P16 (continued)

Objective: Bone health is a significant issue for children to encourage healthy physical development. The objective of this research was to analyze the relationship between bone density and daily habits to explore effective strategies for promoting bone health in children.

Study Design, Setting, and Participants: Participants were 157 junior high school students living in Yamagata, Japan. Each student's bone density was measured, and they answered a questionnaire in Home Economics class at school.

Outcome Measures and Analysis: The calcaneus density was measured using an ultrasound technology system (AOS-100SA, Hitachi, Japan). The Osteo Sono-assessment Index (OSI) was used as an index of bone density. Frequency of eating calcium rich foods such as milk products and small soft-boned fish was assessed by a questionnaire, and the results of which were summarized with a total diet score. The students were divided into three (high/middle/low) groups according to their total diet scores. The students were also divided into two groups (high/low) according to the frequency of their physical activity. Two-way ANOVA tested for differences in mean OSI across gender and groups.

Results: The high diet score group showed significantly ($p=0.04$) higher OSI than the other two groups in both genders. The high physical activity group had marginally ($p=0.09$) higher OSI than the low physical activity group in both genders.

Conclusions and Implications: Nutrition educators need to help students achieve a calcium rich diet, and daily physical activity should be also recommended to encourage bone health in teenagers.

Funding: None

P17 Factors Influencing Nutrition Knowledge Growth Among Fourth-Grade Students: FoodMASTER Intermediate

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Objective: To assess the impact of child and classroom level factors on nutrition knowledge growth among forth-grade students exposed to the FoodMASTER Intermediate (FMI) curriculum.

Study Design, Setting, Participants, and Intervention: Data were collected from $n=263$ forth-grade students in Ohio and North Carolina who participated in a quasi-experimental trial of the FMI curriculum, which integrates nutrition knowledge into mathematics and science curriculum. Students were nested in 18 classrooms, evenly split between intervention and control. All lessons were delivered by trained classroom teachers, and follow-up evaluations were completed at least one month prior to the end of the academic year.

Outcome Measures and Analysis: Data, including intervention or control status, student knowledge, demographics, and contextual factors at the student (gender, free/reduced lunch status) and classroom (years of teacher experience, teacher previous nutrition training) levels, were collected prior to program intervention and at follow-up. Multilevel modeling was used to assess the impact of student and classroom level variables on nutrition knowledge gain, and the model-building process resulted in six models to assess the research question.

Conclusions and Implications: Classroom intervention status was significantly associated with gain in nutrition knowledge in all models where it was included ($p < 0.05$), further supporting program efficacy. Student nutrition knowledge prior to the intervention was also significantly positively associated with nutrition knowledge growth ($p < 0.05$). Student gender, free/reduced lunch status, teacher years of experience, and previous teacher nutrition training remained insignificant. These results indicate that more efforts should be made to introduce nutrition education in earlier grades to maximize growth in nutrition knowledge in upper elementary programs.

Funding: None

P18 An Evaluation of the Relationship Between Physical Activity, Cooking, Dietary Behavior and Wellness Indicators in College Students: GetFRUVED Study

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Objective: Determine the influence of modifiable lifestyle factors on college students' fruit and vegetable (FV) intake and body mass index (BMI).

Study Design, Settings, and Participants: First-year students ($n=1,153$) considered at risk for unwanted weight gain based on factors of diet, socio-economic status, weight and ethnicity from eight universities were assessed for physical activity (PA), cooking (skills, frequency and confidence), intention for meal planning (MP), mealtime behaviors, cups of FV, height and weight.

Outcome Measures and Analysis: Multiple linear regression (Stata 13.1) was used to assess the ability of lifestyle factors to predict FV intake and BMI after controlling for sex. Significance was $p \leq 0.05$.

Results: FV intake was predicted by PA, cooking frequency, cooking type, intention for MP and mealtime

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P18 (continued)

behaviors. Highly active individuals reported significantly greater FV intake (2.7 ± 1.1) than moderately active (2.1 ± 1.1) or inactive (1.6 ± 0.3). FV intake was greater in those reporting meal preparation 4-7 times weekly (3.1 ± 0.2) compared to 1-3 (2.4 ± 0.1) or zero times weekly (2.3 ± 0.1). Cooking mostly convenience and ready-made meals was associated with significantly lower FV intake (2.1 ± 0.1) compared to preparing meals from basic ingredients (2.6 ± 0.2) or not cooking (2.5 ± 0.1). Intention for MP and mealtime behaviors were positively associated with FV intake. Preparing meals from basic ingredients was associated with a lower BMI (23.8 ± 0.3) than consuming mostly convenience and ready-made meals (24.6 ± 0.3) or not cooking (24.6 ± 0.2). Positive mealtime behaviors were inversely related to BMI.

Conclusions and Implications: FV intake and BMI are influenced by PA, cooking, and dietary behaviors. Although many interventions for college students focus on PA and diet, programs should consider including a cooking focus.

Funding: USDA

P19 Appalachian Young Adults Food Security and Tobacco Use

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Objective: To examine the relationship between tobacco use and food security of young adults in the Appalachian region.

Study Design, Setting, Participants: Data was analyzed from the Fruved study, a social marketing campaign increasing healthier lifestyles among college students from eight universities across the United States who were assessed at baseline (Fall 2015) (N=347).

Outcome Measures and Analysis: Food security was scored using the USDA Adult Food Security Survey. Participants were asked about the frequency of their use of tobacco products (cigarettes, hookah/waterpipe, electronic cigarettes, cigars/cigarillos, pipe, chew, snuff, and snus) within their lifetime, the past year, and the past 30 days. Food security status, tobacco use, and geographical regions were compared.

Results: Forty-three percent (N=301) of non-Appalachian students and 50% (N=44) of Appalachian students were categorized as food insecure ($p=0.44$). 63.6% of respondents (N=345) reported using tobacco in their lifetime, 11.5% in the past year, and 37.9% in the past thirty days. No significant difference was found in relationship between all food security and tobacco use (tobacco in lifetime $p=0.47$; tobacco in last year $p=0.42$; tobacco in last 30 days $p=0.92$). Furthermore, no significant difference was found in Appalachian vs Non-Appalachian

groups for tobacco use in any category ($p=0.52$, $p=0.67$, $p=0.65$, respectively).

Conclusion and Implications: Geographical location can be a determinant of behavior. In this study no difference in comparison of frequency of tobacco use among Appalachia students and other regions were found. However, this study was limited by a small sample of Appalachian young adults. Future research is warranted to investigate food security and tobacco use as well as other commonly abused substances.

Funding: USDA; WVU Hatch Experimental Station

P20 Associations Between Variables of the Home Food Environment and Fruit and Vegetable Intake in College Students

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Objective: To determine which variables within three domains of the comprehensive home food environment (Home Food Availability and Cues; College Student Food Practice; Social Support and Modeling) are associated with fruit and vegetable (FV) intake of college students.

Study Design, Setting, Participants: Baseline survey data from the Healthy Home Study, a subproject of the Get FRUVED Study, were collected online during Fall 2016 from new freshmen ($n=157$; 18 to 25 years) at the University of Florida. Participants were recruited through Get FRUVED and list serves, lived on campus, and stored food at their dorm. Participants received \$20 for completing surveys.

Outcome Measures and Analysis: Participants completed the Comprehensive Home Food Environment Survey, Dietary Screener Questionnaire, demographic questionnaire, and Social Support and Eating Habits Survey. A spearman correlation analysis was used to test for basic association between each variable of the home food environment and FV intake. Variables that significantly correlated with FV intake were included in a multiple regression analysis.

Results: A multiple linear regression was calculated to predict [FV consumption] based on [variables within three domains of the comprehensive home food environment]. A significant regression equation was found ($F(3,154)=14.9$, $p < .000$), with an R^2 of .225]. Preliminary data suggest that availability of FV at home, healthy food preparation skills, and screen viewing were significant predictors of FV intake ($\beta=0.302$; $p < .01$, $\beta=0.235$; $p < .01$ and $\beta=-0.203$; $p < .03$, respectively).

Conclusions and Implications: This study identified modifiable factors within the home food environment associated with FV intake, which have been targeted in