P22-037-23   Improving the Diet Quality of WIC-Participating Women Using Digital Food Environments: Study Protocol

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Objectives: The primary aim is to assess the feasibility and acceptability of an online grocery shopping cart prefilled with items prescribed by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (intervention group, IG) compared to individually selecting items (control group, CG) to improve WIC benefit redemption and diet quality (DQ) of grocery purchases using a pilot randomized-controlled mixed methods trial. The secondary aim is to explore barriers, facilitators, and attitudes driving online grocery shopping decision-making.

Methods: We will recruit 25 Rhode Island WIC participants who are > 18 years and primary food shoppers, speak English or Spanish, have internet, and no special dietary needs. We will use Gorilla Shop Builder to design a simulated store. At baseline, participants will complete a sociodemographic questionnaire and a simulated shopping episode (SSE) to assess grocery purchase DQ. Participants will be asked to shop as if using their monthly food benefits and to buy WIC and non-WIC items to last 10 days in their household. After a week, participants will be randomized to the IG or CG and complete a second SSE. The IG will have a modifiable cart pre-filled with WIC items providing 100% of the benefits proposed on the 2022 food package revision, except for fruits/vegetables and milk, and will be personalized based on the items selected during the first SSE. The CG will select their items individually. Both groups will have a list of their assigned benefits, and WIC items will have a WIC label. We will conduct qualitative interviews after the second SSE to better understand their food shopping decisions online vs. in-person, and perceptions, barriers, and facilitators of online food shopping. Feasibility and acceptability will be measured using validated scales. Grocery purchase DQ and WIC benefit redemption will be evaluated with Grocery Purchase Quality Index 2016 scores and % of maximum allotted amounts for each food group, respectively.

Results: N/A.

Conclusions: By testing the feasibility and acceptability of modifiable a WIC pre-filled cart in a simulated environment, this study can inform a full-scale efficacy trial to improve benefit redemption and grocery purchases DQ in real-life settings during the implementation of WIC online food shopping.

Funding Sources: Supported by Dr. Alison Tovar's discretionary research funds.

P22-038-23   A Pilot Study Protocol: A Nutritional Intervention During Pregnancy To Improve Pregnancy Outcomes and Telomere Length

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Objectives: Adequate pregnancy nutrition can impact maternal-child health, being a change factor in epigenetic expression and telomere length. Newborn telomere length can predict later length and be a marker for biological aging and development of non-communicable diseases. A nutritional education program was designed by focusing on adequate intake of macro and micronutrients, decreased consumption of simple sugars and fats, and increased consumption of fruits and vegetables. The objectives include improvingconsumption of complex carbohydrates, legumes, whole grains, fiber, and energy distribution during gestation by adding 300 Kcal per day, and achieving micronutrient requirements through the diet with emphasis on folic acid, calcium, and iron. We hypothesize pregnancy intake will associate with newborn telomere length.

Methods: A pilot quasi-experimental study will be conducted among pregnant women. The intervention protocol consists of a personal face-to-face counseling nutritional session (each 6 ± 2 weeks) and support material. Key messages on nutrition education will consist inproper gestational weight gain, nutrient requirements changes on each trimester, and promotion of breastfeeding and exercise. Baseline data will be collected using a semi-structured questionnaire for sociodemographics and health. Blood levels of hemoglobin, albumin and glucose as biomarkers, and anthropometric indicators (middle-arm, wrist circumference, and tricipital skin-fold) will be used. A 165-items Frequency Food Consumption Questionary, Healthy Diet Index validated questionary, and two non-consecutive 24-hour recalls will be applied to estimate dietary intake and assess adherence. Data will be collected at 26 ± 2 weeks of gestational age (WGA) and at 36 ± 2 WGA. The nutritional status of the newborn will be determined by birth weight and length reported by the mother and measured in the first week, where an additional blood sample will be also collected for DNA extraction and telomere length measurement by quantitative PCR.

Results: N/A.

Conclusions: Results from this research will help design a nutritional education strategy during pregnancy to improve dietary intake, biomarkers, and newborn telomere length.

Funding Sources: N/A.

P22-039-23   Investigating Adolescent Food Choice Patterns in School: A Study Protocol

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Objectives: Adolescent dietary intake in the United Kingdom falls short of guidance, with consumption of sugar-sweetened

beverages, free sugars, saturated fatty acids exceeding government recommendations, and intake of fibre, fruit, and vegetables below guidance. Adolescents spend a significant part of the day at school and thus, schools are an important area to try to address diet quality. The use of food choice data (automatically collected with some school catering systems) to examine adolescents' food choice presents a unique opportunity to track adolescent dietary patterns. This is important given that dietary patterns in childhood may track into adulthood. The objective of this study is to explore automatically collected canteen purchase data from a secondary school in England and determine the food choice patterns of adolescents.

Methods: Food choice data will be examined from a secondary school in England, collected over one academic year. The data will be cleaned and prepared before merging with demographic information for the adolescents. The data will comprise of food and drink items on offer in the school canteen such as pizzas, sandwiches, bottled water and juices. All items will be classified into broad and narrow categories based on food type, descriptions, and format. Frequencies of food and beverage selections will be examined, and data will be aggregated at the student level. Food choice patterns will then be determined through cluster analysis. This will give mutually exclusive groups of students with distinct food choice patterns. Statistical relationships between cluster membership and students' demographic characteristics (age, sex) will be explored.

Results: Ethical approval has been granted by the University of Leeds Faculty Research Ethics Committee (AREA 21–169), and results will relate to the analysis of the food choice data.

Conclusions: Findings from this analysis will help provide further understanding of adolescent food choice in schools. This will add to current evidence and will help inform the design and development of interventions aimed at improving adolescent food choice.

Funding Sources: This research is funded as part of a PhD project at the University of Leeds.

P22-040-23 Effects of Episodic Food Insecurity on Psychological and Physiological RESPONSES in African American Women with Obesity: Protocol for a Longitudinal, Observational Study

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Objectives: Food insecurity is a risk factor for multiple chronic diseases, including obesity. Importantly, both food insecurity and obesity are more prevalent in African American women compared to other groups. Further, food insecurity is considered a 'cyclic phenomenon' with episodes of food adequacy (i.e., enough food to eat) and food shortage (i.e., not enough food to eat). The objective of this study is to longitudinally investigate the episodic nature of food insecurity as a stressor via responses in body weight and psychological and physiological parameters in two cohorts of African American women with obesity.

Methods: We are currently enrolling 30 food insecure and 30 food secure, assessed using a modified version of the 6-Item Food Security Scale, African American women (age 18–65 y) with obesity (BMI 30–50 kg/m^2) and reported income ≤250% of the federal poverty level to measure 1) daily body weight remotely over 22 weeks and 2) psychological and physiological parameters via clinic assessments at the beginning and end of 22 weeks. Further, we are assessing episodes of food insecurity, stress, hedonic eating, and appetite on a weekly basis. We hypothesize that food insecure African American women with obesity will demonstrate increased body weight and changes in psychological and physiological endpoints, whereas food secure African American women with obesity will not. We are also examining associations between changes in psychological and physiological parameters and changes in body weight.

Results: We are utilizing a range of psychological questionnaires to assess stress; executive function, decision-making, and motivation; and affect and non-homeostatic eating. We are also collecting a range of physiological measurements, including cortisol, DHEA-S, c-reactive protein, thyroid hormones, glucose, HbA1c, insulin, and allostatic load.

Conclusions: We believe this is the first study to examine changes in body weight and psychological and physiological factors in African American women with obesity during episodes of food insecurity.

Funding Sources: National Institutes of Health, including National Institute on Minority Health and Health Disparities, National Institute of General Medical Sciences, and National Institute of Diabetes and Digestive and Kidney Diseases.

P22-041-23 A Study Protocol: Targeted Metabolite Profiling and the Effect of Maternal Lean Fish Intake During Pregnancy and Infancy

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Objectives: Maternal diet and metabolic health during pregnancy are associated not only with the mother's health and pregnancy outcomes but also with the future health outcomes of the infant. Simultaneously there is an increase in global health challenges posed by malnutrition and obesity related chronic inflammation. Lean fish is an important source of several nutrients that are essential for foetal and infant health, and the Norwegian Scientific Committee for Food and Environment has concluded that regular fish intake is associated with reduced risk of non-communicable diseases in the general population. However, the underlying mechanisms linking lean fish intake to health, remain poorly understood. In addition, there is growing concern about contaminants present in fish. This study will investigate the effect of lean fish intake during pregnancy on plasma biomarkers reflecting nutritional status, metabolic risk, oxidative stress and inflammation in mothers and their infants.