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care behaviors included measures such as 10-item diabetes self-efficacy scale, 4-item health distress scale (range: 0-5), 3-item scale for communications with doctors (range: 0-5), and 4-item social role-diabetes interference scale (range: 0-4). Body weight/height (BMI) and waist circumference (WC) were used to characterize weight status. Descriptive results were calculated using IBM SPSS Statistics.

Results: Most (83%) of the participants' BMIs were in overweight/obese category (mean: 27.9 ± 4.7); 80% of participants had high risk WC. Mean HEI score (37.9 ± 13.7), intake of fruits ($1.1 \text{ cups} \pm 1.6/\text{d}$), vegetables ($1.5 \text{ cups} \pm 1.4/\text{d}$), and fiber ($14.9\text{g} \pm 13.8/\text{d}$) were below recommended levels; 80% of participants preferred mostly/exclusively Asian foods at home. Diabetes self-efficacy was moderately high (mean: 7.4 ± 1.9); means for health distress (1.5 ± 1.3) and social role interference (1.7 ± 2.6) scores were moderately low, and communication (with doctors) score was 2.9 ± 1.2 .

Conclusions: These results indicate a need to improve weight status and dietary quality, which are potential risk factors for type 2 diabetes. Future education programming should be tailored to address Asian dietary intake preferences and include strategies to improve health distress, social role interference, and communication with healthcare providers. Results will be used for culturally appropriate curriculum development and implementation for AI.

Funding: New Jersey Department of Health.

Nutrition Education Program Design Implementation and Evaluation

P160 Management of Obesity in Children with Asthma Using Nutrition Video Counseling

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Background: Asthma and obesity in children are major public health concerns. Asthma makes obesity worse and obesity makes asthma worse. We report a pilot program integrating nutrition video counseling with routine office visits.

Objective: To determine if routine office visits plus nutrition video counseling improve body mass index (BMI), asthma, and obesity quality of life scores.

Study Design, Setting, Participants: Obese children ages 7-18 years old with persistent asthma were enrolled into a 6-month program that included 3 visits with a pediatric pulmonologist and a registered dietitian and 4 additional monthly free nutrition video visits using FaceTime, WhatsApp, or Skype. Motivational interviewing guided discussions about why and how to change behaviors such as skipping meals, binge eating, excessive screen time and

physical inactivity. Identifying whole foods, nutrition label reading, mindfulness and goal setting skills were taught. At each office visit, subjects underwent evaluation of anthropometric measures, respiratory and nutritional status, and validated quality-of-life measures for asthma (PAQOL) and obesity (Sizing Me Up [SMU] for 7 to 13 years; IWQOL-Kids for 14 to 18 years).

Measurable Outcome/Analysis: Participants were assessed for BMI, asthma control, and quality of life measures pre-, mid-, and post-intervention.

Results: Twenty-one subjects were enrolled; 14 (67%) completed all visits and procedures. Twelve of the 14 (86%) reported improvement in obesity quality of life scores. Median SMU score improved from 61 (IQR 56, 76) to 76 (IQR 72, 77), $P = .03$. Median IWQOL-Kids score was 95 at baseline, 97 at completion, $P = .20$. Seven of the 14 (50%) had a decrease in BMI; mean BMI decreased from 33.0 to 31.3, which was not significant. There were no significant changes in pulmonary function or PAQOL.

Conclusions: In this small pilot study, the addition of video nutrition counseling to enhance office visits showed promising results and allows for deep discussions on the complexities of behavior change. However, future studies should be longer, combined with other multidisciplinary approaches, and have larger sample sizes.

Funding: Stony Wold-Herbert Fund, Inc.

Nutrition Education Research Methods

P161 Digital Workbooks to Develop and Evidence Learning in a Flipped Nutrition Classroom in Higher Education

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Objective: To evaluate student use and perceptions of a digital workbook in 3 undergraduate nutrition courses taught with a flipped classroom approach (FCA).

Use of Theory or Research: Within the FCA 3 phases of learning are aligned with Bloom's Taxonomy: prepare (self-directed pre-class activities: remember and understand); participate (facilitated in-class activities: apply and analyse) and recap (self-directed post class activities: evaluate and create). While technology can support the delivery of the FCA, there is little evidence for the most effective delivery of FCA learning experiences for nutrition students.

Target Audience: One hundred and sixty-two undergraduate nutrition students at a regional Australian University in Semester 1, 2019.

Course/Curriculum Description: PebblePad digital workbooks were used to deliver 3 FCA courses. Each digital workbook contained weekly workbook tabs with interactive pages based on the FCA phases. Students used the workbook to access and participate in learning experiences during each FCA phase.

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Evaluation Methods: An online survey measured self-report student satisfaction and patterns of digital workbook use. Student perceptions of engagement with, usefulness of, and suggestions for assessment and learning to use the digital workbook were collected. Quantitative data was analyzed descriptively and qualitative data analyzed using conventional content analysis.

Results: Thirty-nine students (24%) participated. Majority of students reported the digital workbook was engaging. Useful aspects included workbook structure, development of a learning artifact, and convenience. Digital workbooks were well-utilized for learning activities related to learning, applying and consolidating knowledge, with most students accessing their digital workbook several times a week. Less useful aspects included technology issues and limited feedback provided. Suggestions for future use included more 'how-to' resources and integration of quizzes.

Conclusions: Well-structured digital workbooks can support FCA delivery in nutrition education. Further exploration of feedback integration and student technology support mechanisms would be useful for educators using the FCA.

Funding: None.

Nutrition Education Program Design Implementation and Evaluation

P162 Comparative Outcome Evaluation of 3 Delivery Models for a Diabetes Prevention Education Program for Older Adults

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Objective: Outcome evaluation of 3 delivery models for a diabetes prevention education program for older adults.

Use of Theory or Research: Older adults have the highest prevalence of diabetes and have proved to benefit from prevention programs. Few community-based education programs have targeted this age group.

Target Audience: Community-dwelling older persons (≥ 60 years) in Lubbock, Texas.

Program Description: We modified the national Diabetes Prevention Program based on previously assessed health education needs of the elderly. Seven modules on diabetes basics, physical activity, and overall healthy diet were developed. The core elements were healthy eating within budget, enhancing self-efficacy, nutrition misconceptions, and problem-solving skills. Two community centers were randomly assigned to education by nutrition professionals (Pro, $n = 23$), 2 were assigned to trained peer educators (Peer, $n = 27$), and 2 were assigned to receive written materials (Passive, $n = 26$). Pro and Peer groups received 9 weekly 45-minute sessions; passive group received the written materials weekly.

Evaluation Methods: Nutrition and Diabetes Knowledge (NDK) questionnaire, self-efficacy for eating behaviors scale, Starting the Conversation instrument for dietary behaviors, and the Veggie Meter for Skin Carotenoid Status (SCS). We also conducted post-intervention focus group discussions.

Results: Regression models demonstrated a significant improvement in self-efficacy in Peer group ($+0.38 \pm 0.24$) compared to the other 2 groups ($+0.18 \pm 0.32$ for Pro and $+0.11 \pm 0.45$ for Passive, $P < .05$). NDK ($P < .01$), SCS ($P < .001$), and dietary behaviors ($P < .001$) improved in both Pro and Peer groups, with no significant between-group differences. Written material group did not improve in any of the assessed variables, although focus group discussions showed they felt comfortable with the required literacy and numeracy skills. Budget management strategies were the most frequently identified element that empowered them toward changing their dietary behaviors, as well as the most meaningful driver that enhanced their self-efficacy.

Conclusions: Passive information dissemination was not an effective education model for elderly people. Peer education provided a valuable resource for diabetes education for older adults.

Funding: Texas Tech University.

Nutrition Education Research Methods

P163 Baseline Skin Carotenoid Levels and Associations with Season, Age, Gender, and Race among Head Start Children (3-5 years) Living in Eastern North Carolina

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Background: Low intake of fruits/vegetables (FV) among preschoolers is well documented, establishing a need for interventions that can improve intake. However, in order to determine effectiveness of interventions, valid and objective methods are needed. A promising non-invasive tool for objectively measuring FV consumption is the Veggie Meter (VM), which uses reflection spectroscopy to assess skin carotenoids. While the tool has been used and validated in adults, limited research exists to describe its use in children.

Objective: Establish baseline skin carotenoids and examine differences in skin carotenoids and changes over time by age, gender, and race of preschoolers enrolled in Head Start (HS) in North Carolina.

Study Design, Setting, Participants: A prospective cohort design was used to collect baseline and post-surveys from participating families. Children's skin carotenoids were measured 3 times over a 6-month period.

Measureable Outcome and Analysis: Analysis of Variance (ANOVA) was used to identify baseline skin

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