG, n=23) and placebo control group (CG, n=19). VDG took 800 IU vitamin D3 drops per day, and CG supplemented the same dose of corn oil capsules. The experiment lasted for 4 weeks. Before and after the intervention, the VD nutritional indicators (serum total 25(OH)D, parathyroid hormone, blood calcium, blood phosphorus), physical fitness indicators (height, weight, body composition), and muscle strength indicators (muscle mass, grip strength, back strength, vertical jump, standing long jump) were measured. Results （1）After 4 weeks of VD3 supplementation, the VDG serum 25(OH)D concentration was significantly higher than pre-experiment (47.86±10.76 VS 65.32±14.34, *P<0.01*), the CG also was significantly higher than pre-experiment (47.26±11.70 VS 52.20±12.56, *P<0.01*). The change of VDG serum 25(OH)D concentration was significantly higher than CG (4.94±4.15 VS 17.45±10.12, *P<0.01*). （2）The boys and girls back strength increased significantly in both groups(*P<0.05*, *P<0.01*), the fat mass of VDG boys was significantly higher than pre-experiment (*P<0.01*); the muscle mass and fat mass of CG girls were significantly higher than pre-experiment (*P<0.01*, *P<0.05*). （3）Boys serum 25(OH)D concentration was significantly negatively correlated with parathyroid hormone (r = -0.530, *P<0.01*), and significantly positively correlated with grip strength, back strength, and standing long jump (r = 0.333, *P=0.04*, r = 0.528, *P<0.01*, r = 0.499, *P<0.01*); girls serum 25(OH)D is significantly positively correlated with inorganic phosphorus (r = 0.452, *P<0.01*), positively correlated with muscle mass and back strength (r = 0.314, *P=0.05*, r = 0.332, *P=0.05*). Conclusion Four-weeks VD3 supplementation (800 IU/d) can improve the nutritional level of vitamin D in young swimmers. We found that serum 25(OH)D concentration is positively correlated with back muscle strength of adolescent swimmers.

Key words swimming players; vitamin D; nutritional status; muscle strength; adolescent

Category: Public Nutrition & Health

中国老年人群维生素D缺乏和认知功能改变的前瞻性研究

The longitudinal association between vitamin D deficiency and cognitive changes in Chinese older adults

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Background and Objectives: with the acceleration of human aging, the prevalence of dementia is increasing year by year. The aim of this study was to explore the association between vitamin D deficiency (VDD) and cognitive changes in community-dwelling elderly population.

Methods and Study Design: in March 2016, community-based elderly over 65 years old were selected. The serum level of 25-hydroxyvitamin D was determined by liquid chromatography-tandem mass spectrometry. VDD is defined as less than 20 ng/mL. All subjects completed the health status questionnaire. Wechsler Adult Intelligence Scale-Revised in China was used to assess cognitive function at baseline and interview. A linear mixed effects model was used to study the association between baseline VDD and cognitive change.

Results: In total, 866 participants were included in our study, with a mean duration of 3 years. VDD was markedly associated with lower full intelligence quotient (FIQ) (β:-3.355, 95% confidence interval [CI]:-4.165,-2.545), verbal intelligence quotient (VIQ) (β:-3.420, 95%CI:-4.193,-2.647), performance intelligence quotient (PIQ) (β:-2.610, 95%CI:-3.683,-1.537), comprehension (β:-0.630, 95%CI:-1.022,-0.238), information (β:-0.354, 95%CI:-0.699,-0.008), arithmetic (β:-1.065, 95%CI:-1.228,-0.902), digit span (β:-0.370, 95%CI:-0.547,-0.192), vocabulary (β:-0.789, 95%CI:-1.083,-0.493), picture completion (β:-0.391, 95%CI:-0.761,-0.022), block design (β:-0.412, 95%CI:-0.697,-0.127), picture arrangement (β:-0.542, 95%CI:-0.909,-0.174) and object assembly (β:-0.492, 95%CI:-0.818,-0.165) than those with adequacy.

Conclusions: A higher frequency of VDD was associated with lower scores of FIQ, VIQ, PIQ and subtests on memory and executive function.

Key words vitamin D deficiency, cognitive function, dementia, cohort study, older adults

Category: Public Nutrition & Health

膳食硒摄入对心血管疾病的影响： 基于中国健康与营养调查（CHNS）数据的回顾性队列研究

Effect of dietary selenium intake on cardiovascular disease: A retrospective cohort study based on China Health and Nutrition Survey (CHNS) data

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Background: The effect of dietary selenium (Se) on cardiovascular disease (CVD) is inconclusive.

Objectives: We aim to examine the association between dietary Se intake and CVD risk in Chinese adults.

Methods and Study Design: This retrospective cohort study included adults aged above 20 in the China Health and Nutrition Survey (CHNS) were followed up from 1991 to 2011 (N = 16,030). Dietary data were retrieved from CHNS, and a three-day, 24-h recall of food intake was used to assess the cumulative average intake of dietary Se, which was divided into quartiles. The Cox proportional hazards model was adopted to analyze the relationship between dietary Se intake and incident CVD risk.

Results: A total of 663 respondents developed CVD after being followed up for a mean of 9.9 years (median 9 years). The incidence of CVD was 4.3, 3.7, 4.6, and 4.0 per 1000 person-years across the quartiles of cumulative Se intake. After adjusting all potential factors, no significant associations were found between cumulative Se intake and CVD risk. No interactions were found between Se intake and income, urbanization, sex, region, weight, and hypertension and CVD risk.

Conclusion: We found no association between dietary selenium (Se) on cardiovascular disease (CVD).

Key words Dietary selenium intake; Cardiovascular disease; Effect; China; Nutrition survey

Category: Public Nutrition & Health

不吸烟的二型糖尿病成年人每天咖啡的摄入量与新发心血管疾病的关联

Coffee consumption and incidence of cardiovascular diseases in never-smoking adults with type 2 diabetes mellitus

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Background and Objectives: The associations between coffee consumption and risk of different cardiovascular outcomes in type 2 diabetes mellitus remain unclear. We aimed to explore the relationships of coffee consumption with total and separate cardiovascular diseases (CVD) in individuals with type 2 diabetes mellitus who were never smokers to eliminate confounding by smoking.

Methods and Study Design: We included 9964 participants from UK Biobank who were free of CVD or cancer at baseline. Participants were categorized as 4 groups according to daily coffee intake (0, 0.5-1, 2-4, ⩾5 cups/day). Multivariable cox regression models were used to assess the relationships between coffee consumption and incidence of total CVD as well as coronary heart disease (CHD), myocardial infarction (MI), stroke and heart failure (HF) individually.

Results: During a median 12.7 years of follow-up, 1860 incident cases of total CVD were identified. Compared with participants who reported never consumption of coffee, those who reported 2-4 cups/day of coffee consumption had lower incidence of total CVD (hazard ratio [HR] 0.82, 95% confidence interval [CI] 0.73-0.93), CHD (HR 0.84, 95% CI 0.73-0.97), MI (HR 0.73, 95% CI 0.57-0.92), HF (HR 0.65, 95% CI 0.52-0.81), and possibly stroke (HR 0.79, 95% CI 0.58-1.07). Even higher coffee consumption of ⩾5 cups/day was associated with a lower risk of HF but not other CVD outcomes.

Conclusions: Among never-smoking individuals with type 2 diabetes mellitus, moderate coffee consumption of 2-4 cups/day was associated with a lower risk of CVD, with no adverse associations for even higher consumption.

Key words coffee consumption, cardiovascular diseases, never-smoking, type 2 diabetes mellitus, prospective studies.

Category: Public Nutrition & Health

不同糖代谢人群中血清硒水平与血脂的关联

Association between serum selenium levels and serum lipids among people with different diabetes status

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The impact of diabetes status on the relationship between serum selenium and lipids remains unclear. To examine whether the association between serum selenium and lipids is affected by diabetes status. A total of 4417 adults from the National Health and Nutrition Examination Survey (2011-2016) were included in this study. Serum selenium levels were measured by inductively coupled plasma dynamic reaction cell mass spectrometry. Serum total-cholesterol and triglyceride were measured enzymatically. Serum high-density lipoprotein cholesterol was measured by immunoassay, and low-density lipoprotein cholesterol was calculated by the Friedewald equation. Multiple linear regression models were used to estimate the association between serum selenium levels and lipid levels among adults with different diabetes status. The mean (standard deviation) serum selenium level in the study population was 130.53 (0.61) μg/L. Serum selenium was positively associated with TG and LDL-C among subjects with normal glucose metabolism but not among subjects with diabetes or prediabetes (*P* for interaction<0.05). In the population with normal glucose metabolism, comparing the highest with the lowest tertiles of serum selenium levels, the β coefficients (95% CIs) were 33.65 (19.40, 47.90) for TG and 18.01 (8.53, 27.48) for LDL-C, respectively. Additionally, higher serum selenium was associated with increased TC among subjects with normal glucose metabolism and prediabetes, but not among subjects with diabetes (*P* for interaction<0.001). In the population with normal glucose metabolism and prediabetes, comparing the highest with the lowest tertiles of serum selenium levels, the β coefficients (95% CIs) were 21.55 (12.11, 30.98) and 12.63 (3.49, 21.77) for TC, respectively. No significant associations were observed between serum selenium and HDL-C among any subgroup stratified by diabetes status. In US adults, the association between serum selenium and lipids was affected by diabetes status. More studies are needed to confirm our findings.

Key words selenium; diabetes status; lipids; interaction; NHANES.

Category: Public Nutrition & Health

蛋白凝胶的质构调控与 IDDSI 分类

Texture regulation of protein gels and their IDDSI classification

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This project modulated the structure of casein micelle (CM) network units and further modulated its3D network structure. The qualitative properties of macroscopic gels were detected to obtain the desired IDDSI Level classification. In details, gels with identical components but differentiated textural properties were successfully constructed by a mild enzymatic reaction in which Ca^{2+} modulates the structure of the gel network building units (i.e., casein micelles) and thus influences their interactions. variation in Ca^{2+} addition induced the generation of different three-dimensional network structures, including a fine chain gel network with many irregular fracture structures and a coarse chain gel network composed of larger casein micelle aggregates fused into a coarse-chain gel network, resulting in gel textural properties ranging from soft to firm to soft, in accordance with IDDSI Level 4 and 5. Among them, the fine chain-like and more broken network structures have weak textural properties, corresponding to the weaker IDDSI Level, while the coarse chain-like network structures have improved mechanical properties, corresponding to the stronger IDDSI Level. This is because Ca^{2+} connects adjacent micelles by forming calcium bridges between the carboxyl groups of glutamate and aspartate attached to casein micelles and promotes micelle aggregation. However, the formation of excessive calcium bridges and aggregation of micelles reduces the site of κ-CN cleavage by ginger protease, which affects the formation of curd. In addition, the addition of calcium chloride affects the activity of ginger protease. We hope that the protein gel model designed in this experiment will provide relevant reference values for the continuous optimization or quantitative analysis of the IDDSI framework, and establish and develop objective/standard measures and measurable specifications related to the description of IDDSI levels (which are now rather limited), thus helping the food industry to manufacture safe, reliable and high-quality texture-modified foods for clinical studies.

Key words CM gel; ginger protease; TGase; external aqueous phase gelation O/W emulsion gel; IDDSI

Category: Public Nutrition & Health

在控制经济因素的条件下探讨影响儿童生长发育的社会决定因素：一项基于观察性研究的 Meta 分析

Association of social determinants of health in guanxi growth and development: a meta-analysis and meta-regression controlling for economic factors

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Background and Objective Despite significant improvements in global medical care and population health, differences in development rates have led to inevitable health inequalities in child growth and development. We aimed to investigate whether the social determinants of health had impact on children's overweight, obesity or anemia at different economic levels.

Methods Observational studies from January 1980 to October 2022, reporting information on dietary intake, parental education level, or nutrition policy and measuring overweight, obesity, or anemia in children, were identified in PubMed, Web of Science, Scopus, etc., with two independent reviewers extracting data and assessing risk of bias. Meta-regression and random effects models were used to examine the effect of these factors on rates of overweight, obesity, or anemia, controlling for economic factors such as GNI, GDP.

Results From 28,935 identified studies, 194 met the inclusion criteria. Meta-regression showed that economic factors was an interaction in the association between milk intake and childhood anemia, between parental education level and children's overweight and/or obesity and anemia (*P*s<0.05). Meta-analysis of the results found that the protective effect of fruit and/or vegetable and negative effect of sugar-sweetened beverage with childhood overweight and obesity were observed in low- and middle-income countries, whereas the protective effect of nutrition policy implementation and the negative effect of parental education were found only in high-income countries/regions. Meanwhile, the association of nutrition policy, milk and dietary iron supplement intake on children anemia was observed only in countries with lower economic levels.

Conclusions The study found that social determinants of health have varying effects on child growth and development in countries with different economic statuses, providing insight into the complex relationship between these factors and childhood health.

Key words Children; Social determinants of health; Overweight; Obesity; Anemia; Economic factor

Category: Public Nutrition & Health

孕妇唾液碘浓度与碘营养状况及甲状腺功能的关系

Salivary iodine concentration in pregnant women and its association with iodine status and thyroid function

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Purpose: This study aimed to clarify the relationship between salivary iodine concentration (SIC) and indicators of iodine nutritional status and thyroid function during pregnancy, to investigate whether salivary iodine can be applied to the evaluation of iodine nutritional status in pregnant women, and to provide a reference basis for establishing a normal range of salivary iodine values during pregnancy.

Methods: Pregnant women were enrolled in the Department of Obstetrics, the people's hospital of Yuncheng Country, Shandong Province, from July 2021 to December 2022. Saliva, urine, and blood samples were collected from pregnant women to assess iodine nutritional status, and venous blood was collected to determine thyroid function.

Results: A total of 609 pregnant women were included in the study. The median SIC was 297 μg/L. SIC was positively correlated with SUIC ($r = 0.46$, $P < 0.0001$), 24-h UIC ($r = 0.30$, $P < 0.0001$), 24-h UIE ($r = 0.41$, $P < 0.0001$) and EII ($r = 0.52$, $P < 0.0001$). Pregnant women with a SIC < 176 μg/L had a higher risk of insufficient iodine status (OR = 2.07, 95% CI: 1.35 - 3.19) and thyroid dysfunction (OR = 2.71, 95% CI: 1.18 - 6.21) compared to those with higher SIC. Those having SIC > 529 μg/L were more likely to have excessive iodine status (OR = 2.82, 95% CI: 1.81 - 4.38) and thyroid dysfunction (OR = 3.04, 95% CI: 1.36 - 6.78) than those with lower SIC values.

Conclusion: SIC is associated with urinary iodine concentration and thyroid function in pregnant women. SIC < 176 μg/L was associated with an increased risk for iodine deficiency and hypothyroxinemia, while SIC > 529 μg/L was related to excess and thyrotoxicosis. SIC can be used as a reference indicator for evaluating the iodine nutrition status of pregnant women.

Key words pregnant women, salivary iodine concentration, iodine nutritional status, thyroid function

Category: Public Nutrition & Health

儿童含糖饮料消费行为与肥胖相关研究进展

Research progress on the relationship between sugar-sweetened beverages consumption behavior and obesity in children

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Objective: To summarize the influence mechanism of Sugar-sweetened beverages (SSBs) on childhood obesity and provide policy suggestions for the prevention and control of childhood obesity. Methods: A systematic literature analysis was conducted on the cross-sectional studies, cohort studies, intervention studies, mathematical model studies and public policy studies on the mechanism of childhood obesity caused by SSBs at home and abroad. Results: SSBs is a major and intervenable factor leading to childhood obesity. There is a dose-effect relationship between children's SSBs consumption behavior and obesity, obesity-related indicators and diseases, and the behavior is associated with future obesity status. Conclusions: Direct intervention on SSBs can reduce the incidence of obesity, and increasing the tax on SSBs has a certain effect, but on the whole, the existing intervention strategies have not achieved the expected effect, and it is urgent to form effective intervention programs and research evidence.

Key words Children, Sugar-sweetened beverages, Consumption behavior, Obesity, Relationship

Category: Public Nutrition & Health

中国预包装食品反式脂肪酸含量分析

Trans fat content of pre-packaged foods in China

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Objective: high intake of trans fat increases the risk of coronary heart disease and mortality while the presence of trans fat in the food supply of China is unknown. This study aims to investigate the trans fat content of pre-packaged foods in China.

Methods: this cross-sectional study used data of FoodSwitch China project, which collected nutrients and ingredients information of pre-packaged foods from supermarkets and retail stores during 2017 to 2020. The presence of trans fat in ingredients and content in nutrition information panels(NIP) were analyzed according to 14 food groups. Products containing specific (any hydrogenated edible oils) and non-specific (vegetable fat, margarine, vegetable cream, processed cream, shortening, creamer and cocoa butter substitute) ingredients were identified as indicative of trans fat .

Results: of the 73,885 products, the percentage of products with specific and non-specific trans fat ingredients were 1722(2.3%) and 5675(7.7%) with 6249 (8.5%) containing either specific or non-specific trans fat, and 16.6% products reported trans fat value in NIP, of which 437(0.6%) reported the value other than zero with the median of 0.6 g/100g (Q1,Q3: 0.5, 1.0). The top five food groups with high trans fat presence were bread and bakery products (3194, 30.8%), confectionary (849, 15.9%), non-alcoholic beverages (714, 11.5%), convenience food (342, 10.7%) and dairy products (440, 7.9%).

Conclusion: trans fat ingredients were found in less than one tenth of pre-packaged foods in China, but the presence in bread and bakery products was detected in over three tenths of the products. No more than one fifth of pre-packaged foods reported trans fat content values. Improvements in nutritional labelling and regular surveillance of trans fat presence would be needed to restrict the use of industrially produced trans fats.

Key words trans fat, trans-fatty acids, hydrogenation, pre-packaged food

Category: Public Nutrition & Health

中国儿童青少年正向发展状况与健康相关行为和体重状态关系的队列研究

Linkages of Positive Youth Development Attributes with Health-related Behaviors and Longitudinal Weight Status: A Cohort Study among Chinese Children

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Background and Objectives: Positive youth development has been associated with health risk and promoting behaviors and may establish trajectories of risk for obesity. This study aims to investigate the effects of positive youth development on health-related behaviors and longitudinal weight status among Chinese children.

Methods and Study Design: Data were collected from Wave I (from December 2019 to January 2020) and Wave III (June 2021) of the Chengdu Positive Child Development Survey (n=8473, mean age: 11.4±2.3 years at baseline). Positive youth development attributes (cognitive-behavioral competence, prosocial attributes, positive identity, and general positive youth development qualities) were assessed by Chinese Positive Youth Development Scale at each wave. Anthropometric measurements were performed by professional medical workers. Health-related behaviors including sugar-sweetened beverage consumption, physical activity and screen time were collected by questionnaire at baseline. Linear regression and Generalized Estimating Equations model were used to analyze the associations between these observed measures.

Results: After adjusting for gender, baseline age, paternal education level, monthly household income and residency, higher scores on positive youth development attributes were related to lower sugar-sweetened beverage consumption (β: -0.29~-0.47), more physical activities (β: 0.08~0.12) and less screen time (β: -0.23~-0.36) at wave I (all $P<0.001$). Longitudinally, cognitive-behavioral competence (β=-0.035, $P=0.003$), positive identity (β=-0.023, $P=0.02$) and general positive youth development qualities (-0.040, $P<0.001$) were negatively associated with body mass index z-scores after adjustment for potential covariates. Furthermore, higher scores on positive identity (odds ratio: 0.95, 95% confidence interval: 0.92-0.99) and general positive youth development qualities (odds ratio: 0.95, 95% confidence interval: 0.90-0.99) predicted lower risk of overweight/obesity.

Conclusions: This study proved that children with greater positive youth development attributes tended to select healthier behaviors. Additionally, positive youth development programs might be implemented to prevent overweight/obesity among Chinese children.

Key words positive youth development, health behaviors, weight status, children

Category: Public Nutrition & Health

白藜芦醇对血脂异常人群血小板功能的改善作用及其量-效关系研究

Resveratrol supplementation attenuates platelet function in a dose-dependent manner in subjects with dyslipidemia

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Background

Dyslipidemia, as an important risk factors of cardiovascular disease, induces platelet hyperreactivity that is linked to thrombosis. Resveratrol, a natural polyphenol, has been proven to attenuate platelet hyperreactivity in animals and in vitro. However, the effects of resveratrol on platelet function in subjects with dyslipidemia are still unknown yet.

Objective

This study aims to investigate the efficacy and dose-dependent effects of resveratrol on platelet function in subjects with dyslipidemia.

Methods

In a randomized, double-blind, placebo-controlled trial, 114 eligible subjects with dyslipidemia were recruited and randomly assigned to placebo (n=28), 100 mg/day (n=30), 300 mg/day (n=30), 600 mg/day (n=26). At baseline, 4 weeks and 8 weeks, venous blood samples of volunteers were subjected to blood biochemical parameters and platelet function tests.

Results

Compared with placebo group, resveratrol supplement did not significantly change the blood lipid, blood glucose, oxidative stress and inflammation levels ($P > 0.05$). However, compared to the placebo group, individuals who received 600 mg/day resveratrol for 8 weeks showed significant inhibition in ADP-induced platelet aggregation (-8.12 ± 2.06%), the expression of P-selectin (-8.70 ± 0.97%), the activation of GPⅡbⅢa (-12.95 ± 1.52%), platelet oxidative stress (ROS: -9.95 ± 1.00%, Mitochondrial membrane potential: 11.78±2.06%) and PS exposure (-3.68 ± 1.03%) levels ($P < 0.05$). Moreover, there were linear dose-response relationships between resveratrol and the attenuation of platelet function in subjects with dyslipidemia after 8-week intervention (P for trend < 0.05). In addition, significantly negative correlations were observed between the change in ADP-induced

platelet aggregation ($r = -0.185$) or P-selectin expression ($r = -0.188$) and the change in HDL-C in subjects with dyslipidemia after 8-week intervention ($P < 0.05$).

Conclusions

Resveratrol supplementation attenuates platelet function in a dose-dependent manner, and taking 8-week supplementation with 600 mg of resveratrol can reduce platelet function in subjects with dyslipidemia.

Key words resveratrol, dyslipidemia, platelet function, dose-response relationship

Category: Public Nutrition & Health

吸烟、饮酒和抑郁对牙周病的独立和联合效应

Independent and Combined Effects of Smoking, Drinking and Depression on Periodontal Disease

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ABSTRACT

Background: Periodontitis is a complex chronic inflammatory disease associated with health-related behaviours such as smoking, excessive drinking and depression.

Objectives: This research aimed to investigate the independent and combined effects of smoking, drinking and depression on periodontal disease.

Methods: Data from the National Health and Nutrition Examination Survey (2009-2014) were analyzed in this study. Respondents included in the analysis were ⩾30 years old who completed the oral health-periodontal examination, Smoking-Cigarette Use Questionnaire, Alcohol Use Questionnaire, and Patient Health Questionnaire. The logistic regression models were used to analyze the independent effects of smoking, drinking and depression on periodontitis. The adjusted multiplicative and additive interaction models were established to examine the interaction between influencing factors.

Results: Participants with smoking behavior and depression had 58% higher risk of developing periodontitis than those without, particularly in elderly men. A dose-dependent J-shape relationship was identified in the association between drinking-depression interaction and periodontitis. When exposed to depression, heavy drinkers (>56 g/d) had an increased risk of periodontitis (odds ratio [OR]: 1.94, 95% confidence interval [CI]: 1.05 to 3.58), whereas low drinkers (<14 g/d) had a decreased risk (OR: 0.55, 95% CI: 0.30 to 0.99).

Conclusions: These results suggest that depression has an interactive effect on periodontitis occurrence between smoking and alcohol consumption behaviors. The combined effect of smoking and alcohol consumption significantly elevated the occurrence of periodontitis. Policies aimed at healthy behaviours and mental health may be beneficial for our periodontal health.

Key words periodontitis, depression, smoking, alcohol drinking, interaction effect

Category: Public Nutrition & Health

中国成年人鸡蛋摄入与总脑血管疾病发病风险的前瞻性关联

The Prospective Associations of Egg Consumption with the Risk of Total Cerebrovascular Disease Morbidity among Chinese Adults

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Abstract:

Background: Studies investigating the relationship between egg consumption and the risk of cerebrovascular disease (CED) have yielded inconsistent results. This study evaluated the association between egg consumption and the risk of CED among Chinese adults.

Methods: Data were obtained from China Kadoorie Biobank, Qingdao. A computerised questionnaire was used to collect information regarding egg consumption frequency. CED events were tracked through linkage with the Disease Surveillance Point System and the new national health insurance databases. Cox proportional hazards regression analyses were used to evaluate associations between egg consumption and CED risk controlling for potential confounders.

Results: After a median follow-up of 9.2 years, 865 and 1083 CED events among men and women, respectively, were documented. At baseline, More than 50% of participants consumed eggs daily, and 6.2% of participants consumed eggs at most once a month. Higher consumption of eggs (>7 days/week) was significantly associated with CED risk (hazard ratio [HR] = 0.81, 95% confidence interval [CI]: 0.67–0.98), but this association was moderated in a multiadjusted model (HR = 0.83, 95% CI: 0.69–1.01). Among men, a 28% lower risk of CED was observed in those who consumed eggs at a higher frequency (HR = 0.72, 95% CI: 0.55–0.95) after adjustment for age, gender, education level, marital status, household income, alcohol consumption status, smoking status, daily food consumption, diabetes at baseline, metabolic equivalent of energy task hours per day, body mass index, and family history of stroke. However, no association between egg consumption and CED were identified in women.

Conclusion: Higher frequency of egg consumption was associated with a lower risk of total CED events among men but not women in Chinese adults. The beneficial effect on women warrants further investigations.

Key words Chinese; prospective study; egg; cerebrovascular disease

Category: Public Nutrition & Health

中国中老年人群休闲活动与轻度认知障碍的关系

Association between leisure activity and mild cognitive impairment in middle-aged and older Chinese population

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Objectives: To investigate the associations between leisure activities and mild cognitive impairment (MCI) in the middle-aged and older Chinese population.

Methods: This was a cross-sectional study of a nationally representative sample of 2,712 adults aged 45 years or over who participated in the Lifestyle and Healthy Aging of Chinese Square Dancer Study (HealthyDance Study). According to Petersen's criteria, MCI was assessed by the combinations of different cognitive domains using a set of neuropsychological tests, i.e., the Huashan Auditory Verbal Learning Test (AVLT), the Verbal Fluency Test (VFT), the Digit Symbol Substitution Test (DSST), and the Trail Making Test B (TMT-B). Leisure activities are classified as lower diversity level (types≤3) and higher diversity level (types >3). The associations between the type and diversity level of leisure activities and MCI and cognitive domains (episodic memory, language fluency, attention, executive ability) were investigated by using logistic regression and multiple linear regression.

Results: Among the 2712 participants (mean age 62.1 years; 9.9% male) in this study, 59.1% had higher diversity level of leisure activities, and 13.8% were reported MCI. After adjusting for age, gender, demographics, lifestyle factors, health status, BMI, and disease, compared to the lower diversity level group, higher diversity level of leisure activity was associated with lower odds of MCI (OR = 0.86, 95% CI: 0.79, 0.95). Social organized activities (OR = 0.72, 95% CI: 0.56, 0.91), and reading books or newspapers (OR = 0.68, 95% CI: 0.53, 0.88) were negatively associated with the odds of MCI. Participation in outdoor activities and reading books or newspapers were associated with four cognitive domains.

Conclusion: These results provide some evidence that higher diversity levels of leisure activities, participating in social organization activities, and reading books or newspapers may be associated with reduced the odds of MCI.

Key words leisure activity; mild cognitive impairment; cognitive function; cognitive domains

Category: Public Nutrition & Health

1991-2018 年中国成年人超重肥胖的时空分布及 BMI 的相关影响因素分析

Geographic differences in overweight and obesity prevalence and factors associated with BMI among adults in China, 1991-2018

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BACKGROUND: Overweight and obesity are collectively emerging as a major public health problem in China. The main objectives of this study were to investigate the spatial heterogeneity of overweight and obesity prevalence, as well as the associations between various factors and BMI among adults in China from 1991 to 2018.

METHODS: We used data on 94,277 adults aged ≥ 18 y recorded between 1991 and 2018 from the China Health and Nutrition Survey, an ongoing cohort study. Inverse distance weighted (IDW) interpolation mapping, which provided geographical information on the prevalence of overweight and obesity, was conducted with ArcGIS Pro. Using panel data random-effects models, we analyzed a variety of factors associated with BMI.

RESULTS: We found that the prevalence of overweight and obesity increased over time, and the spatial distribution of overweight and obesity varied across provinces. The regions with the highest prevalence of overweight and obesity were estimated to be all of Shandong and all of Beijing. Middle-aged adults, men with low physical activity (PA), men with high education status, women with low education status, adults living in urban areas, and adults with middle or high income status were the groups significantly associated with a high BMI.

CONCLUSION: The sociodemographic and geographical heterogeneity of BMI, overweight and obesity suggest that more effective and unique interventions are needed to address this public health issue.

Key words adult, overweight, obesity, BMI, geographic information system

Category: Public Nutrition & Health

不同形态膳食碘的代谢动力学研究

Study on the metabolic kinetics of different forms of dietary iodine

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Objective: To investigate the metabolic kinetics of different forms of dietary iodine, including the absorption and metabolism of potassium iodide and kelp iodine, in order to correctly assess individual iodine nutritional status.

Methods: A total of 20 healthy volunteers meeting the enrollment criteria, were recruited for a cross-over design intervention study. The trial was conducted under strict dietary intake control conditions, including four stages of interventions and sample collection: 1. Basic Dietary Stage: Low-iodine diet, iodized salt replacement via non-iodized salt, elimination of high-iodine ingredients, and replacement of daily drinking water with pure water; 2. Iodine Intervention Stage I: 5ml of fasting venous blood, 1200μg iodine potassium iodide, and 1000μg iodine kelp administered orally at breakfast, along with 2-3ml of postprandial venous blood and urine collection over time; 3. Basic Dietary Stage: Same as stage 1; 4. Iodine Intervention Stage II: 1700μg iodine kelp and 600μg iodine potassium iodide orally administered at breakfast time, otherwise identical to stage I. Each stage of feces was marked with a red card and collection of red-stained feces was discontinued.

Results: Approximately 1200 μg of KI-form iodine was ingested, with a resultant peak serum iodine ion concentration of 40.96±5.34 μg/L after 0.5-1 hour. However, with ingestion of 1700 μg of kelp-form iodine, serum iodine ion concentration slowly increased to its peak (9.10±1.68 μg/L) at 4-12 hours, and the peak concentration was lower than that of the same-dose KI intervention. The apparent digestibility of KI and kelp iodine was 94.5% and 48.4%, respectively.

Conclusion: Seaweed has a high iodine content and undergoes processes such as digestion and absorption, resulting in a lower peak serum iodine level compared to the same dose of KI intake. Therefore, seaweed is an ideal dietary source of iodine. The structure of the paragraph has been made clearer and more rigorous.

Key words Iodine, kelp, potassium iodide

Category: Public Nutrition & Health

微生物群疗法对非酒精性脂肪肝患者的肝酶、血脂和炎症的疗效：一项随机对照试验的系统回顾和荟萃分析

Efficacy of microbiota-therapy on liver enzymes, lipid profile, and inflammation in patients with non-alcoholic fatty liver: a systematic review and meta-analysis of randomized controlled trials

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Introduction There is a contradictory in microbiota-therapy, including probiotics, prebiotics, and synbiotics, to improve condition of patients with nonalcoholic fatty liver disease (NAFLD). Objective This review was to evaluated the effect of microbiota-therapy on liver enzymes, inflammation and lipid levels in individuals with NAFLD.

Method Using Pubmed, Embase, Cochrane, and Web of Science to search all articles on prebiotics, probiotics, or synbiotics supplementation for the treatment of patients with NAFLD up to December 2022.

Result The result of microbiota-therapy showed that it had an overall favorable effect on AST, ALT, HDL, hs-CRP and TNF-α. Nevertheless, the outcomes of various therapies were clearly different. Supplementation with probiotics significantly lower AST (SMD = -0.40; 95% CI: -0.57, -0.22) and ALT (SMD = -0.66; 95% CI: -0.97, -0.36) irrespective of study population, intervention period and sample size, while it was more beneficial effect on Asians (SMD = 0.23; 95% CI: 0.08, 0.37) and sample size > 40 (SMD = 0.20; 95%CI: 0.07, 0.32). Prebiotic supplementation had a lowering-effect on LDL (SMD = 0.56; 95%CI: -0.97, -0.15), TC (SMD = -0.64; 95%: -0.64; 95%CI: -1.06, -0.23), hs-CRP (-0.46; 95%CI: -0.81, -0.11). Synbiotics had a unique reduction effect on Asians (SMD = -0.36; 95%CI: -0.58, -0.13) for GGT. Regardless of research population, intervention duration, and sample size, three of the aforementioned interventions can reduce TNF-α (probiotics: SMD = -1.30; 95%CI: -2.24, -0.36; prebiotics: SMD = -0.75; 95%CI: -1.32, -0.18; synbiotics: SMD = -1.22; 95%CI: -1.92, -0.51).

Conclusion Overall, microbiota-therapy had a positive effect on lessening liver enzymes, lipid profiles, and inflammatory cytokines in patients with NAFLD. Of note, Probiotics and synbiotics were mainly lowering-effect on liver enzymes, while prebiotics were on serum lipids and anti-inflammation. Patients from Asia who take prebiotics or probiotics can improve their serum lipids levels.

Key words nonalcoholic fatty liver disease, microbiota-therapy, liver function, lipid profiles, inflammation factors, meta-analysis

Category: Public Nutrition & Health

坚持终止高血压膳食模式与中老年人骨质疏松症风险的关联研究

Adherence to the Dietary Approaches to Stop Hypertension (DASH) dietary pattern and osteoporosis risk in the Chinese elderly

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Summary This study examined the relationship between the Dietary Approaches to Stop Hypertension (DASH) and bone mineral density (BMD) /risk of osteoporosis among elderly Chinese adults. Adherence to the DASH dietary pattern was significantly and positively correlated with bone health.

Purpose The purpose of this study was to examine associations between the DASH dietary pattern and bone health outcomes in Chinese elders, to verify whether higher adherence to the DASH was associated with better bone health in elderly populations.

Methods A total of 839 Chinese adults aged 50 years and above participated in this cross-sectional study. BMD at calcaneus was measured via ultrasonic bone densitometer. A semiquantitative food frequency questionnaire (FFQ) was used to assess the usual dietary intake in the past 12 months. The DASH score was calculated based on energy-adjusted intakes of nine dietary components, including whole grains, beans, vegetables, fruits, dairy, red meat, total fat, sodium, and sugar-sweetened beverages.

Results In postmenopausal women, DASH score was significantly and positively correlated with BMD T-score after controlling potential covariates (β: 0.027 ± 0.012, P = 0.031) in multivariable linear regression models. In binary logistic regression analysis, male participants in the highest tertile of DASH score had lower risk of osteoporosis than those in the lowest tertile (odds ratio = 0.499; 95% confidence interval, 0.262 - 0.951; P = 0.035) after adjusting potential covariates.

Conclusion Adherence to the DASH dietary pattern appeared protective of bone health in Chinese elderly adults.

Key words dietary pattern, bone mineral density, osteoporosis, elderly populations, Chinese

Category: Public Nutrition & Health

美国成年人营养模式和营养素与血脂异常的相关性：2011-2018年国家健康和营养检查调查（NHANES）数据

Correlation of nutrient patterns and nutrients with dyslipidemia in US adults: data from the National Health and Nutrition Examination Survey (NHANES) 2011-2018

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Background & aims: Dietary interventions are essential for preventing dyslipidemia. The relationship between nutrient patterns, nutrient intake, and the risk of dyslipidemia has only been partially studied. The purpose of this study was to examine the relationship between nutrient patterns and nutrients on dyslipidemia.

Methods: The study screened 7,269 participants from the National Health and Nutrition Examination Survey from 2011 to 2018. The average of 24-hour recalled dietary data for two days was selected, and six nutrient patterns that were independent of each other were extracted from 29 dietary nutrients through principal component analysis. And then, factor loadings of nutrients greater than 0.4 from nutrient patterns that were negatively correlated with the risk of dyslipidemia were selected. Multifactor logistic regression models were developed to evaluate the association of nutrient patterns and nutrients with dyslipidemia risk.

Results: Twenty-nine nutrients were downscaled to extract six principal components by principal component analysis. After adjustment for a variety of covariates, participants in the high fiber-high vitamin-mineral nutrient pattern were related to lower dyslipidemia risk (OR = 0.853; 95% CI, 0.743 - 0.980), and a significant nonlinear negative association of vitamin B1 (OR = 0.688; 95% CI, 0.551-0.860) and vitamin E (OR = 0.987; 95% CI, 0.976 - 0.998) intake with dyslipidemia was observed.

Conclusion: Named as the second principal component of the high-fiber, high vitamin-mineral nutrient pattern, which was negatively associated with dyslipidemia. Vitamins B1 and E were significantly negatively associated with dyslipidemia.

Key words Dyslipidemia, NHANES, logistic regression, Nutrients, Nutrient patterns

Category: Public Nutrition & Health

饮水量影响正常生活条件下的运动大学生体成分：一项横断面研究

Habitual Water Intake Impacted the Body Composition of Young Male Athletes in Free-Living Conditions: A Cross-Sectional Study

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The study aimed to explore the associations between water intake and body composition, and to investigate the differences of body composition among young male athletes. A cross-sectional study was conducted among 111 young male athletes in Beijing, China. Total drinking fluids (TDF) and water from food were assessed by a 7-day, 24-hour fluid intake record questionnaire and duplicate portion method, respectively. The osmolality of 24-hour urine and blood samples were tested. The body composition was tested with a bioelectrical impedance analyzer (BIA) twice at 5 minutes interval. According to the recommendations of total water intake (TWI) and TDF of China, participants were divided into two groups, respectively. Pearson's correlation coefficients were performed to determine the relationship between water intake and body composition. A total of 109 subjects completed the study. TDF and TWI were positively correlated with total body water (TBW), intracellular water (ICW) and extracellular water (ECW), respectively ($r=0.230$, $p=0.016$; $r=0.234$, $p=0.014$; $r=0.242$, $p=0.011$; $r=0.275$, $p=0.004$; $r=0.243$, $p=0.011$; $r=0.243$, $p=0.011$). The TBW/BW was positively associated with TDF percentage of body weight (TDF/W), water from food percentage of body weight and TWI percentage of body weight (TWI/W), respectively ($r=0.267$, $p=0.005$; $r=0.217$, $p=0.024$; $r=0.316$, $p=0.001$). Participants achieved the recommendation of TDF had 0.9kg, 0.5% higher ICW and TBW/BW than those who did not, respectively (all $p < 0.05$); with the FFM and TBW tended higher ($p=0.051$; $p=0.050$). Those met the recommendation of TWI had 1.1 kg, 0.6kg and 1.7kg higher ICW, ECW and TBW than their counterparts, respectively (all $p < 0.05$). Moderate associations were found between water intake and body composition. Participants met the recommendation of TWI or TDF had better distribution of body composition than their counterparts. Habitual water intake affected the body composition among athletes in free-living conditions.

Key words Body composition; total water intake; total drinking fluids; association; hydration status; young athletes

Category: Public Nutrition & Health

中国社区老年人群肌少症患病率及其与膳食炎症指数的相关性研究

Prevalence of Sarcopenia and Association with the Dietary Inflammatory Index in Chinese Community-Dwelling Older Adults

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Background: Dietary-induced inflammation is potentially associated with sarcopenia. Nevertheless, few studies have investigated the structure of the inflammatory diet and its correlation with muscle function and performance in both the upper and lower limbs. This study was performed to explore the association of the dietary inflammatory index (DII) with sarcopenia and its diagnostic parameters. Methods: We conducted a cross-sectional survey on a sample of 551 Chinese community-dwelling older adults selected through multistage cluster sampling from three districts in Shanghai. DII scores were calculated using a validated food frequency questionnaire. Sarcopenia and its diagnostic parameters were determined based on the definition set by the Asian Working Group on Sarcopenia (AWGSOP). Results: The mean age of study participants was 71.31 ± 4.71 years. The prevalence of sarcopenia in the cohort was 12.4%. Older adults in the highest DII quartile had a 3.294 times increased risk of sarcopenia compared to those in the lowest quartile (OR Quartile4vs1:3.294, 95%CI: 1.205, 9.010, p-trend: 0.004) after adjusting for confounding factors. Additionally, a more pro-inflammatory diet was associated with lower appendicular skeletal muscle index (ASMI) (OR Quartile4vs1: 3.112, 95%CI: 1.297, 7.468, p-trend: 0.005), a higher 5-times sit-stand test time score (OR Quartile4vs1: 4.166, 95%CI: 1.451, 11.962, p-trend: 0.014), and lower gait speed (OR Quartile4vs1: 2.576, 95%CI: 1.111, 5.972, p-trend: 0.041) after adjusting for confounding factors. However, there was no significant association between DII, handgrip strength, and SPPB score in either the unadjusted or adjusted model. Conclusion: This study found that the association between consuming a more pro-inflammatory diet and sarcopenia in Chinese community-dwelling older adults was mainly due to underlying low intakes of dietary energy, protein, and anti-inflammatory foods, and not due to the high intake of pro-inflammatory foods. Meanwhile, DII was highly correlated with lower limb muscle strength and performance compared to upper limb muscle strength.

Key words Dietary inflammatory index; Sarcopenia; Muscle mass; Muscle performance; Community-Dwelling; Older adults

Category: Public Nutrition & Health

双酚A对中老年人死亡的有害影响可能通过抗炎饮食得到改善

Exploring the mitigating effect of anti-inflammatory diet on the deleterious effect of bisphenol A on mortality in middle-aged and older adults

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Accumulating evidence linked bisphenol A (BPA) exposure with several diseases and even premature death. We aimed to evaluate the association between BPA exposure and mortality in middle-aged and older adults from a large national cohort, and to explore whether an anti-inflammatory diet can mitigate the deleterious effect of BPA on mortality. A cohort study including 8142 adults was conducted. Of these, 4143 (50.2%) were men, with a weighted average age of 55.9 years. Urinary BPA was measured by the on-line solid phase extraction, coupled to high performance liquid chromatography and tandem mass spectrometry. Dietary Inflammatory Index (DII) score was calculated based on 28 available kinds of food parameters. Cox proportional hazards regression models were applied to calculate the hazard ratios (HRs) and 95% confidence intervals (CIs) for all-cause, cardiovascular disease (CVD), and cancer mortality. After 75927 person-years of follow-up (median, 9.3 years; maximum, 17.1 years), BPA exposure and DII score were independently associated with all-cause mortality. The fully-adjusted HR (95% CI) in the high versus low levels of BPA was 1.33 (1.05-1.70) for all-cause mortality, and the anti-inflammatory versus pro-inflammatory category of DII was 0.70 (0.56-0.87). There was no significant interaction between BPA and DII (p=0.200). However, an indication of combined effect was found that, participants in subgroups with low BPA exposure and concurrently with anti-inflammatory category of DII score had 53% significantly lower all-cause mortality. Our findings highlight the importance of continuously monitoring cycles of BPA exposure, and its long-term adverse effects on health, even though the government had restricted its use nowadays. Besides, we provided a new perspective against the adverse health effect induced by BPA exposure, that future studies could explore the offset impact of other healthy dietary patterns on the deleterious effect of BPA on health outcomes.

Key words bisphenol A, Dietary Inflammatory Index, mortality

Category: Public Nutrition & Health

1989-2018年中国学龄儿童心血管健康全国和区域性变化趋势
National and regional trend in cardiovascular health among Chinese school-aged children during 1989 to 2018

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Background The updated metrics of “Life’s Essential 8 (LE8)” in quantifying cardiovascular health (CVH) status were released, whiles its distribution in Chinese children has not be reported.

Objectives To assess the national distribution of Chinese school-aged children’s CVH status by LE8 scores and their temporal changes over time.

Methods Participants who aged between 7 and 19 years from 11 waves (1989-2018) of the China Health and Nutrition Survey were included. Scores of overall CVH and each LE8 metrics were calculated individually. Temporal changes were assessed with geographic regions, the causal relationship between health behaviors and health factors over time were built with cross-lagged panel models.

Results 21921 participants (52.6% boys) with data of at least four CVH components were included in the present analysis, the mean age was 13.0 (standard deviation, SD: 3.6) years. The overall CVH score remained stable in most regions with slight increased by 0.38 (95% CI: 0.29, 0.46; P<0.001) for every 5 years. Decline of diet score during 2004-2008 led to the decline in BMI score during 2009-2013 with the coefficient of 0.190 (95% CI: 0.030, 0.351; P=0.021), while decline of BMI score during 2004-2008 led to decline in sleep health during 2009-2013 with the coefficient of 0.089 (95% CI: 0.010, 0.168; P=0.027).

Conclusions Chinese school-aged children and adolescents are generally of moderate CVH status, but mutual influences existed between CVH metrics. Interventions on diet may be the priority for promoting overall CVH in the future.

Key words Cardiovascular health; School-aged children; Temporal change; China Health and Nutrition Survey

Category: Public Nutrition & Health

农村成年人戒酒与高尿酸血症的关联

Association of abstinence with risk of hyperuricemia in rural Chinese adults

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Objectives: Alcohol drinking can cause hyperuricemia (HUA), but few studies have explored abstinence's health effects, particularly the abstinence duration on HUA. This study aimed to evaluate the associations of abstinence with HUA in rural Chinese adults.

Methods: This was a cross-sectional analysis of 38,855 participants (15,371 men and 23,484 women) using the baseline data (2015–2017) from the Henan Rural Cohort Study. A questionnaire survey collected information on alcohol consumption patterns. Multivariate logistic regression analyses were used to evaluate the associations of type of alcoholic beverages, abstinence status and abstinence duration with HUA, respectively. Restricted cubic spline models were applied to visualize the dose-response trend of HUA risk with increasing abstinence duration.

Results: 3,978 cases of 38,855 participants were identified with HUA. Total alcohol intake, including beer, liquor and rice wine intake was significantly associated with the increased risk of HUA, especially for men. Compared with drinkers, abstainers and nondrinkers presented the lower ORs (95%CIs) of 0.686 (0.676, 0.844) and 0.718 (0.649, 0.793) for HUA. Furthermore, the adjusted ORs (95%CIs) for those abstainers with <5, 6-10 and ⩾11 years duration was 0.868 (0.693–1.073), 0.753 (0.519–1.092) and 0.717 (0.517–0.990), respectively. In addition, the risk of HUA decreased with the increasing years of abstinence duration (P for trend <0.05) and negative linear dose-response associations were observed. Abstainers with⩾11 years duration showed the lowest risk of HUA (OR, 0.669; 95%CI, 0.484–0.924).

Conclusion: Abstainers were associated with a reduced risk of HUA compared with current drinkers. Moreover, increasing abstinence duration could be beneficial for preventing HUA. Therefore, for those people who are currently drinking or have been drinking in the past, quitting alcohol in time and sticking to it will help reduce risk of HUA.

Key words Drinking status; Abstinence duration; Hyperuricemia; Alcoholic beverages; Rural adults

Category: Public Nutrition & Health

中国老年人孤独、独居与心血管疾病的关系

Loneliness, living alone and risk of cardiovascular disease among older adults in China

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Abstract

Aims: The aim of this study was to assess the association of loneliness and living alone with cardiovascular disease (CVD) among community-dwelling elderly individuals in China.

Methods: We conducted a longitudinal analysis on 3661 participants aged over 65 years from the latest 2014 and 2018 waves of the Chinese Longitudinal Healthy Longevity Survey (CLHLS). Cox proportional hazards models were used to assess the associations of loneliness and living alone with CVD risk, with adjustment for related confounding factors.

Results: A total of 616 incident CVD cases were identified during follow-up. Participants who reported feeling lonely experienced a 36% increased risk of developing CVD after adjustment for sociodemographic characteristics, lifestyle factors, and baseline health status (adjusted hazard ratio (HR): 1.36, 95% confidence interval (CI): 1.08–1.71; Ptrend = 0.011). In contrast, no significant association was observed between living alone and CVD risk. Subgroup analyses showed that among those individuals who lived alone, often feeling lonely doubled the risk of CVD compared to never being lonely (HR: 2.03, 95% CI: 1.15–3.59; Ptrend = 0.01).

Conclusions: Loneliness was positively associated with CVD risk independent of multiple traditional factors. Older individuals who feel lonely, especially living alone in the meantime should be the focus of CVD prevention and intervention.

Key words cardiovascular disease, loneliness, living alone, elderly, China

Category: Public Nutrition & Health

血清白蛋白水平对老年居民癌症死亡风险的影响

Impacts of Serum Albumin on Risk of Cancer Mortality among Elderly Residents

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Background and Objectives: Many studies have indicated that serum albumin is associated with many health outcomes. Therefore, we aimed to explore the relationship between serum albumin levels and the risk of cancer mortality.

Methods and Study Design: Data from the National Health and Nutrition Examination Survey (1999-2018) was used in this cohort study. The main exposure in this study was serum albumin level, and the main outcome was cancer mortality. This cohort study applied Restricted Cubic Spline to explore the possibly nonlinear association between serum albumin level and the risk of cancer mortality. Cox proportional hazards regression model was used to evaluate the hazard ratio (HR) and 95% confidence interval (95% CI).

Results: A total of 10,555 American elderly residents [mean (standard deviation) age, 71.06 (8.19) years; 5292 (50.14%) females] were included in the current analysis. After a median follow-up of 8.33 years, 827 of the participants died of cancer. Restricted Cubic Spline analysis showed a significant nonlinear correlation between serum albumin and cancer death ($P < 0.05$). Compared with the group with serum albumin $\geq$ 45 g/L, the risk of cancer death increased by 183.1% (HR=2.831, 95%CI: 1.755-4.568) and 64.8% (HR=1.648, 95%CI: 1.307-2.078) in participants with serum albumin of < 35g/L, and 35-39 g/L, respectively. No significant association was found in the group with serum albumin level of 40-44 g/L.

Conclusions: Low serum albumin levels can increase the risk of cancer death in older adults. Ensuring appropriate serum albumin levels is beneficial for older adults.

Key words Serum albumin; Mortality; Cancer; Elderly; Hazard ratio

Category: Public Nutrition & Health

身体圆度指数与结直肠癌发病风险的关系:一项横断面研究

The association between the body roundness index and the risk of colorectal cancer: a cross-sectional study

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Background: Obesity, especially visceral fat, is a risk factor for colorectal cancer (CRC). Body roundness index (BRI) is an emerging anthropometric index that can better assess body fat and visceral fat level. But no study has evaluated the association between BRI and the risk of colorectal cancer.

Objectives: To investigate the association between BRI and the risk of CRC in adults.

Methods and Study Design: This study included 53,766 participants from the National Health and Nutrition Examination Survey (NHANES). They were divided into two groups according to the presence or absence of CRC. Logistic regression was used to analyze the association of BRI and the risk of CRC. Stratified analyses showed significant association between BRI and CRC risk in different populations. The receiver operating characteristic (ROC) curve calculated the area under the curve (AUC) and cut-off values of different anthropometric indicators for predicting CRC risk.

Results: Participants with CRC had higher BRI than normal and the risk of CRC increased significantly with the increase of BRI (P-trend< 0.001). The association remained significant after adjustment for all covariates (P-trend =0.017). In stratified analyses, CRC risk increased with the increase of BRI, especially among those who were inactive (Q3vsQ1, P=0.019, Q4vsQ1, P=0.005), overweight (Q3vsQ1, P=0.029, Q4vsQ1, P=0.014) or obese (Q3vsQ1, P<0.001, Q4vsQ1, P<0.001). ROC curve analysis showed that BRI was superior to body weight, body mass index (BMI), waist circumference (WC) and waist-to-height ratio (WHtR) in predicting the risk of colorectal cancer.

Conclusions: BRI is significantly and positively correlated with the risk of CRC, especially in inactive participants with BMI > 25.

Key words body roundness index; abdominal obesity; visceral fat; colorectal cancer; anthropometric index;

Category: Public Nutrition & Health

高龄社区人群血清白蛋白水平与心血管死亡风险的关系

Association between Serum Albumin and Risk of Cardiovascular Death in Advanced-age Community Population

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Background and Objectives: Increasing researches have reported that low admission serum albumin relates to high in-hospital and long-term mortality. However, few studies have evaluated the association between serum albumin levels and risk of cardiovascular death in advanced-age community population.

Methods and Study Design: We analyzed data of 3487 advanced-age (≥ 75 years) and community-dwelling Americans from National Health and Nutrition Examination Survey (1999-2018). This cohort study examined the association between serum albumin and risk of cardiovascular death via Restricted Cubic Spline and Cox proportional hazards regression model.

Results: During a median follow-up period of 6.58 person-years, 828 cardiovascular deaths occurred. Results of Restricted Cubic Spline demonstrated a nonlinear association between serum albumin and risk of cardiovascular death ($P < 0.05$). In Cox proportional hazard regression model, we adjusted for demographic characteristics, smoking, alcohol consumption, body mass index, history of hypertension, diabetes mellitus, high cholesterol, cardiovascular diseases (congestive heart failure / coronary artery diseases / stroke), respiratory diseases (asthma / emphysema / chronic bronchitis), and cancer. Compared with serum albumin of 40-44 g/L, hazard ratio of cardiovascular mortality was 2.132 (95%CI: 1.322-3.441, $P < 0.05$), 1.305 (95%CI: 1.100-1.547, $P < 0.05$) and 0.880 (95%CI: 0.719-1.077, $P > 0.05$) in those with serum albumin of < 35g/L, 35-39 g/L, and ≥ 45 g/L, respectively.

Conclusions: Advanced-age community population is worthy of close attention when serum albumin is lower than 40 g/L, due to the higher risk of cardiovascular death.

Key words Serum albumin; Death; Cardiovascular diseases; Aged; Hazard ratio

Category: Public Nutrition & Health

人工神经网络模型结合饮食因素预测非酒精性脂肪性肝病的风险

An artificial neural network model combined with dietary factors to predict the risk of nonalcoholic fatty liver disease

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Background: Available evidence indicates that the risk of NAFLD is strongly related to dietary factors. However, no studies have used an ANN model combined with dietary factors to predict the risk of NAFLD. This study aimed to develop an ANN model combined with dietary factors to predict the risk of NAFLD in American adults.

Methods: Data from the NHANES 2007–2014 were used. The eligible subjects were randomly divided into a training set and a validation set at a ratio of 7:3. We developed the prediction model in three stages. First, the training set was used to identify a set of predictors of NAFLD risk through logistic regression analysis. Second, an ANN was established to predict NAFLD risk by using the training set. Finally, ROC curve analysis was used to evaluate the model's accuracy using training and validation sets.

Results: Individuals with NAFLD in the training set included 901 males and 803 females. The logistic regression models found that the ORs (95% CIs) of NAFLD for the highest quartile of plant-derived dietary retinol intake (OR=0.75, 95%CI: 0.57 to 0.99) were inversely associated with NAFLD risk compared to the lowest quartile of intake by adjusting for potential confounders. A three-layer back propagation neural network model with 10, 7 and 1 neurons in the input layer, hidden layer and output layer, respectively, was selected as the optimal prediction model in neural network analysis. The area under the ROC curve was 0.874 for the training set and 0.883 for the validation set. NAFLD was present if the probability of incidence was greater than 0.388. The accuracy, sensitivity, specificity, and Youden index indicated that the performance of the ANN model was successful and valuable.

Conclusion: The present study shows that the ANN model based on individual diet information could be applied to predict NAFLD risk in American adults.

Key words NAFLD; dietary factor; ANN; prediction model; NHANES

Category: Public Nutrition & Health

妊娠早期血清金属水平与胎儿第一年 BMI 轨迹的关系：前瞻性队列研究

Association of serum metals in early pregnancy with BMI trajectory of infants during the first years: a prospective study

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Background and Objectives: The association between prenatal exposure to essential metals and postnatal growth patterns is poorly understood. This study aims to explore the joint effects of mixed exposure on infant growth during the first year and assess the proportion of the partial effect for each metal.

Methods and Study Design: The concentrations of serum metals of pregnant women were measured using polarography method before 14 gestational weeks. The BMI trajectory based on data from subject’s infants BMI available at age 0, 1, 6 12 months. In total, BMI of 407 infants were included in the trajectory analyses. Binary logistic regression analysis and restricted cubic spline were applied to evaluate the association between serum individual metal and BMI trajectory. Bayesian kernel machine regression (BKMR) and weighted quantile sum (WQS) regression were used to assess the associations between mixed metals exposure and BMI trajectory.

Results: We coded distinct trajectories as a categorical variable and named them based on their visual appearance: normal-light gain, normal-light loss, low-moderate gain and normal-moderate gain. No significant difference was noted among the four groups in terms of maternal serum metal concentrations. The OR for the Normal-moderate gain group of serum Zn concentrations as compared to the Normal-light gain group was 8.42 (95% CI: 1.04, 68.23, P=0.04). Relative to the Normal-moderate gain trajectory, being in the Normal-moderate gain trajectory was associated with the lower serum Cu concentrations (OR=0.03, 95% CI: 0.01, 0.30, P=0.02). No statistically significant difference was found in the mixed exposure model, but the individual effect revealed a significantly positive association between serum Zn and Normal-moderate gain trajectory, and a significantly negative association between serum Cu and Normal-moderate gain trajectory.

Conclusions: Offspring born to mothers with higher serum Zn and lower Cu concentration at early pregnancy experiencing rapid BMI growth during the first year.

Key words Metal; BMI trajectory; Mixed metal exposure; Zinc; Cupper

Category: Public Nutrition & Health

母乳、母血和脐带血中神经节苷脂 GM3 和 GD3 的含量分析：来自中国队列研究的结果

Profiling of ganglioside GM3 and GD3 concentration in human milk, maternal plasma and cord plasma: Results from a Chinese cohort study

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Background

Gangliosides are benefit to cognitive and immune development of infants. However, data on gangliosides in human milk, maternal and cord plasma among Chinese are limited.

Objectives

This study aimed to investigate the concentration and composition of ganglioside GM3 and GD3 in human milk, maternal and cord plasma, and to explore potential factors affecting human milk ganglioside concentration.

Methods

This study is part of the Maternal Nutrition and Infant Investigation study, involving 921 cross-sectional participants who provided human milk samples from 0-400 days of lactation, and 136 longitudinal participants who provided maternal plasma, cord plasma, and colostrum, transitional, and mature milk from 0-45 days postpartum.

Results

The concentration of human milk GM3 increased (from 2.29±1.87 to 13.93±4.82 μg/mL) and GD3 decreased (from 17.94±6.41 to 0.30±0.50 μg/mL) during lactation (P<0.05). Consistent results were observed in cross-sectional and longitudinal participants. GM3 was higher in maternal (13.82±3.51 μg/mL) and cord plasma (12.55±3.24 μg/mL) compared with GD3 (1.58±0.49 μg/mL, and 2.05±0.62 μg/mL). Correlation coefficients between maternal and cord plasma for GM3 and GD3 were 0.30 and 0.35, respectively (P<0.001). The content of ganglioside with very long chain fatty acids (≥20 carbons) was higher in human milk than that in plasma. Lactating women with lower pre-pregnancy BMI and higher plasma GD3 also had a higher level of GD3 in colostrum (P<0.05).

Conclusions

We observed higher levels of GD3 in colostrum and transitional milk, followed by a downward trend in the prolonged lactation period, whereas an opposite trend was found in GM3. GM3 was also the predominant ganglioside in maternal and cord plasma. There were positive correlations between maternal and cord plasma gangliosides. Our results supplement current Chinese data on human milk ganglioside and add evidences to ganglioside transmission between mothers and infants.

Key words GM3, GD3, human milk, maternal plasma, cord plasma

Category: Public Nutrition & Health

肠道共生菌对葡聚糖硫酸钠诱导的肠道炎症的影响及作用方式的差异

Differences in the effects and action modes of gut commensals against dextran sulfate sodium-induced intestinal inflammation

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Inflammatory bowel disease (IBD) is a complex relapsing inflammatory disease in the gut and is driven by complicated host-gut microbiome interactions. Gut commensals have shown different functions in IBD prevention and treatment. To gain a mechanistic understanding of how different commensals affect intestinal inflammation, we compared the protective effects of 6 probiotics (belonging to the genera Akkermansia, Bifidobacterium, Clostridium, and Enterococcus) on dextran sulfate sodium (DSS)-induced colitis in mice with or without gut microbiota. Anti-inflammatory properties (ratio of interleukin (IL)-10 and IL-12) of these strains were also evaluated in an in vitro mesenteric lymph nodes (MLN) co-culture system. Results showed that four probiotics (belonging to the species Bifidobacterium breve, Bifidobacterium bifidum, and Enterococcus faecalis) can alleviate colitis in normal mice. The probiotic strains differed in regulating the intestinal microbiota, cytokines (IL-10, IL-1β and interferon (IFN)-γ), and tight junction function (Zonulin-1 and Occludin). By constrast, Akkermansia muciniphila AH39 and Clostridium butyricum FHuNHHMY49T1 were not protective. Interestingly, B. breve JSNJJNM2 with high anti-inflammatory potential in the MLN model could relieve colitis symptoms in antibiotic cocktail (Abx)-treated mice. Meanwhile, E. faecalis FJSWX25M1 induced low levels of cytokines in vitro and showed no beneficial effects. Therefore, we provided insight into the clinical application of probiotics in IBD treatment.

Key words Gut commensals; Dextran sulfate sodium (DSS) colitis; Intestinal barrier; Immunoregulation

Category: Public Nutrition & Health

两歧双歧杆菌 FJSWX19M5 通过减轻肠道屏障损伤，促进 treg 分化来缓解 2,4,6- 三硝基苯磺酸(TNBS)诱导的慢性结肠炎

Bifidobacterium bifidum FJSWX19M5 alleviated 2,4,6-trinitrobenzene sulfonic acid (TNBS) chronic colitis by mitigating gut barrier injury and increasing Tregs

Dingwu Qu*,Leilei Yu,Fengwei Tian,Hao Zhang,Wei Chen,zhennan Gu,Qixiao Zhai
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Probiotics have been evaluated as alternative approaches to preventing relapse of Crohn's disease (CD). Previously, we observed strain-specific anti-inflammatory properties of Bifidobacterium bifidum in 2,4,6-trinitrobenzene sulfonic acid (TNBS) acute colitis models. In this study, we further assessed the effects of several B. bifidum strains on colonic damage, fibrosis, inflammatory factors, intestinal metabolic profiles, and peripheral regulatory T cells (Tregs) in the context of TNBS chronic colitis in mice. These results indicated that B. bifidum FJSWX19M5, but not FXJWS17M4, ameliorated body weight loss, reduced colonic shortening and injury, decreased markers of gut inflammation, and rebalanced colonic metabolism in TNBS-treated mice. FJSWX19M5 supplementation also promoted Treg cell differentiation and intestinal barrier restoration compared to other strains. The co-culture of B. bifidum strains and mesenteric lymph node cells from TNBS-treated mice showed that those strains with anti-colitis could induce higher IL-10 levels and a lower ratio of IL-22/IL-10 and IL-17/IL-10 when compared to those strains that were not protective. Furthermore, heat-killed B. bifidum cells also function well but exhibit a reduced alleviating effect on CD-related symptoms. These data imply that specific B. bifidum strains or their lysates may be the current therapeutic alternatives for CD

Key words Bifidobacterium bifidum; chronic colitis; gut barrier; Treg; metabolic disorder

Category: Public Nutrition & Health

险资医院 MDT 构建及体重管理（超重和肥胖）相关研究
Deputy senior title

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Overweight or obesity is caused by environmental and genetic factors, and is an important risk factor of type 2 diabetes, dyslipidemia, hypertension, cancer and other diseases.Scientific and reasonable weight management is the basic treatment for the prevention and control of overweight or obesity and related chronic diseases.Establish standardized management workflow to make overweight or obesity prevention strategies and weight management procedures more scientific, standardized and easy to implement.

Key words insured hospital, weight management (overweight and obesity), MDT construction.

Category: Public Nutrition & Health

MDT construction and related research on weight management (overweight and obesity) in insured hospitals

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Overweight or obesity is caused by environmental and genetic factors, and is an important risk factor of type 2 diabetes, dyslipidemia, hypertension, cancer and other diseases.Scientific and reasonable weight management is the basic treatment for the prevention and control of overweight or obesity and related chronic diseases.Establish standardized management workflow to make overweight or obesity prevention strategies and weight management procedures more scientific, standardized and easy to implement.

Key words insured hospital, weight management (overweight and obesity), MDT construction.

Category: Public Nutrition & Health

老年恶性肿瘤肌少症发生率及影响因素分析

Incidence of sarcopenia in elderly patients with malignant tumor and its influencing factors

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Objective To explore the incidence and related factors of sarcopenia in elderly patients with malignant tumor, so as to provide reference basis for the prevention of its occurrence and development. Methods A total of 466 patients with malignant tumors were recruited from five hospitals in Jilin Province from January 2020 to March 2021, according to the diagnostic criteria of the European Working Group on Sarcopenia in Older People, they were divided into two groups: sarcopenia group (n=170) and non-sarcopenia group (n=296). The body composition of patients was measured by body composition analyzer, and the related serum indicators were detected by automatic biochemical analyzer. Binary Logistic regression analysis was used to analyze the risk of sarcopenia. Results The incidence of sarcopenia in elderly malignant tumors was 36.48% (170/466). The age of patients with sarcopenia was older than non-sarcopenia patients (P<0.01), while body mass index (BMI), abdomen circumference, arm circumference, arm muscle circumference, basal metabolic rate, body fat percent, body water index, protein index, minerals index, serum total protein, serum albumin, serum prealbumin, serum high density lipoprotein cholesterol, serum uric acid was lower than non-sarcopenia patients (P<0.05). After adjustment for age, sex and BMI, multivariate Logistic regression analysis showed that abdomen circumference and arm circumference were positively correlated with sarcopenia (P<0.05), while body water index, protein index, minerals index, serum prealbumin, serum high density lipoprotein cholesterol were negatively correlated with sarcopenia (P<0.05). Conclusion The incidence of sarcopenia in elderly patients with malignant tumors is high. Maintaining appropriate content of body water, protein, minerals, serum prealbumin and serum high density lipoprotein cholesterol has a positive protective effect on patients with malignant tumor sarcopenia.

Key words Old age; Malignant tumor; Sarcopenia; Incidence; Influencing factors

Category: Public Nutrition & Health

母亲叶酸增补与膳食叶酸摄入与出生性别比及不同性别新生儿出生体重的关联

Maternal folic acid supplementation and dietary folate intake in relation to sex ratio at birth and sex-specific birthweight in China

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Abstract

Background and Objectives: It has been evidenced that prenatal folic acid supplements could reduce neural tube defects. However, the effect of folic acid supplementation, dietary folate, and total folate intake on sex-specific birth outcomes remain unclear. This study aimed to explore the association of periconceptional folic acid supplement, dietary folate, and total folate intake with the sex ratio at birth and sex-specific birthweight.

Methods: Data were from a cross-sectional survey conducted between August and December 2013 in Northwest China. 7318 infants and their mothers were recruited using a stratified multistage random sampling method. Folic acid supplements (400μg/d) were collected via a retrospective in-person interview. Dietary folate were assessed by a validated food frequency questionnaire. Information on birth outcomes, including birth sex and birth weight were abstracted from the Medical Certificate of Birth. Generalized linear models were used to estimate the relative risks (RRs) or difference with 95% confidence intervals (CIs).

Results: No associations and dose-response of folic acid supplement, dietary folate, and total folate intake during periconceptional period with male births were observed, whereas women with folic acid supplement during pre- and post-conception was in relation to an increased male birthweight of 55.3(9.1 to 101.4) g compared to non-users, the total folate intake during the early pregnancy was linked with increased male (upper vs lower tertile: b=43.0, 95%CI: 8.2 to 77.8 g, Ptrend=0.016) and female birthweight (upper vs lower tertile: b=50.4, 95%CI:13.5 to 87.2; Ptrend=0.008).

Conclusions: The results suggested that the periconceptional folic acid supplement and total folate intake had no association with sex ratio at birth but might increase male birth weight.

Keywords: folic acid; dietary folate; sex ratio at birth; sex-specific birthweight.

Conflict of interest:No conflicts of interest.

Key words folic acid; dietary folate; sex ratio at birth; sex-specific birthweight.

Category: Public Nutrition & Health

晚餐-晚睡时间间隔大于 3 小时可降低 2 型糖尿病的风险：一项大规模横断面研究

Dinner-bedtime interval larger than 3 hours decreased the risk of type 2 diabetes mellitus: a large-scale cross-sectional study

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Objective Glucose metabolism was impacted by circadian disruption. Dinner-bedtime interval was an accessible indicator to reflect the alignment between eating time and circadian clock. We aimed to investigate the association of DBI with type 2 diabetes mellitus.

Methods A total of 7676 adult subjects from the Henan Rural Cohort were included. Their demographic information including dinner time and bedtime was collected. Fasting venous blood samples were collected for biochemical determinations. Logistic regression incorporated with restricted cubic spline model was applied to evaluate the association between DBI and T2DM. Furthermore, linear regression model was applied to evaluate the correlation between DBI and fasting insulin level. In addition, the mediating effect of BMI on the correlation between DBI and fasting insulin was also estimated.

Results DBI was significantly associated with T2DM (adjusted OR: 0.910, 95% CI: 0.845-0.979, P = 0.012). DBI shorter than 3 hours was a risk factor of T2DM while that longer than 3 hours was a protective factor of T2DM (adjusted OR: 0.773, 95% CI: 0.648-0.921, P = 0.004). Furthermore, DBI was positive correlated with fasting insulin (P = 0.012). The coefficient was highest for people with prediabetes (adjusted β: 0.887, 95% CI: 0.118, 1.657, P = 0.026). In addition, body mass index (BMI) showed a significant partial mediating effect on the correlation between DBI and fasting insulin (β: 0.06, 95% CI: 0.02-0.10, P = 0.004), which accounted 22.2% the total effect. **Conclusion** DBI larger than 3 hours is recommended for people to improve fasting insulin levels and to prevent T2DM, especially for those with prediabetes.

Key words type 2 diabetes mellitus; circadian disruption; dinner timing; bedtime

Category: Public Nutrition & Health

细颗粒物长期暴露与高血压风险：膳食模式的修饰效应

Long-term exposure to fine particulate matter and risk of hypertension : the modifying effect of dietary patterns

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Background and Objectives: Studies have shown that nutritional supplements could reduce the adverse effects induced by air pollution. However, whether dietary patterns modify the association of long-term exposure to fine particulate matter (PM2.5) and its constituents with hypertension defined by the 2017 ACC/AHA guideline has not been evaluated.

Methods and Study Design: We included 47,501 adults aged 18~79 years from Chinese Nutrition and Health Surveillance (CNHS) 2015-2017. PM2.5 and five constituents were estimated by satellite-based random forest models. Dietary approaches to stop hypertension (DASH) and alternative Mediterranean diet (AMED) scores were calculated for each participant. Interactions between dietary patterns and air pollution were examined by adding a multiplicative interaction term to logistic models.

Results: Long-term exposure to PM2.5 and its constituents was associated with an increased risk of hypertension and stage 1-2 hypertension. DASH and Mediterranean diets significantly modified these associations, as individuals with higher DASH and AMED scores had a significantly lower risk of air pollution-related hypertension and stage 1-2 hypertension (P-int < 0.05). For each IQR increase in PM2.5, participants with the lowest DASH and AMED quintiles had hypertension risk with ORs (95%CI) of 1.20 (1.10, 1.28) and 1.19 (1.09, 1.29), whereas those with the highest DASH and AMED quintiles had lower risks with 0.98 (0.91, 1.05) and 1.04 (0.97, 1.11). Stratified analysis found modification effect was more prominent in the < 65 years age group. Consuming more fresh vegetables, fruits, whole grains, and dairy can reduce the risk of hypertension caused by PM2.5 and its constituents.

Conclusions: Dietary patterns rich in antioxidants can reduce long-term exposure to PM2.5 and its constituents-induced hypertension defined by the 2017 ACC/AHA guideline, especially in young and middle-aged individuals. Compared to the Mediterranean diet, the DASH diet offers superior dietary guidance to prevent stage 1 hypertension caused by air pollution.

Key words diet; fine particulate matter; PM2.5 constituents; hypertension; interaction

Category: Public Nutrition & Health

中国成年人体脂百分比和2型糖尿病患病风险的纵向关联：来自中国健康与营养调查的证据

Longitudinal relationship between body fat percentage and risk of type 2 diabetes in Chinese adults: Evidence from the China Health and Nutrition Survey

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Objective: Body fat percentage (BF%) might be an alternative index of obesity which is the major risk factor for developing type 2 diabetes (T2D). We aim to longitudinally evaluated the relationship between BF% and risk of T2D.

Methods: A sample of 5595 adults aged 18-65 who participated in two waves of China Health and Nutrition Survey (CHNS 2015 and 2018) was analyzed. Two level mixed-effects modified Poisson regression with robust estimation of variance stratified by sex was used to evaluate the risk ratios (RRs) for T2D according to quintiles of BF%, and the curves of receiver operating characteristic (ROC) were plotted to identify the optimal total and trunk BF% cut-offs for predicting an increased T2D risk.

Results: In males, compared with subjects in the first quintile of total BF%, those in the third (RR = 2.03, 95% CI 1.09-3.79), fourth (RR = 2.56, 95%CI 1.46-4.48), and fifth (RR = 2.16, 95%CI 1.22-3.82) quintile had higher risk of T2D after adjusting for all potential confounders (p-trend < 0.001). For females, the RR (95% CI) was 1.92 (1.14, 3.24) in the fifth quintile (p-trend = 0.014). Males and females with a trunk BF% greater than 25.5% and 34.4% (≥ quintile 4), respectively, were at significantly increased risk of T2D (p-trend = 0.001). Besides, the optimal cut-off values of total and trunk BF% were 21.9% and 25.2% for males, and 36.7% and 30.3% for females, respectively.

Conclusions: The incident risk of T2D significantly increased over specific level of total and trunk BF% in both Chinese males and females, and the optimal BF% cut-off values were valuable for clinical application of BF% based on sex difference, which may be a cost-effective implementation for prevention and treatment of T2D in China.

Key words Body fat percentage, Cut-off points, Type 2 diabetes, Obesity, China

Category: Public Nutrition & Health

维生素受体基因多态性对中国人群高血压和二型糖尿病共病易感性的影响:基因与高甘油三酯血症和腹部肥胖的交互作用

The influence of VDR polymorphisms on the HTN and T2DM comorbidity susceptibility in Chinese: interactions with hypertriglyceridemia and abdominal obesity

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Abstract: Objective Synergistic interactions of gene-environment risk factors are probably thought to raise the odds of HDC. The current investigation mainly focuses on the relationship between VDR variations and the interaction with hypertriglyceridemia and abdominal obesity on HDC risk.

Methods A whole of 1364 individuals had been covered in this cross-sectional study. Logistic regression models were used to appraise the associations between the VDR gene (rs3847987 rs2239179, rs739837, and rs2228570) or environmental factors (obesity and dyslipidemia) and HDC susceptibility. Additive interaction model was applied to evaluated the interaction effect between gene and environmental factors on HDC risk.

Results The consequences indicated that rs3847987 and rs739837 were meaningfully associated with an increased HDC susceptibility after adjusting for potential risk factors (OR=1.972, 95% CI: 1.043-3.730 and OR=1.412, 95% CI: 1.029-1.937). We also found that overweight/obesity, abnormal WC or WHR, and abnormal levels of TC and TG all could increase the risk of HDC. Beyond environmental factors, these data also point to a meaningful additive interaction effect between rs3847987 and hypertriglyceridemia (SI: 2.367, 95% CI: 1.106-5.065) and between rs3847987 and abnormal WHR (SI: 1.964, 95% CI: 1.137-3.392) on HDC susceptibility.

Conclusion This study supplied novel proof that the interaction of the VDR gene polymorphisms and hypertriglyceridemia or abdominal obesity had combined and additive effect on HDC susceptibility.

Key words VDR polymorphisms; Hypertension; Type 2 diabetes; Comorbidity; Hypertriglyceridemia; Abdominal obesity

Category: Public Nutrition & Health

自闭症谱系障碍儿童的血液和头发铜水平：基于病例对照研究的荟萃分析

Blood and hair copper levels in children with autism spectrum disorder：A meta-analysis based on case-control studies

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The association between copper levels and autism spectrum disorder (ASD) has been a controversial topic. This study investigated relationship between copper levels and ASD. The following databases are searched until April 2022: Pubmed, EMBASE, Web of Science, and Medline. Combined effect size standardized mean differences (SMD) and 95% confidence intervals (95%CI) were calculated with Stata 12.0. In this meta-analysis, 29 case-control studies were included, which included 2504 children with ASD and 2419 healthy controls. The copper levels in hair (SMD: -1.16, 95% CI: -1.73~-0.58) was significantly lower in ASD children than healthy controls. Copper may be one of important causal factor in the etiology of ASD.

Key words Copper; ASD; Children; Meta-analysis

Category: Public Nutrition & Health

林县食管发育不良人群营养干预试验的37年随访结果——随机临床试验

Long-term effect of nutrition intervention in the Linxian Dysplasia Nutrition Intervention Trial using 37 years follow-up data: a randomized clinical trial

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Background: We aimed to offer short-term and long-term nutrition intervention effects using 37 years follow-up data. Methods: The Linxian Dysplasia Population Nutrition Intervention Trial was a randomized, double-blind, placebo-controlled trial with 6 years of intervention and 31 years of follow-up. The Cox proportional hazard model was used for analysis. Subgroup analyses were conducted in age and gender subgroups and 31 years follow-up was divided into the early and late periods. Results: 37 years results didn't indicate any effect on cancers or other diseases mortality. In the first 15 years, the intervention increased the risk of cerebrovascular disease death in the female subgroup (HR=1.29, 95%CI:1.00-1.68). In the age<55 subgroup, intervention decreased the risk of death for gastric cancer (HR=0.65, 95%CI:0.43-0.97) and other disease (HR=0.58, 95%CI: 0.35-0.97), but increased cerebrovascular disease death risk (HR= 1.94, 95%CI:1.34-2.80) as well as heart disease (HR= 1.76, 95%CI:1.11-2.81). In the age≥55 subgroup, the intervention decreased the risk of deaths from heart disease (HR =0.76, 95%CI:0.58-0.99). There weren't any significant results in the late 15 years. Comparing demographic characteristics of subjects died in the two periods, the later died subjects were more female, higher in education level, lower in smoking rate, younger and more with mild degree of esophageal dysplasia. Conclusions: Long-term follow-up indicated no effect of nutrition on deaths among esophageal squamous dysplasia population. Short-term results varied across gender and age subgroups. Subjects died in later stage had more protective factors than the previous, contributing to the obvious effect of the intervention in early stage.

Key words cohort study, esophageal squamous dysplasia, nutrition intervention trial, upper gastrointestinal cancer,risk factors