

## HER NOPREN Summer Speaker Series for Students Virtual Student Presentations August 14, 2024 – 4:00-5:00 p.m. ET

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### Development and Validation of a 2-item Nutrition Security Screener for Use in Clinical and Public Health Settings in the U.S.

**Presenter:** Hope Craig

**University:** Tufts University

**Objective:** This work has the following objectives 1) identify the prevalence of nutrition insecurity in the U.S., 2) compare prevalence of nutrition insecurity to that of food insecurity, and 3) assess how nutrition insecurity compares to food insecurity as a predictor of diet-related disease.

**Background:** Current measures of food security have important limitations in the context of food-is-medicine interventions, including lack of assessment of food quality. Nutrition security has emerged as a new concept to complement measures of food security and refers to access, availability, and affordability of foods that support well-being and prevent and manage nutrition related diseases. Healthcare and government entities are focusing on nutrition insecurity in light of the distinction between access to calories vs. nourishing foods but validated screening measures are not established.

**Methods:** Tufts University, Kaiser Permanente, and Los Angeles County Department of Public Health developed a 2-item Nutrition Security Screener (NSS) and refined it in pilot studies. Descriptive analyses assesses the prevalence of food and nutrition insecurity among diverse populations at the national, state, and county levels in the U.S. Multivariable logistic regression models examine associations between these constructs and diet-related disease adjusted for age, sex, income, race/ethnicity, education and jointly adjusted for food and nutrition insecurity.

**Results:** Results include 19,348 respondents total from five diverse populations. Only moderate positive correlation exists between the presence of food insecurity and nutrition insecurity with Spearman correlation ranging from 0.40-0.62 across the five surveys. Prevalence of food insecurity in the five surveys ranged from 13-42% while prevalence of nutrition insecurity ranged from 18-44%. Food insecurity and nutrition insecurity only partly overlapped, with discordance in about 20% of all respondents. Common barriers to nutrition security were cost, cooking knowledge, and uncertainty around food assistance qualifications. Across the studies, presence of food insecurity and nutrition insecurity each independently predicted significantly higher risk of diabetes, obesity, heart disease, hypertension, and high cholesterol.

**Conclusions:** The 2-item NSS provides new information independent of FI, associates with key socio-demographics and disease outcomes, and provides insight on barriers to inform interventions in clinical and public health settings.

2

**Universal Free School Meals via the Community Eligibility Provision and Blood Pressure Outcomes in Children and Adolescents**

**Presenter:** Anna Localio

**University:** University of Washington

**Background:** The Community Eligibility Provision is a federal universal free school meals policy for schools in low-income areas. The purpose of this research is to assess the association of this policy with pediatric blood pressure outcomes.

**Methods:** Patients ages 4-18 who attended community health centers in the OCHIN healthcare network were matched to schools based on address. Using a balanced sample of schools, we assessed change in blood pressure outcomes among patients matched to schools that participated in the policy to those matched to eligible, nonparticipating schools. The analysis used doubly robust difference-in-differences estimation for staggered policy adoption, conditional on covariates and weighted by number of patients per school.

**Results:** The sample included 155,778 patients matched to 1,052 schools eligible for the Community Eligibility Provision between 2013-14 and 2018-19. Patients were on average 10 years old and 50% were male, 48% Hispanic, 22% White, and 16% Black. Mean number of patients per school was 47. Baseline prevalence of a high blood pressure measurement was 25%. Schools were located in 12 US states, but the majority (64%) were in California or Oregon. Relative to schools that were eligible for but did not participate in the Community Eligibility Provision, participating schools were associated with a 2.73 percentage point net reduction in prevalence of a high blood pressure measurement (95% CI: -4.76, -0.70,  $p=0.01$ ), corresponding to an 11% net reduction given baseline prevalence. School participation in the policy was also negatively associated with prevalence of a hypertensive blood pressure measurement and mean diastolic blood pressure percentile.

**Conclusions:** Compared to eligible nonparticipating schools, participation in the Community Eligibility Provision was associated with a net reduction in high blood pressure among patients who visited community health centers across the US.

3

**Implementation of a social needs screener and uptake patterns of a produce prescription program in an urban pediatric primary care clinic**

**Presenter:** Claire Branley

**University:** University of Massachusetts

**Objective:** Our aim was to compare responses to a social needs screener that was implemented in an urban pediatric primary care clinic with patterns of uptake in a produce prescription program. Specifically, we wanted to determine whether screening positive for needing help with food increases the odds of parental enrollment in this program.

**Background:** Social needs screening and referral systems have been implemented in primary care settings nationally, particularly to address food insecurity among children. However, it is unknown whether responses from screeners correlates with parents' acceptance of assistance. We evaluated screening data from an urban pediatric clinic and the uptake of Fresh Connect (FC), which provides families \$80 per month for fresh fruits and vegetables for 6 months.

**Methods:** The WE CARE social needs screening system, a self-report instrument for 8 social needs, was implemented in a pediatric clinic in Worcester, MA beginning in October 2021. Families who completed a screener (n=1049) and spoke English, Spanish, or Portuguese were followed-up via telephone between Aug 2022-Sep 2023 and offered FC regardless of screener results. Child race/ethnicity, caregiver's preferred language, and insurance were extracted from their medical record. Cases with missing data (n=24) were removed for a final sample of n=1,025. A multivariable adjusted logistic regression model was utilized to describe the association between WE CARE responses and likelihood of enrolling in FC.

**Results:** Overall, 38% of the children sample was of NH White race/ethnicity, 97% of caregivers spoke English, and the majority (52%) were on public insurance. Among caregivers who completed the screener, 78% did not request help with food, while 6% said yes and 2% said "maybe later"; 13% left the question blank. Overall, 20% of caregivers enrolled in FC (n=202). Indicating "yes" to needing help with food did not increase odds of FC enrollment after controlling for race/ethnicity, insurance, and primary language. Choosing "maybe later" was associated with 3.2 higher odds of FC enrollment (95% CI 1.2-8.3).

**Lessons learned:** Caregivers were accepting of pediatric produce prescription regardless of indicated food need. Wanting help with food "later" on the screener was more predictive of enrollment. Future primary care-based interventions should evaluate the role of social needs screeners in the referral pathway and consider, when possible, offering resources that address the broad scope of food needs to all families regardless of screening responses.

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Evaluating School Meal Participation Post-Policy Change in Arizona

**Presenter:** Shreya Raval  
**University:** Arizona State University

**Objective:** The objective of this study is to examine the effects of a state level policy that eliminated the reduced-price co-pay for families in Arizona as of January 2023 on school meal participation.

**Background:** Every school day, more than 600,000 students in Arizona receive nutritious meals from federally supported school meal programs, including the National School Lunch Program (NSLP) and the School Breakfast Program (SBP), which serve around 30 million students nationwide. These programs provide free, reduced-price, and full-price meals using a tiered approach based on family income. School meals offer numerous health benefits for children, including better dietary intake and weight outcomes. These meals are generally more nutrient-dense than homemade packed lunches, and the nutritional quality of food consumed at schools surpasses that of food obtained from other sources like grocery stores and restaurants. To address food insecurity during the COVID-19 pandemic, the USDA supported schools to serve free meals to every student through September 2022, when the policy ended and the tiered system returned. However, the Arizona Department of Education (ADE) launched a temporary policy to provide free meals to students eligible for reduced-price meal benefits under the NSLP and SBP using federal COVID relief dollars. This program started on January 1, 2023, and ran through June 30, 2024.

**Methods:** This study will examine the effects of Arizona's policy eliminating the reduced-price co-pay on school breakfast and lunch participation using data from the ADE. We will compare participation data from July 2022 through December 2022, the period when the USDA COVID-19 waivers expired, and schools were again operating on the 3-tiered system, with participation data from July 2023 to December 2023 when Arizona's policy was in place.

**Findings/Results:** We hypothesize that participation rates will increase following the policy implementation compared to before the policy change. The analysis will provide insights into the overall impact of the state level policy on changes in participation across all eligibility categories.

**Implications:** This study will inform policymakers about the effectiveness of removing the reduced-price co-pay on increasing school meal participation. For the first time in Arizona's history, \$3.8 million from the state's general funds has been allocated to provide free meals to students in public and charter schools for the upcoming school year. Additionally, the analysis will help estimate the program's cost to the state to determine if the recently allocated funds will be sufficient.

## Student Posters

*The posters are available on the NOPREN website:*

<https://nopren.ucsf.edu/her-nopren-summer-speaker-series-students-2024>

1

**Mediation of the association between sociodemographic characteristics and psychosocial well-being by food insecurity among Mexican and U.S. Mexican American adults in 2021**

**Presenter:** Marian Winters

**University:** University of South Carolina

**Background and Objective:** Food insecurity (FI) is a stressor that can cause feelings of isolation, negative social interactions, emotional turmoil, and undernutrition, affecting well-being. FI disproportionately affects households in Mexico and Hispanic households, especially Mexican immigrant households in the U.S. Age, sex, household composition, income, educational attainment, acculturation, and Indigenous identity are associated with FI, suggesting that associations between sociodemographic characteristics and psychosocial well-being may be partially due to FI. This study aimed to determine whether mediation of these relationships by FI differed between Mexican (MEX) and U.S. Mexican American (MA) adults.

**Methods:** The sample included 5,958 MEX and 3,566 MA adults  $\geq 18$  years old who participated in the 2021 International Food Policy Study. Structural equation modeling with full information maximum likelihood was used in Stata (v.15.1) to estimate FI mediation. The percentage of mediation was calculated by dividing the indirect path coefficient by the total (i.e., direct path coefficient + indirect path coefficient). Sociodemographic characteristics, including age, sex, number of children in the home, income adequacy, educational attainment, indigenous identity (MEX only), and language preferences (MA only), were included in one model. Indicators of well-being were stress and mental health. FI was assessed using the Household Food Security Survey Module, scored 0 (no FI) to 10. Analyses were stratified by country, with sampling weights applied.

**Results:** The average age was 38.7 years (50% female) for MEXs and 36.8 years (55% female) for MAs. The mean FI score was similar between strata (3.04 MEX, 3.31 MA). FI was positively associated with stress for MEXs (0.039,  $p < 0.001$ ) and MAs (0.065,  $p < 0.001$ ). FI was negatively associated with mental health for MEXs (-0.022,  $p = 0.001$ ) and unassociated with mental health for MAs (-0.004,  $p = 0.595$ ); consequently, FI was not a mediator for MAs when considering mental health. FI mediated associations between sociodemographic characteristics and stress in both strata and mental health for MEXs. FI mediation between age and stress was greater for MAs (16.6%) than MEXs (4.8% MEX). FI mediated the association between children in the home and stress for MEXs (34.3%) and MAs (41.2%). The extent of mediation was similar between income and stress for MEXs (25.0%) and MAs (31.5%).

**Conclusions:** FI partially explained the association between sociodemographic characteristics and well-being, underscoring that actions to address FI may improve the well-being of MEXs and MAs.

2

**New and recurring food insecurity during and after the COVID-19 pandemic in a nationally representative sample**

**Presenter:** Elise Sheinberg

**University:** Harvard University

**Background and Objectives:** In 2019, 10.5% of United States (US) households were food insecure, 10.2% of US households were food insecure in 2021, and 12.8% of US households were food insecure in 2022. However, little is known about the longitudinal trajectory about households who experienced food insecurity before, during and after the COVID-19 pandemic. The objective of this study is to understand households' longitudinal food insecurity trajectory from 2019-2023. The findings from this study contribute to the policy evaluation of COVID-19 related federal nutrition program waivers and program changes and can inform future policy to reduce food security.

**Methods:** We used the 2019, 2021 and 2023 waves of the Panel Survey of Income Dynamics (PSID) to create a balanced panel of 21,653 households. PSID is a nationally representative longitudinal survey that began in 1968. Food security was measured using the United States Department of Agriculture 18-item Household Food Security Survey Module. Food security status was examined as four categorical levels (full, marginal, low and very low food security) and through a binary variable of food secure or food insecure. Food security trajectory was created by combining the binary food security status in 2019, 2021 and 2023. There were eight possible food security trajectory patterns. We evaluated differences in food security trajectory pattern by sex, age, race and ethnicity, education status, and employment status of the PSID reference person and by total family income, region of residence and SNAP participation of the household. We examined differences in food security score by subtracting the four categorical levels between 2019-2021, 2021-2023 and 2019-2023.

**Results:** The prevalence of marginal, low or very low food insecurity in our study changed from 19.8% in 2019 to 18.1% in 2021 to 26.3% in 2023. From 2019 to 2023, 9.3% of households in the study experienced food insecurity during all three waves, 10.6% experienced food insecurity in two waves, and 15.2% experienced food insecurity in one wave. Households who were food insecure at all time points had a lower total family income, were more likely to be enrolled in SNAP at all time points, were more likely to be non-Hispanic Black and Hispanic, had lower educational attainment, were more likely to live in the South, and were more likely to be out of the labor force or unemployed than the full sample. Households were more likely to be food insecure in 2023 than any other year. Among households that were food insecure in at least one study wave, 49.1% of their food security status worsened from 2019 to 2023, 25.5% had no change in food security status, and 26.4% had improved food security status.

**Conclusions:** Household level food insecurity worsened in 2023 from 2019 and 2021 levels. Historically marginalized sociodemographic groups were more likely to experience food insecurity at all time points. These findings are among the first longitudinal study on food security as an outcome following the COVID-19 pandemic and findings align with cross-sectional findings that the termination of SNAP waivers exacerbated food insecurity.

3

**From Awareness to Access: Enhancing SNAP Participation Among Middle Eastern and North African Immigrants in North Carolina**

**Presenter:** Salma Hakam

**University:** The University of North Carolina and Chapel Hill

**Objectives:** As the daughter of Middle Eastern immigrants currently employed at the Carolina Hunger Initiative as a Nutrition Assistant and at the North Carolina Department of Health and Human Services as a SNAP Outreach and Education Assistant Program Coordinator, I aimed to create a comprehensive, accessible, informational resource for members of my community, largely comprised of refugees, asylees, and immigrants, to learn about the federal food assistance program, eligibility requirements, and local cultural stores that accept EBT.

**Background:** The federally funded Supplemental Nutrition Assistance Program (SNAP) is a household-level, food assistance program aimed at mitigating food insecurity and healthcare costs for eligible individuals and families of low socioeconomic status by providing benefits to utilize when purchasing nutritious foods. Despite the program's intention, however, a disproportionate amount of eligible immigrants and their families remain unbeknownst of their eligibility status, program requirements, and potential benefits. Although research and programming has been done into certain migrant communities, the Middle Eastern/North African (MENA) non-citizen populations are consistently one of the most marginalized by federal and health practices. The lack of racial/ethnic options that accurately identify MENA prevents equitable resource allocation to these communities, including SNAP education and outreach. Thus, the development of a palatable yet comprehensive, culturally attuned SNAP education and outreach resource for the local North Carolina MENA community became one of the first informational initiatives targeted at this population. The resource includes but is not limited to, a list of local, cultural stores that accept EBT, a list of grocery store chains that accept EBT and sell halal meat/food, an explanation of SNAP eligibility with an easy-to-follow flow chart, and process assistance contact numbers and office locations in the area. The information is available in English, Arabic, Dari, Pashto, Kurdish, Turkish, Farsi, and Spanish so as to circumvent language barriers if present.

**Implications:** Distribution within the local MENA community is the next step. This initiative is projected to continue development. Resource lists can be added for regions other than the Piedmont, so as to eventually have the capacity to serve the broader state community. A 'cookbook' section for popular MENA dishes edited to include more nutritious ingredient substitutes, and EBT-accepting purchase locations for uncommon ingredients would be a welcome addition.

**4 Development of a conceptually equivalent Vietnamese-language translation of the US Household Food Security Survey Module for use with Vietnamese people living in the US.**

**Presenter:** Man Viet Nguyen  
**University:** Boston University

**Objective:** Food insecurity (FI) refers to the limited or uncertain access to nutritionally adequate and safe foods obtained in socially acceptable ways. In the United States (US), FI remains a prevalent issue and particularly affects marginalized communities. Despite the important role of surveillance in addressing FI, national data tends to omit Asian American subgroups by not providing various language options in their surveys. Vietnamese Americans are one of the most likely groups affected by this pattern which excludes their needs from national policies and targeted program implementation. Thus, we aimed to develop a conceptually equivalent Vietnamese-language translation of the Household Food Security Survey Module (HFSSM) for use with Vietnamese immigrants living in the US.

**Methods:** With extensive training from food security survey experts, two bicultural and bilingual (Vietnamese/English) research students independently produced two forward-translations of the 18-item HFSSM and the food sufficiency question. Using a 3-round Delphi method, 3 bicultural and bilingual (Vietnamese/English) advocates - whose professions center on the Vietnamese language - provided feedback and suggestions on the translations. Decided a priori, the best translation was chosen when all 3 advocates responded “agree” or “strongly agree” in a 5-point Likert scale to a translation option without giving any additional concerning critique. A steering committee made of the forward-translators, a food security survey expert, and a Vietnamese language expert used advocates’ feedback and gradings to select the translation options to be sent for back translation. Two independent back translators, not aware of food security, used the same 5-point Likert scale to grade the questions. Similarly, the steering committee narrowed the questions to be sent to the last step of the process, which included focus groups with the Vietnamese community to reach consensus on the final translation.

**Results:** The Delphi method helped reach consensus for 15 out of 18 HFSSM items. We encountered significant issues when translating words like “balanced meals,” “ever skip meals,” “ever hungry,” “not eat for a whole day,” “adults,” and “children.”

**Conclusions:** A Vietnamese HFFSM was successfully validated and culturally adapted for use in the US. Forward and back translations using the Delphi method and Likert scale, a steering committee, and focus groups proved to be powerful methodologies to reach the best translation. Difficulties in translating words that are not readily available in Vietnamese proved to be a challenge resolved with cultural adaptation. While an inaccurate translation may affect all groups, it can particularly affect those with high percentage of Non-English Language Preference. With the HFSSM availability in Vietnamese, we hope their needs become part of national policies and targeted program implementation.



5

**Qualitative analysis of fieldnote and interview data for planning a food bank-based breast cancer screening intervention**

**Presenter:** Charlotte Kerber

**University:** University of California, Davis

**Background and Objective:** Among individuals and communities with low-income, the experience of food insecurity is associated with greater delays in recommended mammography screening and late-stage breast cancer at diagnosis. Community-based interventions that address barriers to breast cancer screening in diverse communities of women with food insecurity can increase screening uptake, ultimately improving cancer health equity. In partnership with Sacramento Food Bank and Family Services (SFBFS), the largest non-profit provider of social services in Sacramento County, this study identified barriers and facilitators to implementing a breast cancer screening intervention in a food distribution setting, assessing the preliminary acceptability and logistical feasibility of the proposed intervention.

**Methods:** Qualitative data about food bank distribution events and the clients served was collected over 24 weeks using participant observation with semi-structured fieldnotes and interviews, then analyzed via directed content analysis guided by the well-defined domains and determinants in the Consolidated Framework for Implementation Research (CFIR) and coded using Dedoose software. Fieldnotes were completed for 12 community food distribution events, and 20 stakeholder interviews were conducted with purposefully sampled food bank staff (N=10) and female clients (N=10) who regularly attend events.

**Results:** The results of this qualitative analysis identified barriers and facilitators to implementation in all CFIR domains, describing current workflows for food distribution events and existing health education efforts, capacity, client engagement logistics and modes of delivery, and resources available or needed to support implementation. Prominent CFIR determinants included characteristics of individuals, specifically the innovation recipients' capability and motivation to receive a breast cancer screening intervention in this context. Participants often pointed out their awareness of important preventative behaviors such as nutrition while also acknowledging barriers such as time constraints, accessibility of breast cancer screening services, and culturally-specific health beliefs and practices. Determinants in the outer setting, inner setting, innovation characteristics, and process that relate to the overall theme of sustainability were identified as potential barriers including financing, the availability of resources, internal and external pressure to change, and the process of engaging with clients while they are at the food distribution event. Facilitators included buy-in from SFBFS leadership and staff, and the benefit of collaborating with reputable local partners.

**Conclusions:** Intervention format should include tailored messaging that is culturally appropriate and empowers individuals to obtain recommended screening. Content of the intervention should provide interactive assistance that facilitates local support for screening eligibility and services. Overall, there was consensus that promoting breast cancer screening in the food distribution setting was beneficial and welcomed by all stakeholders.