Background

- Nearly 14% of U.S. children between the ages of 2 and 5 years were classified with obesity in 2015-2016.1
- Combating childhood obesity requires a multilevel and multicomponent intervention approach to changing obesogenic environments in school and home settings.

Objectives

- To examine the impact of an ongoing childhood obesity preventive intervention on preschool children’s food knowledge, and intentions to choose nutrient-dense foods for meals and snacks.

Methods

Participants

Included 1034 predominantly rural, Pennsylvania preschool children from 2 of 3 cohorts in an ongoing childhood obesity preventive intervention. Child characteristics at study entry:

- Mean Age (SD) = 4.4 ± 0.6y
- 48.7% female
- Predominantly non-Hispanic, White (97.6%)
- 12.6% with obesity

Study Design: Multiphase Optimization Strategy (MOST)

- Uses a 2 factorial design with 16 experimental conditions.
- Childcare centers are randomized into one of the 16 conditions.
- Conditions vary based on whether a treatment is turned on or off.

Advantages to using the MOST Framework

- Using MOST, the efficacy of each individual component is examined, individually in combination, allowing researchers to engineer the most efficient, effective and scalable intervention.
- This approach will allow us to efficiently examine the efficacy of components on children’s outcomes before packaging them together.

Intervention Components

- Fine Curricula: Food literacy curriculum that encourages fruit and vegetable intake by introducing children to various fruits and vegetables from a through Z.
- All classrooms receive this component.
- Healthy Eating Curriculum: Designed to increase children’s nutrition knowledge (Go/Who foods and food groups) and ability to build a healthy plate (using MyPlate).
- Active Play Curriculum: Designed to increase children’s time spent in active play.
- Child Self-Regulation Curriculum: Play-based curriculum designed to increase knowledge, behavioral and intake regulation.
- Enhanced Parent Education: A video-based curriculum that maps to constructs in the preschool curriculum and reinforces the messages outlined in the classroom curricula by providing guidance on ways to increase/improve child outcomes.

Healthy Eating Curriculum Materials

- MyPlate placemats: Designed to increase children’s time spent in active play.
- Interactive “Whoa Foods” game: Designed to increase children’s knowledge of the food groups.
- Nutrition knowledge measure developed by Sigman-Grant et al. (2016).2 It consisted of a 2-step process in which children were first asked to choose their FAVORITE foods for lunch from a list of 6 foods within each food group (30 foods total), as well as their FAVORITE beverage (4 beverages total). In the second step, children were asked to choose HEALTHY foods and beverages from the previous foods. The proportion of “healthy” foods chosen was calculated.

Procedures

- Healthy Eating Curriculum – Children were exposed to 11 lessons on Go and Whoa foods, MyPlate, food groups and building a healthy plate (variety).
- Preschool teachers were trained to deliver all lessons.
- Child Assessments – Children were interviewed one-on-one in their classrooms by trained research assistants. Measures included height, weight, behavioral assessments of self-regulation and measures assessing children’s food knowledge and healthy snacking choices.

Statistical Analyses: All analyses were conducted in SAS 9.4. Sample descriptive (variable means and frequencies) were calculated, and pre-post differences in outcomes, by HE condition, were measured using proc GLM. Preliminary analyses revealed that children HE OFF condition were slightly older than children in the HE ON condition (4.5 vs. 4.3y). Thus, all analyses were adjusted for child age. A total of 888 children with complete data were included in the analysis.

Snack Selection

- No significant differences by condition in snack selection scores at baseline.
- There was a trend towards pre-post change in children’s choice of nutrient-dense foods being greater in the HE ON condition.

Conclusions

- Increasing children’s food knowledge and intentions to choose nutrient-dense over energy-dense foods may lead to the development of healthy dietary patterns that prevent the development of obesity in children.