P11 (continued)

Study Design, Setting, Participants, Intervention:

Four photovoice projects (2 urban and 2 rural) with youth ages 10-17 (n=48) were conducted in community centers and afterschool programs, examining the food environment in and around the park and recreation centers. Students took photos and later discussed photos as a group, identifying overall themes they wished to address with community key decision makers. Questionnaires were administered with the youth before and after the photovoice projects.

Outcome Measures and Analysis: Questionnaires assessed youth's perceptions of parks and community centers, food and nutrition, and factors that influence their choices. Paired t-tests were used to examine changes in youth's perceptions.

Results: After participation in the photovoice project, youth perceived greater importance of parks/community centers for health; greater desire to choose healthy food and drinks at parks/community centers; less satisfaction with the current snack choices offered; and greater recognition of the influence of ads.

Conclusions and Implications: Findings from this study demonstrate that photovoice projects examining park food environments not only help give voice to youth that may not typically be included in decision-making, but also increase perceived importance of healthy food environments in parks.

Funding: North Central Nutrition Education Center for Excellence

P12 Effect of Nutrition Interventions on BMI in Youth Attending After-School Programs: A Meta-Analysis

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Objective: To evaluate the effectiveness of nutrition interventions in reducing Body Mass Index (BMI) for youth participating in after-school programs conducted solely at school.

Design, Setting, Participants: Overweight and obesity in youth are problematic. After-school nutrition interventions could be beneficial for addressing youth weight issues; however, the effectiveness of these programs on reducing BMI is unclear thus a meta-analysis was performed.

Outcome Measures and Analysis: Nine databases (e.g. CINAHL, EBSCO, PubMed, etc.) were searched with terms such as "Diet," "Nutrition," "Body Mass Index," and "After-Nine databases (e.g. CINAHL, EBSCO, PubMed, etc.) were searched with terms such as "Diet," "Nutrition," "Body Mass Index," and "After-School." The mean and standard deviation of BMI change scores were extracted to calculate effect size (ESs). A random effect model was used to calculate an overall ES and 95% confidence interval (CI). Moderator analyses were conducted for parent

involvement (yes/no) and type of intervention (nutrition only, nutrition + physical activity, nutrition + physical activity + other) on overall ES. Heterogeneity was evaluated using Cochran's Q statistics. Comprehensive Meta-Analysis (2.2) software was used to conduct ES calculation and moderator analyses.

Results: The searches yielded 1702 articles. After initial screening, 111 potentially relevant studies were fully reviewed. Seventeen studies involving 1,716 participants were included and 18 ESs were calculated. Overall mean ES was significant (ES = -0.156, CI = -0.29, -0.02) which indicated that school-based, after-school nutrition intervention programs were effective in reducing BMI. Moderator analyses indicated that the mean ES was influenced by type of intervention and parental involvement, $Q_{\text{between}} = 16.26$, $df = 2$, $p < .001$ and $Q_{\text{between}} = 4.56$, $df = 1$, $p = .033$, respectively.

Conclusion and Implications: This meta-analysis indicated that nutrition interventions in after-school, school-based settings are effective in reducing BMI among youth.

Funding: None

P13 Efficacy of the iCook 4-H Dissemination Using Outcome and Fidelity of Implementation Measures

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Objective: Test the efficacy of disseminating the iCook 4-H program with youth-adult dyads a following two-year multistate research study for childhood obesity prevention.

Study Design, Setting, Participants, Intervention: Control (n=63)/treatment (n=75), intervention pre-post-design. An experiential learning curriculum with eight bi-weekly sessions and at-home activities was implemented in community settings, primarily by Extension educators (n=12), with minimal researcher assistance. Participants were youth (mean age=9.9±0.6 yr) and their primary meal preparers (mean age=39.4±7.8 yr). Program outcome and fidelity of implementation measures were developed specifically for the curriculum. The youth instrument was 33 items, including scales for cooking skills ($\alpha=0.80$), eating ($\alpha=0.72$), playing ($\alpha=0.69$) and setting goals ($\alpha=0.76$) together. The adult instrument was 22 items, one scale ($\alpha=0.69$), cooking, eating, and playing together. Fidelity measures included meeting objectives, leader effectiveness, and participant engagement and were conducted systematically on 28 of 96 total sessions (29%) by trained evaluators (n=18).

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P13 (continued)

Outcome Measures and Analysis: Paired and independent sample t-tests were used to determine within and between group differences ($P \leq 0.05$). Fidelity descriptive statistics were computed.

Results: Treatment increased youth cooking skills ($P=0.001$) within group and setting goals together within ($P=0.01$) and between ($P=0.03$) groups. No changes were found for eating or playing together. Treatment adults reported within ($P=0.01$) and between ($P=0.02$) group increases. For fidelity, evaluators rated 91% of objectives met, leaders 97% effective, and youth and adults engaged 88% and 91% of the time, respectively.

Conclusions and Implications: Based on outcome and fidelity measures, a successful translation to community settings was made. iCook 4-H is an evidence-based program, tested in multiple settings, for prevention of childhood obesity.

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P14 Evaluation on Total Sugars Intake of Elementary School Students in South Korea

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Objective: The purpose of this study was to estimate sugars intake of children and investigate its relation to obesity degree.

Study Design, Setting, Participant: A cross-sectional survey was conducted targeting 1,155 elementary school students (567 boys) in Chungnam, Korea.

Outcome Measures and Analysis: Questionnaire and 24 hour recall was conducted. Daily total sugars intake was estimated using the USDA database. Outcome variables were compared by quartiles of total sugars intake.

Results: Total sugars intake was 38.8 g/day for boys and 36.3 g/day for girls, respectively. Energy intake from total sugars was 8.3% of total energy intake without significance between boys and girls. The major food groups contributed to sugars intake were milks, fruits, grains, sweeteners, and beverages. And the main food sources of sugars intake were milk, grapefruit, ice cream, sugar, and apple. Age and body mass index were significantly decreased with increment of sugars intake quartile, however, obesity rate among sugars intake quartile groups was not significantly different.

Conclusions and Implications: Daily sugars intake of the subjects was not exceeded the recommended level. Considering of higher sugars intake in younger children, however, it is required dietary guidance for adequate sugars intake from early childhood. This research will be used in these nutritional educations.

Funding: Korean Ministry of Agriculture, Food, and Rural Affairs

P15 Examining Associations Among Psychosocial Determinants of Vegetable Consumption in Korean Adolescents, Using Social Cognitive Theory (SCT)

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Objective: The majority of Korean adolescents do not meet dietary guidelines for vegetable intake. This study's objective was to examine relationships among social cognitive theory mediators of vegetable consumption in Korean adolescents.

Study Design, Setting, Participants: A cross-sectional survey study. Participants were recruited from two high schools in an urban area, South Korea. A total of 399 students (192 boys, 207 girls), aged 16-17 years, participated in this self-report survey study.

Outcome Measures and Analysis: A survey instrument with SCT variables was administered. There were 54 previously validated questions that consisted of outcome expectation, self-efficacy, affective attitude, knowledge, vegetable accessibility-at-home, and accessibility-at-school, vegetable preference, and behavioral intention. Path analysis was performed to examine potential mediating relationships among SCT variables related to students' vegetable consumption. A structural equation modeling (SEM) software AMOS v.23 was used. Acceptable cutoffs for model fit were as follows: RMSEA ≤ 0.06 , NFI > 0.90 , CFI > 0.90 , TLI > 0.90 .

Results: Model fit indices of SEM for the final model were CFI=.996; NFI=.988; TLI=.985; and RMSEA=0.033, indicating an excellent model fit. Students' knowledge and accessibility at home and at schools predicted outcome expectation, affective attitudes, and self-efficacy ($p < .05$ to $p < .001$); outcome expectation predicted self-efficacy significantly ($p < .001$); self-efficacy predicted vegetable preferences. Vegetable preferences and affective attitudes were significant predictors of behavioral intention ($p < .001$), which was a dependent variable in the final model.

Conclusions and Implications: Results show that self-efficacy and affective attitudes may affect students' vegetable preferences, which may in turn increase students' behavior intention. Nutrition education intervention targeting these SCT variables are thus warranted and may be effective improving Korean adolescents' vegetable consumption.

Funding: Changwon National University

P16 Factors Associated With Bone Density Among Japanese Teenagers

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