POSTER SESSION: SCIENCE/EDUCATION/MANAGEMENT/FOODSERVICE/CULINARY/RESEARCH

Food and Beverage Consumption Patterns and S. mutans in Severe Early Childhood Caries

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Learning Outcome: The participant will be able to prioritize the dietary factors most highly related to the development of Severe Early Childhood Caries.

Severe early childhood caries (S-ECC), a debilitating condition in primary teeth, is caused by acids from oral bacterial metabolism of dietary carbohydrates. This study determined associations between S-ECC and individual foods or beverages, diet composites reflecting cariogenic potential, and consumption frequencies in 72 S-ECC and 38 caries-free children 2-6 years of age. A validated beverage survey capturing with and between meal consumption, and a 24 hour diet recall focusing upon the number and timing of eating occasions, were administered to caregivers of children from Boston dental clinics. Non-nutritionist investigators were trained in non-directive interviewing approaches to elicit types of foods/beverages consumed and the timing of food/beverage consumption rather than intake quantities. Caries-associated species were assayed from plaque samples by PCR. Foods were categorized as non-cariogenic, low cariogenic, liquid cariogenic and solid cariogenic. A mean cariogenicity score was also determined for each child, as was the number of distinct meal or snack times. S-ECC children consumed more total food/ beverage items daily (p=0.05), ate/drank more frequently (p= 0.005), and consumed more cariogenic foods more often (p=0.0001) than caries-free children. S-ECC children also had more between meal beverages (p=0.007), and solid retentive foods (p=0.0005). Mean food cariogenicity was also higher in S-ECC children. There was no significant difference between S-ECC and caries-free children in consumption of caries protective foods, non-cariogenic foods, or foods low in cariogenic potential. Detection of S. mutans was associated with food cariogenicity. These findings should help prioritize appropriate preventive educational strategies to reduce the risk of developing S-ECC.

Design and Use of Pilot Food Frequency Questionnaires to Maintain Ongoing Food Frequency Questionnaires with Changing Food and Nutrient Trends

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Learning Outcome: To demonstrate the design of a pilot FFQ and the evaluation of its results to determine the best food profiles to represent each FFQ item for ongoing cohort studies based on current food and nutrient specific trends.

Objective: To determine the best food profiles to represent Food Frequency Questionnaire (FFQ) questions for specific cohorts based on current food and nutrient trends, using a pilot FFQ.

Background: The Nurses' Health Study (NHS), the Health Professionals Follow-up Study (HPFS) and the Nurses' Health Study II (NHS2) are long running prospective cohort studies using the Harvard FFQ. Dietary data is collected every 4 years. The FFQ's and associated analysis programs are routinely updated to capture significant differences in food and nutrient trends, without major changes to the FFQ format.

Design: First, multiple types of market research were conducted. Changes in cohort related trends were reviewed and relevant items were piloted. Different forms or types of related products were added to the pilot to help determine actual consumption of these items. For example, one FFQ item is "Pancakes or waffles", based on the "whole grain" added trend these items were piloted resulting in the addition of whole wheat pancakes to the profile. The pilot FFQ was sent to a random national sample of 800 NHS, HPFS and NHS2 participants. Statistical analysis was performed on each set of questions per cohort and as one merged group to generate separate and total weighted averages.

Application: Results from each pilot FFQ were used to create year specific food profiles for some FFQ items and to facilitate the development of future FFQ's. The most recent pilot FFQ findings resulted in significant changes to approximately 20% of the food profiles used in the nutrient analysis programs.

Development of an Evaluation Tool for Taste Testing Activities in Low-Income Youth

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Learning Outcome: To implement an evaluation method among low-income youth in a classroom setting.

Evaluating outcomes among youth participating in Supplemental Nutrition Assistance Program nutrition education (SNAP-Ed) can be very challenging. Food tasting activities are commonly included in SNAP-Ed classes but little is known about their effect on willingness to try new foods among youth. The purpose of this study was to develop a simple, teacher-administered tool to measure student response to SNAP-Ed food tasting activities in a classroom or afterschool setting. After presenting a food for tasting, the teacher asked the students and recorded how many: 1) had eaten the food before; 2) were willing to try it again; and 3) were willing to ask for the food at home. The first phase involved cognitively testing the tool among 9 classroom teachers and modifying the wording. In the second phase, 39 teachers administered tool to 454 students (K-9th grades) after a food tasting activity. Among these low-income students, 45% had tried the food before; 88% reported being willing to try it again; and 70% reported being willing to ask for the food at home. The tool is easy to administer and can provide useful information for designing nutrition activities to expose low-income youth to new foods and increase their preferences for fruit and vegetables. The information can also be used to inform parents about which new foods their children are willing to try.

Development of a Pediatric Cariogenicity Index

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Learning Outcome: After reading the abstract presentation, participants will have a better understanding of how our cariogenicity index was developed and be able to utilize it to quantitatively assess cariogenic potential of foods and beverages.

Early childhood caries (ECC) is a significant, yet preventable health problem in American children, particularly among those from low-income families of certain racial and ethnic minorities. A multifactorial disease with genetic and environmental determinants, dietary choices and eating patterns are known significant contributors. Although fermentable carbohydrates are essential to caries development, no tool exists that quantifies cariogenic potential of foods and beverages. Using the Palmer Classification of Cariogenicity as a guide along with research on the cariogenic potential of specific nutrients and foods, we established cariogenicity scores for foods and beverages. Cariostatic foods, such as nuts, cheeses, and xylitol-containing foods were assigned a score of zero. Foods were then dichotomously categorized according to presence/absence of carbohydrate, starch, and sugar (natural or added), pH level, and oral dissolution rate. Foods with the highest cariogenic potential were assigned the highest score. For beverages, a similar rubric was developed. Water was assigned a score of zero, and milk was separated out given its cariostatic potential. Other beverages were categorized according to the presence/absence of carbohydrate, added sugars, and acidity. Acidic, sugar-sweetened beverages were assigned the highest cariogenic potential score. This cariogenicity index is novel in that it allows for quantitative assessment of the cariogenic potential of foods and beverages. The index can be used in research settings to determine cariogenic potential scores for individuals based on reported dietary intake and in clinical and public health settings to make specific dietary recommendations for treatment and prevention of ECC.