

Nutrition Knowledge, Attitudes, and Fruit and Vegetable Intake as Predictors of *Head Start* Teachers' Classroom Mealtime Behaviors

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ABSTRACT

Objective: To examine the association between nutrition knowledge, attitudes, and fruit/vegetable intake among *Head Start* teachers and their classroom mealtime behaviors (self-reported and observed).

Design: Cross-sectional design using observation and survey.

Setting: Sixteen *Head Start* centers across Rhode Island between September, 2014 and May, 2015.

Participants: Teachers were e-mailed about the study by directors and were recruited during on-site visits. A total of 85 participants enrolled through phone/e-mail (19%) or in person (81%).

Main Outcome Measures: Independent variables were nutrition knowledge, attitudes, and fruit/vegetable intake. The dependent variable was classroom mealtime behaviors (self-reported and observed).

Analysis: Regression analyses conducted on teacher mealtime behavior were examined separately for observation and self-report, with knowledge, attitudes, and fruit and vegetable intake as independent variables entered into the models, controlling for covariates.

Results: Nutrition attitudes were positively associated with teacher self-reported classroom mealtime behavior total score. Neither teacher nutrition knowledge nor fruit/vegetable intake was associated with observed or self-reported classroom mealtime behavior total scores.

Conclusion and Implications: There was limited support for associations among teacher knowledge, attitudes, and fruit/vegetable intake, and teacher classroom mealtime behavior. Findings showed that teacher mealtime behavior was significantly associated with teacher experience.

Key Words: *Head Start*, nutrition, obesity prevention, mealtime, fruit, vegetable, child care, teacher (*J Nutr Educ Behav.* 2017;■■:■■-■■.)

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INTRODUCTION

Childhood obesity is a serious public health problem; approximately 14% of preschool-aged children in the US are considered to be obese.¹ Given that children are spending an increasing amount of time in child care, with 61% of preschoolers in center-based care, child care teachers have an important role in influencing the diets of children, primarily through their mealtime interactions.²⁻⁶ Although

teacher nutrition knowledge and attitudes are thought to influence their mealtime behaviors with children,^{7,8} evidence is lacking. Similarly, it is unclear whether child care teachers' own dietary behaviors influence their mealtime behaviors with children.^{9,10} Because children who are in center-based care consume up to 75% of their daily meals in the child care setting, there is a need to understand teacher nutrition knowledge, attitudes, dietary behaviors, and classroom mealtime

behaviors further to inform future interventions.

A number of mealtime behaviors, including feeding practices, have been associated with better health outcomes in children.¹¹⁻¹⁵ Controlling feeding practices, including exerting pressure to eat, restricting foods, and using food as a reward, were associated with less optimal outcomes, such as lower intake of vegetables and increased intake of unhealthy off-limits foods, even when the child was not hungry.¹⁶⁻²² In contrast, optimal behaviors are those considered more responsive and positive²³ (eg, responding to children's signals of hunger and satiety, responding positively to children's attempts to self-feed), in which caregivers allow children to control the amount of food they eat. These practices have been associated with improved ability to self-regulate energy intake.²⁴ Although a growing number of studies have explored the

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mealtime behaviors and feeding practices of child care teachers,^{10,25} most of the literature focused primarily on parents. Parents and teachers vary when it comes to the role they have in influencing children's eating,^{26,27} but the parent feeding literature provides an important foundation for examining the feeding practices of child care teachers.

Some studies that included child care teacher feeding practices explored how practices varied among teachers. For example, teachers with more education and experience engaged in more optimal mealtime behaviors⁷ (eg, sitting with children during the meal, consuming the same foods as children). The association between teachers' own nutritional knowledge and attitudes in relation to their mealtime behavior with children, above and beyond teachers' general education and experience, is less well understood, and findings were mixed. One study reported a positive association between mealtime behavior of teachers and nutrition knowledge and attitudes,⁷ whereas others reported no demonstrable effect of improved nutrition knowledge on teacher behavior.²⁸ Nevertheless, a better understanding of how nutrition knowledge and attitudes influence teacher behavior has important implications for teaching education. Research examining nutrition attitudes and perceptions among *Head Start* teachers revealed common beliefs that children's eating behaviors and weight status were not connected and skepticism regarding the definition of overweight.²⁹ Additional research also revealed nutrition knowledge to be low among child care providers.⁹ A recent study examining *Head Start* teachers found that 97% of teachers could answer only ≤ 3 of 5 nutrition questions correctly. Furthermore, 24% of *Head Start* directors thought that the lack of knowledge among teachers about how to encourage healthy eating was an important impediment to obesity prevention.³⁰ Learning more about teacher nutrition knowledge and attitudes may improve teacher classroom mealtime interactions with children.

The study of teacher knowledge and attitudes as an influence on their own health-promoting behaviors, and

ultimately on children's behaviors, is supported by a number of theories including Bronfenbrenner's³¹ ecological model, Bandura's³² Social Cognitive Theory, and the Health Belief Model.³³ Both Bronfenbrenner's and Bandura's theories emphasize that important adults in a child's life, including teachers, influence behavior through several mechanisms including education, normative practices, and social support. Role-modeling may also be a factor in health-promoting behavior. There is some limited research showing that more positive health characteristics and behaviors in one's own life may translate to efforts to improve others' health habits. For example, lower body mass index among doctors is associated with more frequent discussions about weight loss with patients, compared with those with a higher body mass index.³⁴ The behaviors of *Women, Infants, and Children* program staff were also examined in the context of obesity prevention. Compared with a control group, staff members who received an intervention to make healthier food choices and be more physically active were more likely to report making positive changes in counseling parents who were enrolled in *Women, Infants, and Children* about their children's weight.³⁵

Head Start has been a pioneer in setting policies related to food and nutrition for students. For example, *Head Start* programs are required by Federal Program Performance Standards to provide nutrition training to staff as well as families.³⁶ Research indicated high levels of adherence when it comes to centers carrying out these trainings; 92% of programs taught staff routines pertinent to feeding children and 84% offered workshops for parents to prepare and buy healthy foods.³⁷ However, some research suggested that *Head Start* teachers have poor overall health and diets. For example, a study looking at 173 *Head Start* teachers in Texas found low fruit and vegetable consumption, high consumption of fast foods and sugar-sweetened beverages, and self-reported poor nutritional health for teachers as a whole.⁹ In addition, high rates of overweight and obesity were reported among *Head Start* teachers across studies.^{9,10} Compared with women with similar sociodemographic

backgrounds, *Head Start* teachers were found to have poorer physical and mental health and higher rates of obesity, diabetes, and high blood pressure.³⁸ Examining teacher's diets in relation to their behaviors with children is an important avenue of study. Children of low socioeconomic status are particularly at risk for consuming unhealthy foods and obesity³⁹; therefore, understanding factors within their environments could have important implications for obesity prevention.

The purpose of this study was to examine the association between nutrition knowledge, attitudes, and fruit and vegetable intake among *Head Start* teachers and their mealtime behaviors (self-report and observed) in the classroom with children. Higher nutrition knowledge, more positive nutrition attitude scores, and higher fruit and vegetable consumption were expected to be associated with higher mealtime behavior scores in the classroom with children. *Head Start* centers were selected to represent a homogeneous set of child care settings, to minimize center-level differences in examining associations.

METHODS

Study Design, Participants, and Recruitment

The study was a cross-sectional design collecting both survey and observational data between September, 2014 and May, 2015 in 16 *Head Start* centers across Rhode Island. The study was approved by the Institutional Review Board at the University of Rhode Island in September, 2014.

Participants were a convenience sample of 85 *Head Start* teachers (ie, head, assistant, special education and teacher's aides). Teachers were recruited with the assistance of the Rhode Island Department of Education *Child and Adult Care Food Program* (CACFP) director and initial contact was made with the 7 *Head Start* directors in the state. Six of the 7 directors responsible for 22 of the 32 *Head Start* centers across the state agreed to participate in the study and alerted teachers in their centers about the study. Teachers were instructed to contact the researcher; teachers who agreed to participate scheduled a

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