NP30 School Dining Redesign: Impacts on Students and Teachers in Middle and High Schools in California

Lorrene Ritchie, PhD, MS, RD, lritchie@ucanr.edu, University of California, Division of Agriculture and Natural Resources, Nutrition Policy Institute, 2115 Milvia Street, Suite 301, Berkeley, CA 94704; Annie Reed, MPP, University of California, Berkeley, School of Public Health; Kellie Ottoboni, BS; Hannah Thompson, PhD, MPH; Marissa Neelon, MS, RD, UC Cooperative Extension, Contra Costa County; Kris Madsen, MPH, MD, University of California, Berkeley, School of Public Health

Objective: The purpose of the study was to evaluate a school dining redesign in a large school district in California. Outcomes included school lunch participation, student intake of fruits and vegetables, and teacher promotion of school meals.

Description: Using a quasi-experimental controlled trial design, we present results from the first year of a 2-year implementation of a 3-pronged intervention: dining room redesign, distributed points of sale of school lunch, and staff promotion of school meals. Linear regression models were used to compare changes from 2016 to 2017 in survey responses from 7th–10th grade students and teachers from 12 middle and high schools compared to 12 control schools. Models of student survey data were adjusted for race/ethnicity, gender and grade. Changes from 2016–2017 in school lunch participation were adjusted for school enrollment, free and reduced price meal enrollment, and student race/ethnicity.

Evaluation: Surveys were collected from over 8,000 students and over 500 teachers. Half of students were Asian, 17% Latino, 10% White, 4% African-American. Significantly more students in intervention compared to control schools reported eating school breakfast and getting lunch from a mobile school cart. More intervention students indicated that they liked the fruit served with lunch, staff encouraged them to eat school lunch, and the school lunch was healthier than foods from elsewhere. Compared to teachers at control schools, teachers at intervention schools reported more often eating the school lunch, and eating from the healthy student vending machines as opposed to the traditional staff vending machines. No increases in the weekly frequency of students eating fruits and vegetables or in teachers promoting school meals to students were detected. Trends in school lunch participation appear promising.

Conclusions and Implications: Preliminary outcome data suggest that a school dining redesign may be effective in improving student perceptions of school meals and participation in school lunch. Future analyses will include 2-year results and assessment of school meal waste.

Funding: 2015-68001-23236.

NP31 Starting Early/Empezando Temprano: Randomized Control Trial to Test the Effectiveness of a Child Obesity Prevention Program

Mary Jo Messito, MD, mary.messito@nyumc.org, NYU School of Medicine Bellevue Hospital, 462 First Avenue, New York, NY 10016; Alan Mendelsohn; Roberta Scheinmann, MS; Rachel Gross, MS, MD

Objective: To improve maternal infant feeding and activity practices and reduce child obesity with the Starting Early Program (StEP): a primary care-based obesity prevention intervention beginning in pregnancy for low-income Hispanic mother-infant dyads.

Description: Conduct a randomized control trial of the StEP intervention. Women enrolled in the third trimester of pregnancy at an urban public hospital clinic, randomized to StEP intervention vs. standard primary care. Intervention included: individual nutrition counseling in prenatal/peri-partum periods, nutrition and parenting support groups at every well child visit with 2 individual and 13 group intervention sessions scheduled prior to child age 3 years. Feeding styles, diet and lifestyle patterns, psychosocial stressors, and demographic information collected at baseline in pregnancy and infant age 3, 10, 19, months, 2 and 3 years, with measured length/height and weight. Multilevel modeling used to assess intervention impact on infant weight for length z-scores (WFLz). T tests and chi square used to assess impact on nutrition knowledge and practices. Logistic regression used to assess intervention dose on risk of obesity ($\text{BMI} \geq 95\text{th}\%$ for age and sex) at age 3.

Evaluation: Baseline prenatal assessments ($n = 566$) found high rates of maternal stress, obesity and unhealthy dietary practices. Five hundred and thirty three pregnant women randomized to StEP vs. standard care. No group differences in baseline mother/infant characteristics. Mean sessions attended by 3 years: 8.5 (range 1–15). At infant age 3 months: higher nutrition knowledge, higher rates of exclusive breastfeeding, tummy time and less early introduction of complimentary foods for intervention group. At 10 months, more exclusive breastfeeding, more responsive feeding styles and less introduction of juice. At age 2, more family meals and less restaurant food. Complete weight data available for infants through age 18 months ($n = 433$). Intervention group infants had lower mean WFLz between ages 12–18 months ($-.21$ (.10), $p = .046$). At 36 months, infants attending >10 sessions were less likely to have obesity, $p = .039$.

Conclusions and Implications: Interventions like StEP have the potential to improve maternal infant feeding and activity practices and reduce childhood obesity.

Funding: 2011-68001-30207.

NP32 Summer Harvest Adventure: A Garden-Based Obesity Prevention Program for Children Residing in Low-Resource Communities

Colleen Spees, PhD, MEd, LD, RDN, FAND, spees.11@osu.edu, Ohio State University College of Medicine, 453 W 10th Avenue, 170 Atwell Hall, Columbus, OH 43210; Jenny Lobb, MPH, LD, RDN, Ohio State University Extension; James Portner, Ohio State University College of Social Work; Ashlea Braun, MS, LD, RDN, Ohio State University College of Medicine; Ingrid Adams, PhD, LD, RDN, Ohio State University Extension

Objective: The healthcare cost of every U.S. obese child over a lifetime is \$19,000 more than his/her normal-weight counterpart. These financial costs are in addition to the devastating emotional, physical, and medical consequences of obesity. Childhood obesity remains a significant health issue, especially in disparate populations and during the summer months, when millions of children lose access to school-based feeding programs and suffer gaps in meals contributing to an obesogenic environment. The objective of this study is to test the efficacy of a summer comprehensive garden-based behavioral, social, and environmental intervention for children residing in low-resource communities.

Description: We will conduct a two-arm randomized controlled trial in low-resource children and parent/adult caregiver (PAC). A total of 240 children (ages 8–11 years) will be randomized to the garden-based intervention or an enhanced control group. The intervention consists of weekly group education, produce harvesting, remote motivational interviewing, and novel e-technologies. Assessments for both groups will be collected at orientation (week 0) and immediately following the completion of the intervention (week 10) by trained personnel that are blinded to participants' treatment arm assignment. Data on program satisfaction, quality of life, and family engagement will be collected via surveys. Anthropometrics, physical activity, and skin carotenoids will be measured objectively.

Evaluation: The current project will evaluate the efficacy of a garden-based intervention aimed at promoting modifiable lifestyle behaviors (diet and physical activity) and improving child-PAC interactions to promote an anti-obesogenic environment for low-resource families during the summer months. We anticipate that compared to control, garden youths will exhibit greater improvements in fruit and vegetable intake; physical activity, quality of life, and indices of health; and child-PAC interactions.

Conclusions and Implications: The information gleaned from this project will be used to inform, educate, and empower families and to establish a best practice-based summer obesity prevention model, built upon replicable criteria that can be implemented on a national scale.

Funding: 2017-68001-26353.

NP33 Supermarket Science: Multipronged Approaches to Increasing Fresh, Frozen and Canned Fruit and Vegetable Purchases

Michele Polacsek, PhD, MHS, mpolacsek@une.edu, University of New England, 716 Stevens Avenue, Portland, ME 04103; Alyssa Moran, PhD, MPH, RDN, Harvard T.H. Chan School of Public Health; Rebecca Boulos, PhD, MPH, University of Southern Maine; Anne Thorndike, MD, Harvard Medical School; Rebecca Franckle, ScD, Harvard T.H. Chan School of Public Health; Jason Block, MPH, MD, Harvard Medical School; Eric Rimm, ScD, Harvard T.H. Chan School of Public Health

Objective: This project aims to evaluate the success of a financial incentive combined with a point of purchase educational program to promote fruit and vegetable (FV) purchases and consumption in a supermarket setting among low-income and SNAP-eligible families and children living in a rural Maine community. Lessons learned from the research will inform the development of resources, training, professional practice and improved end user experience and behavior.

Description: The project uses a double value coupon incentive program combined with Cooking Matters at the Store education to incentivize the purchase and consumption of fresh produce, and healthful frozen and canned FV (without syrup or salt), nutrient-rich and affordable year-round alternatives to fresh produce. Education and extension efforts based on our study findings will contribute to meeting USDA Childhood Obesity Prevention Challenge Area Goals. The project team partnered with a large national retail grocery chain, Cooking Matters, University of Maine Cooperative Extension, eXtension Communities of Practice, Maine SNAP-Ed, and The Food Trust.

Evaluation: We used a randomized controlled study enrolling customers from a low-income rural Maine supermarket. A double value incentive for fresh, frozen or canned FV and opportunities to participate in Cooking Matters station-style education while shopping was provided to a randomly-selected intervention arm for 6 months after three months of baseline tracking. We used sales data to compare weekly FV sales pre to post intervention, and between intervention and control arms. FV consumption among participants and an index child was measured using a self-administered Food Frequency Questionnaire. All research, education and extension activities will be monitored.

Conclusions and Implications: The research phase of our project provides important information for policymakers interested in SNAP. Financial incentives combined with supermarket education has the potential to improve FV purchases and consumption. However, participation and scalability of the educational component remain a challenge.

Funding: 2016-68001-24961.