

**Acceptability and Feasibility of Best Practice School Lunches for Elementary Schoolchildren in a Serve Setting: A randomized crossover trial**

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**Learning Outcome:** Upon completion, participants will be able to describe the possible impact on acceptability and feasibility of further improving the dietary quality of school lunches for elementary schoolchildren.

**Objective:** Perceptions of low acceptability and feasibility of higher dietary quality (DQ) school lunches may pose significant barriers to further improving school lunch DQ. The purpose of this study was to determine acceptability and feasibility of best practice school lunches (BPSL), optimizing DQ, as compared with typical school lunches (TSL), meeting minimum National School Lunch Program standards.

**Research Methodology:** Forty elementary schoolchildren (grades K–5) were recruited for a randomized crossover trial. Participants attended three meal conditions (MC) choosing one of two meal types within each condition – 1) BPSL/BPSL, 2) TSL/TSL, 3) BPSL/TSL. Acceptability was assessed using taste test surveys, weighted plate waste assessment, and hunger scales. Feasibility included meal cost, time, and skill and equipment requirements.

**Major Findings:** For acceptability, there were no significant differences in total taste test score, total plate waste, or change in hunger ( $p > 0.017$ ) before or after adjusting for covariates, when comparing overall BPSL and TSL or when comparing BPSL served alone and BPSL served with TSL. There was a significant difference in selection of meal type in MC3, favoring the TSL (TSL=83.3%, BPSL=16.7%,  $p=0.001$ ). For feasibility, meal cost ( $p=0.783$ ) and skill and equipment requirements were not significantly different between meal types. BPSL required significantly longer preparation time than TSL (TSL=60±25min, BPSL=267±101min,  $p=0.026$ ).

**Conclusions:** Results indicate few differences in acceptability and feasibility between BPSL and TSL. BPSL took significantly greater preparation time, posing a potential barrier to higher DQ school lunch implementation. This study could inform decision and policy-makers seeking to improve school lunch DQ.

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**Breastfeeding and Growth in Infants with Congenital Heart Disease**

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**Learning Outcome:** Upon completion, participant will be able to understand the impact of feeding type on growth outcomes in infants with Congenital Heart Disease.

**Background:** Infants with Congenital Heart Disease (CHD) often experience growth failure due to feeding difficulties and insufficient energy intake. Historically, infants with CHD had been encouraged to bottle feed as breastfeeding was considered physiologically laborious. Research has demonstrated otherwise and this, paired with the nutritional benefits of breastfeeding, led to the recommendation that infants with CHD be breastfed. Misperceptions remain among health professionals regarding breastfeeding in this population and its effect on growth. The objective of this study was to describe breastfeeding practices in infants with CHD and its impact on growth.

**Methods:** Infants (N=75) with CHD who underwent cardiac surgery were recruited from The Children's Hospital of Philadelphia. Infant feeding practices (breast milk, formula) and anthropometric data were collected during nine contact points within the first year of life. Anthropometrics were converted to Z-scores using World Health Organization growth standards. Cluster analysis of feeding type over time revealed 3 diet patterns: predominantly breast milk, mix of breast milk/infant formula, and predominantly formula. Generalized estimating equations were used to determine if growth trajectories differed based on diet patterns.

**Results:** In the first year of life, 39% of infants were 'predominantly breastfed,' 32% were fed a 'mix of breastmilk and formula,' and 29% were 'predominantly formula fed'. We found no significant group x time interactions in WAZ( $p=0.072$ ), LAZ( $p=0.256$ ), H CZ( $p=0.082$ ), and WLZ( $p=0.213$ ), indicating growth did not differ over time by diet pattern.

**Conclusions:** Breastfeeding in infants with CHD supports growth, similar to other diet patterns, and should be encouraged in this population.

**Association Between the Diversity of Fruits and Vegetables Intake and Colorectal Adenoma in Korean men**

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**Learning Outcome:** Upon completion, participant will be able to describe that a diet rich in a variety of fruits and vegetables is associated with reduced risk of colorectal adenoma in Korean men.

**Background:** Sufficient intake of fruits and vegetables, including phytochemicals and micronutrients, reduces the risk of cancer. We assessed the association between consumption of various fruits and vegetables and colorectal adenoma in Korean men.

**Methods:** This study was conducted with 1,578 participants (including 623 with confirmed incidental colorectal adenoma) who underwent a screening colonoscopy and a dietary interview during a routine health check-up at the health promotion center of Samsung Medical Center between April 2017 and November 2018. We classified fruits and vegetables into five color groups according to the colors of their edible parts (e.g., red, green, orange/yellow, black/purple, and white). We assessed the consumption frequency for each group and categorized data into quartiles. We applied logistic regression models to estimate the odds ratio (OR) and 95% confidence intervals (CI) after adjusting for confounders such as age, BMI, waist circumference, drinking, and smoking.

**Results:** Diets rich in a colorful variety of fruits and vegetables were strongly associated with a reduced risk of colorectal adenoma (OR, 0.63; 95%CI, 0.45–0.89;  $p = 0.000$ ) when compared to diets with poor intake of fruits and vegetables. In the analysis of color groups, high consumption of green colored fruits and vegetables was significantly associated with reduced risk of colorectal adenoma (OR, 0.53; 95%CI, 0.26–1.05, for the highest vs. the lowest quartile;  $p = 0.032$ ).

**Conclusion:** In Korean men, our data support the association of the diversity of fruits and vegetables with a reduced risk of colorectal adenoma.

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**Formative Evaluation of a Social Marketing Campaign in Alabama Promoting Nutrition and Physical Activity to a Limited-Resource Audience**

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**Learning Outcome:** Upon completion, participant will be able to describe steps in formative evaluation for development of social marketing materials that resonate with the target audience.

**Background:** Social marketing campaigns should include formative research to ensure messages and images resonate with the intended target audience. In 2017, Alabama Extension designed three billboards encouraging low-income residents to eat fruits and vegetables, be physically active, and drink water. The objective of this qualitative study was to obtain feedback from target audience members regarding billboard design to inform adaptations.

**Methods:** Six focus groups were conducted in rural and urban areas of the state to determine participants' reactions to billboards and attitudes about healthy eating and physical activity. Participants were recruited from Extension classes and community events by county educators. Altarum led focus groups, recorded and transcribed responses, and coded and analyzed responses for themes.

**Results:** Thematic analysis revealed themes related to participants' reactions to billboards and intentions to change health-related behaviors. The most common recommendations for improving billboards were applied to a revised billboard campaign launched in 2018. Nine changes were made to billboard designs: three messages were shortened, two background colors were adjusted, and four images were replaced. Most participants (98%) were interested in eating more fruits and vegetables, increasing physical activity (87%), and drinking more water (75%). Most participants agreed the billboards encouraged them to consider changing dietary and physical activity behaviors.

**Conclusion:** Alabama Extension used formative research to improve a statewide social marketing campaign. Social marketing campaigns developed to resonate with a target audience can play a role in contemplation of change, an important first step in the stages-of-change or transtheoretical model.

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