

Food & Nutrition Posters 8

APHA 2025 Annual Meeting and Expo

Abstract

Development and Examination of the Validity and Reliability of a Self-Efficacy Scale to Overcome Barriers to Prepare and Consume Healthy Meals at Home in a Diverse Sample of Adults

Lorena Macias-Navarro, M.Sc.¹, Natalia Heredia, PhD¹, Deanna Hoelscher, PhD, RDN, LD, CNS, FISBNPA² and Timothy Walker, PhD¹
(1)UTHealth Houston School of Public Health, Houston, TX, (2)UTHealth Houston School of Public Health at Austin, Austin, TX

APHA 2025 Annual Meeting and Expo

Background: Many U.S. adults do not meet recommended fruit and vegetable intake, partly due to low self-efficacy (SE) in overcoming barriers to preparing healthy meals. Existing SE measures are often lengthy, lack validation, and do not address these barriers. To address this gap, we developed the Self-Efficacy Scale to Overcome Barriers to Prepare and Consume Healthy Meals at Home (SECHM) and examined its structural validity and reliability.

Methods: Guided by DeVellis's four-step scale development framework, we designed an 11-item questionnaire and collected data from 139 adults (108 general population; 31 participants in the Teaching Kitchen Multisite Trial). Descriptive statistics were assessed, and confirmatory factor analyses (CFA) compared a one-factor model (Model 1) and a two-factor model (Model 2). Model fit was evaluated using RMSEA, SRMR, CFI, and TLI.

Results: Model 2, which distinguished "Situational Barriers" and "Resource Barriers", demonstrated better fit (RMSEA=0.06, SRMR=0.06, CFI=0.94, TLI=0.93) compared to Model 1 (RMSEA=0.09, SRMR=0.07, CFI=0.87, TLI=0.83). Cronbach's alpha indicated good internal consistency ($\alpha=0.76$ and 0.72 for the two subscales).

Conclusions: The SECHM is a valid and reliable tool for assessing self-efficacy in overcoming cooking barriers. This scale has potential applications in culinary medicine and lifestyle interventions aimed at improving confidence in preparing healthy meals at home.

Keywords: self-efficacy, confirmatory factor analysis, nutrition behavior, cooking barriers, healthy eating

Chronic disease management and prevention Conduct evaluation related to programs, research, and other areas of practice Diversity and culture Public health or related research Social and behavioral sciences

Abstract

Development and validation of a Digital Photographic Food Atlas as a Portion Size Estimation Aid in Taiwan

SIN-Tian DU¹, **Chaoyu Yeh, MA¹**, Yi-Jing Lin¹, Hsu Chien-Yeh², Cha Jane C.-J.³, Lee Hsiu An⁴ and Chen Chen-Lin³

(1)Health Promotion Administration, Ministry of Health and Welfare, Taipei City, Taiwan, (2)Department of Information Management, National Taipei University of Nursing and Health Sciences, Taipei, Taiwan, (3)School of Nutrition and Health Sciences, Taipei Medical University, Taipei, Taiwan, (4)The Taiwan Association for Medical Informatics, Taipei, Taiwan

Introduction: Accurate dietary assessment is crucial for public health monitoring and policy formulation. The current Nutrition and Health Survey in Taiwan (NAHSIT) uses face-to-face interviews and food models for 24-hour dietary recall (24HR), which requires substantial resources and time, reducing efficiency. To improve both accuracy and efficiency, this study aims to develop and validate a digital photographic food atlas tailored to Taiwanese food culture as a supplementary tool for 24HR surveys.

Approach: Based on the NAHSIT 24HR database (2017-2020), this study selected the 100 most common foods from the 20-65 age group's dietary patterns to create a photographic food atlas. The foods were categorized into six major food groups, beverages, snacks, and others, considering common display forms (whole, sliced, cooking methods, etc.), portion sizes, typical serving containers, reference tableware, and appropriate reference ratios (weight, portion scale, and conversion factors). Standardized photography techniques (consistent lighting, angles, and proportions) were applied. After completion, ≥ 30 participants will view real foods, matching and differing from the atlas, and select the closest portions. Validity will be tested using Pearson's correlation coefficient (r). To ensure consistency, inter-rater reliability will be assessed using the Intraclass Correlation Coefficient (ICC).

Results: The study is ongoing, with results to be presented at APHA, and testing scheduled for completion by September 2025.

Discussion: This study preliminarily explores the feasibility of a national digital Photographic Food Atlas. A validated tool will integrate with the nutrition database and dietary assessment system to enhance data collection and support health management.

Epidemiology Public health or related research Social and behavioral sciences

Abstract

"Association between healthy food diversity and frailty progression in older adults: Findings from the Baltimore Longitudinal Study of Aging"

Xin Li¹, Yichen Jin¹, Stefania Bandinelli², Luigi Ferrucci³, Toshiko Tanaka³ and Sameera A. Talegawkar¹
(1)Milken Institute School of Public Health, George Washington University, Washington, D.C., DC,
(2)Geriatric Unit, USL Toscana Centro Firenze, Florence, Italy, (3)National Institute on Aging, Baltimore, MD

APHA 2025 Annual Meeting and Expo

As individuals age, they experience decline in multiple physiological domains, increasing their vulnerability to health challenges and frailty. While adherence to healthy dietary patterns has been shown to protect against frailty, consuming ultra-processed foods (UPFs)-which are high in added sugars and saturated fat- may contribute to systemic inflammation and frailty risk. This study investigates the association between UPF consumption and frailty development among 938 participants aged 65 years and older in the InCHIANTI study, Italy.

Dietary intake over the past year was assessed using a validated food frequency questionnaire, with items categorized into food groups based on the NOVA classification. Frailty was measured using a 42-item frailty index (FI). Multivariable linear regression analyzed the association between baseline UPF consumption and baseline frailty status, while linear mixed-effect models examined frailty progression over time.

Overall, participants with the lowest UPF consumption were younger, had more years of education, and lower baseline FI. Higher UPF consumption was significantly associated with greater baseline FI after adjustments of the sociodemographic and health characteristics ($\beta=0.025$, 95% CI=0.005-0.007, $p<0.001$) and a steeper increase in FI over time ($\beta=0.014$, 95% CI=0.003-0.025, $p=0.011$). These findings underscore the potential negative health impacts of UPF on frailty development in older adults.

Biostatistics, economics Chronic disease management and prevention Epidemiology Protection of the public in relation to communicable diseases including prevention or control Public health or related nursing Social and behavioral sciences

Abstract

Shifting extremes: temporal trends in high sodium intake among US adults, 2003–2018

Yutong Chen, MS, MPH¹, Jingyan Wang, MS², Kristin Leonberg, PhD, MS, RD, CSR, CDCES², Kenneth Chui, PhD, MPH³, Lynne Ausman, PhD² and Elena Naumova, PhD⁴
(1)Tufts University, Friedman School of Nutrition Science and Policy, Boston, MA, (2)Tufts University, Boston, MA, (3)Tufts University School of Medicine, Boston, MA, (4)Boston, MA

APHA 2025 Annual Meeting and Expo

Introduction

Global dietary sodium studies often emphasize mean intake, potentially overlooking critical shifts at the extremes. Analyzing intake extremes is essential for identifying vulnerable populations and guiding targeted interventions. This study examined temporal trends in sodium intake extremes among U.S. adults using individual- and population-level data from the National Health and Nutrition Examination Survey (NHANES), 2003–2018.

Methods

We analyzed sodium intake distributions at individual and population levels, stratified by age, sex, and health status (cardiovascular diseases, heart attack, stroke, hypertension). Individual-level analyses employed four regression models incorporating linear and quadratic terms for survey cycle and age to identify significant temporal trends in sodium intake. Population-level analyses examined percentile sequences (min-P5-P10-P25-P50-P75-P90-P95-max) to identify shifts in consumption patterns over time.

Results

Individual-level models demonstrated statistically significant temporal shifts in sodium consumption patterns from 2003–2018 ($\beta=20.38$ mg/day/year, SE=4.19, $p<0.001$). Population-level analyses revealed mixed significance: lower intake percentiles (P5-P10-P25) remained stable or showed non-significant trends, while upper percentiles (P75-P90-P95) displayed significant increases ($p<0.05$). Specifically, the upper tail of the sodium intake distribution shifted upward, indicating more extremely high intake patterns over time. Among adults with hypertension, changes were even more pronounced, highlighting heightened risk within this vulnerable group (P75: $\beta=44.11$ mg/day/year, SE=14.34, $p=0.02$; P90: $\beta=43.77$ mg/day/year, SE=14.26, $p=0.02$; P95: $\beta=51.97$ mg/day/year, SE=13.85, $p=0.01$).

Discussion

Our findings underscore the importance of monitoring extreme dietary sodium intakes and demonstrate significant shifts in consumption, especially at higher intake levels. Targeted public health interventions should account for these evolving patterns, particularly among populations at elevated risk.

Biostatistics, economics Epidemiology Public health or related education Public health or related research

Abstract

Associations between Healthfulness of Family Meals, Parent Role Modeling, and Child Dietary Intake

Gianfranco Morote Galvez, MPH, RD¹, Angela Fertig, PhD¹, Amanda Trofholz, MPH, RD, PMP¹, Jerica Berge, PhD, MPH, LMFT, CFLE² and Junia Nogueira De Brito, PhD, MPH, MBA¹
(1)University of Minnesota, Minneapolis, MN, (2)University of Colorado, Anschutz Medical Campus, Aurora, CO

APHA 2025 Annual Meeting and Expo

Background: The literature indicates that children consume healthier diets if they eat more family meals and if their parents are role models of healthy eating. However, less is known about how specific foods served at family meals and eaten by parents are associated with children's dietary intake.

Methods: We analyzed data from an NIH-funded study of families with children aged 5-9 in Minnesota (n=1307) from 6 racial/ethnic groups (African American, Native American, Latino/a/e, Somali/Ethiopian, Hmong, and non-Hispanic White). Parents self-reported how often 13 categories of foods were served at family meals, eaten by themselves, and eaten by their child in an average week. Answers were ranked from 1-4 based on serving and consumption frequency. Associations were estimated using linear regressions, adjusting for demographic characteristics and income.

Results: Child intake of a specific food was more highly associated with parent's intake of the same food than how often the food was served at family meals. A 1-point higher score in serving dark green vegetables was associated with a 0.35 higher child intake score (p<0.001) whereas a 1-point higher in parents' intake score of dark green vegetables was associated with a 0.49 higher child intake score (p<0.001). The only exception was sugar-sweetened beverages where child intake was more highly associated with serving them at meals than parent's consumption.

Conclusion: The specific foods served at family meals and parents' role modeling are both strongly associated with the child's consumption of that specific food, but parents' role modeling appears to have a stronger association.

Diversity and culture Epidemiology Public health or related research

Abstract

The PEARL Study: Nutrition, Environment, and Behavior in Autism

Carla Heiser, MS LDN FAAMFM ABAHP¹, Lori Varas, BS CFMC¹, Melissa Kindred, MS RN¹, Monica Ramakrishnan, PhD², Jeremy Malecha, BME³, Daniel Stein, MD⁴, Xinyi Zhou², Eric Freiling, PhD³, Lynn Yeoman, PhD⁵, Grace Adams², Diane Miller, BS¹, Michael McNeill, PhD⁶ and Anita Panjwani²
(1)Triada World, Chicago, IL, (2)Purdue University, West Lafayette, IN, (3)Biocanic, San Diego, CA, (4)Mosaic Diagnostics, Overland Park, KS, (5)Baylor College of Medicine, Houston, TX, (6)Triada World, Algona, IA

APHA 2025 Annual Meeting and Expo

The prevalence of autism spectrum disorder (ASD) continues to rise, with research pointing to interactions between environmental factors and genetic predispositions. The Personalized Nutrition, Education, Assessment, "Real" Food, and Lifestyle Support Study (PEARL) for Individuals with Autism took a multidisciplinary approach to examine how food/environmental exposures, genetics, and behavioral outcomes intersect in people with ASD.

This 12-week feasibility study involved 36 participants (aged 9–30y) with ASD. Assessments included behavioral questionnaires, dietary intake, genetic testing, gut microbiome sequencing, and metabolic, food sensitivity, heavy metal, and mycotoxin testing. Participants received personalized nutrition plans. Wilcoxon signed-rank tests were used to analyze data between baseline and end-line.

Adherence to fiber, hydration, and micronutrient supplementation was high (>75%), while 40% struggled to maintain an organic and gluten-free diet. However, there was a significant increase in eating organic and preparing meals at home (p<0.0001, respectively). Almost all behavior subscales significantly improved, as

did several metabolic markers, including vitamin D3 ($p < 0.001$), and total ($p < 0.01$) and LDL cholesterol ($p < 0.001$). SNPs associated with neuroinflammation and detoxification pathways, including NLRP3, Nrf-2, IL-1 β , and IL-18, were identified, potentially critical in influencing ASD. Elevated baseline ochratoxin in 92% of participants significantly decreased post-intervention ($p = 0.0001$). Gastrointestinal symptoms and diet quality improved significantly ($p < 0.05$, respectively). Food sensitivities did not change.

This study underscores the value of personalized approaches, emphasizing the importance of accessible nutrient-dense food. It highlights the potential for community-based interventions to scale sustainable health practices, benefiting individuals with ASD. Health policies must integrate food and environmental strategies to achieve successful health outcomes.

Administer health education strategies, interventions and programs
Environmental health sciences
Epidemiology Implementation of health education strategies, interventions and programs
Social and behavioral sciences

Abstract

Correlation of inflammatory biomarkers with diet quality indexes in a cohort enrolled for a weight loss study

Jeanna Campbell, PhD, MSW, Thomas Keyserling, MD, MPH, Evan Paules, PhD, Stephen Hursting, PhD and Carmen Samuel-Hodge, RD, PhD
University of North Carolina at Chapel Hill, Chapel Hill, NC

APHA 2025 Annual Meeting and Expo

Introduction: By 2030, half of the US will experience obesity. Obesity promotes chronic low-grade inflammation, felt to be an underlying cause of common chronic diseases including type 2 diabetes. Healthful dietary patterns reduce inflammation, but the impact on inflammatory and metabolic biomarkers has been understudied in US populations with obesity.

Approach: Adults enrolled in a randomized trial to evaluate weight loss interventions ($N = 360$) were recruited from primary care practices. Using baseline data, Spearman correlations were implemented to assess associations between inflammatory (i.e., interleukin-6, tumor necrosis factor alpha, c-reactive protein) and metabolic biomarkers (i.e., leptin, insulin, glucose), and three validated diet indexes (i.e., Alternate Mediterranean Diet, Alternative Healthy Eating Index [AHEI], Dietary Approaches to Stop Hypertension-Quality [DASH-Q]) derived from the Harvard Food Frequency Questionnaire.

Results: Among participants with complete biomarker and diet index data ($n = 327$), mean age was 54.1 (SD 11.9), 44.9% were male, 35.2% Black, 32.7% had type 2 diabetes, and median body mass index of 36.7 kg/m² (Q1-Q3 32.3 – 38.9). Significant negative correlations were found between three diet indexes and inflammatory and metabolic biomarkers including c-reactive protein ($r = -0.13$ – -0.17 , $p < 0.05$) and leptin ($r = -0.11$ – -0.12 , $p < 0.05$). DASH-Q and AHEI correlated with insulin ($r = -0.12$ – -0.15 , $p < 0.05$).

Discussion: Future lifestyle interventions evaluating dietary patterns to reduce chronic disease risk should consider low-grade inflammation as a target of treatment and inflammatory/metabolic biomarkers (e.g., c-reactive protein, leptin, insulin) as measures of intervention effectiveness.

Planning of health education strategies, interventions, and programs

Abstract

Anthocyanins as a favorable flavonoid in delaying biological aging – a longitudinal analysis in the Health and Retirement Study

Zhaoli Dai-Keller, PhD¹, Karen Charlton, PhD², Karen Mather, PhD¹, Anbu Thalamuthu, PhD³ and Perminder Sachdev, MD, PhD¹

(1)University of New South Wales, Sydney, NSW, Australia, (2)University of Wollongong, Wollongong, Australia, (3)University of New South Wales, Sydney, Australia

APHA 2025 Annual Meeting and Expo

Background

Anthocyanins, a subgroup of flavonoids, may reduce oxidative stress, inflammation, and cellular senescence—key mechanisms of aging. While animal studies suggest benefits for cardiometabolic, neurological, and immune health, the role of these compounds in human biological aging remains unclear.

Methods

We analyzed data from the U.S. Health and Retirement Study, including dietary intake from the 2013 nutrition survey and epigenetic clock measures from the 2016 biomarker study. Anthocyanin and non-anthocyanin flavonoid intake were estimated using the USDA food database. Weighted linear regression models were used to assess the associations between flavonoid intake and three epigenetic aging clocks (DNAmGrimAge, DunedinPoAm, and DNAmPhenoAge), adjusting for demographic, diet quality, and lifestyle factors.

Results

Among 1,815 participants (mean age: 66; 60% female; 69% white), higher anthocyanin intake was significantly associated with delayed aging across all clocks. Compared to the lowest quartile, the highest quartile had lower z-scores for DunedinPoAm ($\beta = -0.41$, 95% CI: -0.60, -0.23), DNAmPhenoAge ($\beta = -0.19$, 95% CI: -0.32, -0.07), and DNAmGrimAge ($\beta = -0.28$, 95% CI: -0.39, -0.17) (all $p < 0.0001$). The third quartile showed similar associations, except for DNAmPhenoAge. Flavonoids excluding anthocyanins had weaker associations, with significant links to DunedinPoAm ($\beta = -0.18$, 95% CI: -0.36, -0.002) and DNAmGrimAge ($\beta = -0.17$, 95% CI: -0.26, -0.08), but not DNAmPhenoAge.

Conclusion

This cohort analysis suggests that anthocyanins from diets may have stronger anti-aging effects than other flavonoids. Future research should validate these findings in interventions and explore sustainable dietary strategies to increase anthocyanin intake to promote healthy aging.

Advocacy for health and health education Epidemiology Public health biology

Abstract

Impact of Medically Tailored Meals and Nutrition Counseling on Dietary Quality and Weight in Food Secure Lung Cancer Patients

Mary Cohen, MS, RD¹, **Zhongyao Li, MS, RD¹**, Kenneth Chui, PhD, MPH², Gail T. Rogers, MS¹, Jade Smith, MS, RD³, Carolyn J. Presley, MD, MHS³, Joya Chandra, PhD⁴, Lori Pai, MD⁵, Jessica R. Bauman, MD⁶, Fang Fang Zhang, MD, PhD¹ and Colleen Spees, PhD, RD, FAND, FAHA³

(1)Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA, (2)Tufts University School of Medicine, Boston, MA, (3)The Ohio State University, Columbus, OH, (4)University of Texas MD Anderson Cancer Center, Houston, TX, (5)Tufts Medical Center Cancer Center, Boston, MA, (6)Fox Chase Cancer Center, Philadelphia, PA

APHA 2025 Annual Meeting and Expo

Food-secure cancer patients often experience poor diet quality and weight loss due to disease and treatment. Medically tailored meals (MTMs) and nutrition counseling may improve outcomes.

249 newly diagnosed lung cancer patients were randomized to NutriTool (n=115; monthly nutrition education) or NutriCare (n=134; MTMs plus nutrition counseling for 6-8 months). Food security (USDA 6-item module) and diet quality (Healthy Eating Index via Dietary Health Questionnaire) were assessed at baseline, 3, and 6/8 months. Weight was measured at clinic visits. The primary intention-to-treat analysis compared changes in food security between arms using hierarchical generalized linear models. Weight and diet quality

changes between arms were evaluated among participants food secure at baseline.

At baseline, 115 (85.82%) NutriCare and 102 (88.70%) NutriTool participants were food secure. NutriCare had higher odds of food security (DiD OR at 3 months: 1.48, 95% CI: 0.37–5.99, $p=0.58$; DiD OR at 6 months: 1.20, 95% CI: 0.20–7.11, $p=0.84$) vs. NutriTool. Among those food secure at baseline, NutriCare showed greater percentages (%) increase in HEI scores (DiD at 3 months: 3.51, 95% CI: -0.79 to 7.81, $p = 0.11$; DiD at 6 months: 8.09, 95% CI: 3.36 to 12.8, $p = 0.001$) and experienced smaller percentages (%) of weight loss (DiD at 3 months: 1.17, 95% CI: 0.42 to 1.92, $p = 0.002$; DiD at 6 months: 1.22, 95% CI: 0.31 to 2.12, $p = 0.009$) vs. NutriTool.

Cancer patients benefit from MTMs and nutrition counseling during treatment, improving diet quality and weight stability.

Advocacy for health and health education Chronic disease management and prevention Provision of health care to the public Public health or related public policy

Abstract

Insights about COVID-era policy changes and adapting to reduced benefits from nationally representative sample of SNAP participants

Elise Sheinberg, MPH, RDN¹, Elise Sheinberg, MPH, RDN², Christine Weston, Ph.D, MEd³, Cerra Antonacci, PhD³, Melissa Laska, PhD, RD⁴, Julia Wolfson, PhD, MPP⁵, Cindy Leung, ScD, MPH¹ and Alessandra Uriarte, MSPH⁶

(1)Harvard T. H. Chan School of Public Health, Boston, MA, (2)Harvard T.H. Chan School of Public Health, Boston, MA, (3)Johns Hopkins University, Baltimore, MD, (4)University of Minnesota School of Public Health, Minneapolis, MN, (5)Baltimore, MD, (6)Cambridge, MA

APHA 2025 Annual Meeting and Expo

Introduction

In response to the COVID-19 pandemic, the USDA's Supplemental Nutrition Assistance Program (SNAP) expanded to improve benefit access, streamline enrollment, increase benefits through Emergency Allotments (EA), and expand eligibility. In 2023, pandemic-era flexibilities ended, creating significant challenges for participants. This research explores participants' perspectives on these waivers and how they adapted as the EAs expired in a nationally representative sample.

Methods

In June 2024 we fielded a national online survey of U.S. adults who participated in SNAP for at least 3 months in 2023 via the NORC AmeriSpeak panel (N=1,694). Questions asked about participants' experiences with pandemic-era SNAP policies, particularly the impact of reduced benefits on food insecurity, coping strategies, household expenditures, and dietary behaviors. Analyses incorporated survey weights for nationally representative estimates.

Results

Among respondents, on average 75.6% received SNAP benefits at some point between 2020-2022. Several pandemic-era policies made SNAP participation more accessible. Survey respondents indicated that the ability to use SNAP benefits for online food purchases (79.2%), provide their signature via phone (75%), have their interview requirements waived (53.3%), and extend certification periods (78.8%) made it somewhat or much easier for respondents to participate in SNAP. After SNAP EAs ended, common coping strategies included buying cheaper or less food (63.7%), utilizing food pantries (40.7%), and borrowing money from family/friends (22.8%).

Discussion

These findings underscore the impact of expanded SNAP participation and increased benefits for SNAP

participants during a public health emergency. Ensuring SNAP benefits are sufficient to meet participants food needs is a critical policy priority.

Public health or related public policy

