American Dietetic Association

RESEARCH

Research and Practice Innovations

Nutrition Practices and Children's Dietary Intakes at 40 Child-Care Centers in New York City

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ABSTRACT

Early childhood is a critical time to establish nutrition habits to prevent obesity. At least half of US children spend time in care outside of the home, where little is known about their dietary intakes and nutrition environment. The purpose of this study was to evaluate nutrition practices of group child-care centers in New York City and to assess whether dietary intakes of children at these centers meet nutrition recommendations. In 2005 and 2006, student research assistants administered surveys to directors of 40 child-care centers in three underserved communities (Central Brooklyn, East/Central Harlem, South Bronx) and in Manhattan, gathered menus, and observed beverages and foods consumed by 240 3- and 4-year-old children. Almost all centers provided beverages and foods recommended by national guidelines, including reduced-fat milk, 100% fruit juice, and whole grains. Some centers also provided higher-fat milk and sugar-sweetened beverages, but no centers provided soda. Drinking water was available in classrooms at only half of the centers. From observations at meal and snack times between 8 AM to 2 PM, <50% of children ate at least half of the daily recommended intake for each of five main food groups, with only 17% of children eating at least half of the daily recommended intake for vegetables and only 5% of children eating at least half of the daily recommended intake for vitamin E. Although many centers provided healthful beverages and foods to children, further efforts are needed to make water available as a beverage throughout the day and to improve dietary intakes, especially of vegetables and vitamin E–containing foods.

J Am Diet Assoc. 2011;111:1391-1397.

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Manuscript accepted: March 24, 2011.

0002-8223/$36.00

doi: 10.1016/j.jada.2011.06.001

Children's dietary patterns and nutrition habits are formed in early childhood (1). It is estimated that 61% of children aged 6 years old and younger spend time outside of home in nonparental care; 36% attend center-based programs such as day-care centers, prekindergarten programs, Head Start, or other early childhood programs (2). Although there is no national nutrition policy for all child-care settings, the American Dietetic Association recommends that children consume at least one third of their daily nutrition requirements at part-time child-care programs (ie, children attend 4 to 7 hours per day) and at least half to two thirds of their daily nutrition requirements at full-time child-care programs (ie, children attend at least 8 hours per day) (3). Child-care centers that serve low-income families may qualify to participate in the US Department of Agriculture Child and Adult Care Food Program and receive reimbursement for meals and snacks served (4). Currently, this federal program requires centers to include components from the milk, fruit, vegetable, grain or bread, and meat or meat alternate food groups on their menus, but does not require meals and snacks to meet nutrient-based standards.

A few studies have analyzed child-care center menus and found that they do not meet children's daily requirements for energy and micronutrients (5-7). Other studies have described the nutrition environment and identified concerns about children's dietary intakes (8-14). According to the White House Task Force Report on Childhood Obesity (15), early child-care settings are a tremendous opportunity to improve children's health and prevent obesity, but in a recent publication (16), Story and colleagues emphasized the need to learn more about nutrition practices and children's dietary intakes in these settings. The purpose of this study was to evaluate nutrition practices of group child-care centers located in New York City and to assess the dietary intakes of 3- and 4-year-old children at the centers in relation to nutrition recommendations.

METHODS

Participants and Setting

In 2005 and 2006, the New York City Department of Health and Mental Hygiene contracted with faculty members at New York University to gather data on existing nutrition practices in group child-care centers as part of a larger effort to develop policies to improve young children's health and prevent obesity. As specified in the contract with the New York City Department of Health and Mental Hygiene, the study sample included 40 licensed group child-care centers: 10 located in each of three District Public Health Office regions serving predominantly low-income communities (Central Brooklyn, East/Central Harlem, South Bronx) and 10 throughout Manhattan. Also according to the contract, most centers had a cook on-site, participated in the Child and Adult Care Food Program, and varied in enrollment size. Before selection, the names of licensed group child-care centers in each region from a publicly available list were arranged in ascending order according to enrollment size and grouped by small (<50 children), medium (50 to 100 children), and large (>100 children) centers. To ensure that a sample size of 40 child-care centers was achieved, a minimum of four centers of each size were selected from each region; for instance, if there were 12 small-sized centers in the South Bronx, every third center on the list was selected.

Directors of centers were contacted and informed about the study and one site visit was scheduled on a weekday (Monday through Friday) that was convenient for each center. When a couple of directors refused, other centers with similar characteristics were invited to participate. Nine nutrition students who had completed coursework or had previous experience in dietary assessment methods in the Department of Nutrition, Food Studies, and Public Health at New York University, were selected as research assistants and met with the project director to review and practice the protocols for data collection. Approval for the study procedures was obtained from the University Committee on Activities Involving Human Subjects at New York University.

Assessment of Nutrition Practices

On the day of the site visit, two research assistants visited participating centers from drop-off until afternoon nap (~8 AM to 2 PM) and collected data about nutrition practices from center directors using a Director Survey that was developed and pilot-tested by epidemiologists at the Bronx District Public Health Office in summer 2005. The Director Survey included questions about demographic characteristics of the centers; types of meals provided to children, places where beverages and foods are purchased, and people in charge of purchasing beverages and foods; on-site food sources, such as availability of vending machines, kitchen and kitchen equipment, and cooks at the centers; and nutrition practices such as menu planning, selection of beverages and foods offered to children, availability of a health committee and person in charge of nutrition issues, and availability of nutrition-related activities for parents and children at the centers.

The Food section of the Building Mealtime Environment and Relationships Inventory, developed by food and nutrition practitioners at the University of Idaho (17), was also completed through interviews with center directors and from direct observation of breakfast or morning snack and lunch in classrooms. The Food section of the Building Mealtime Environment and Relationships Inventory includes items about availability of drinking water in the classroom and during mealtimes, menu planning, food appeal, food quantity to satisfy hunger needs, nutrition activities for child-care staff, and policies regarding meals for children with special dietary needs.

Both the Director Survey and the Building Mealtime Environment and Relationships Inventory were reviewed by experts in nutrition and early childhood but were not validated in this study.

Assessment of Dietary Intake

In one classroom at each center, two research assistants selected six children at random to observe. According to the literature, one adult can reliably observe the dietary intake of up to three children at a time (18,19). Between 8 AM and 2 PM, the research assistants wrote down all types and amounts of beverages and foods consumed by the children on a modified US Department of Agriculture food record form (20). In general, children ate two meals during this time: breakfast or morning snack (referred to as breakfast from here on because the foods and amounts served were very similar) and lunch. If types of beverages or foods were not obvious (eg, percent fat of milk), teachers or foodservice staff were asked to confirm. Directors from 33 of the 40 centers also provided complete 5-day menus for breakfast and lunches served Monday through Friday.

Children's dietary intakes were assessed to determine whether they met 50% of the children's daily requirements for the five main food groups, energy, and nutrients as specified in MyPyramid and the Dietary Reference Intakes (21,22). National guidelines classify children's nutrition needs by age group; that is, 1 to 3 years and 4 to 8 years. Because dietary intakes were observed for children aged 3 and 4 years, dietary intakes of children were compared to 50% of the daily food, energy, and nutrient requirements for the younger age group of children (ie, children aged 1 to 3 years) to prevent underestimation.

Beverages and foods listed on the 33 menus were also evaluated to determine whether they met the Child and Adult Care Food Program requirements for all 5 weekdays. According to the Child and Adult Care Food Program, reimbursable breakfast consists of three components: milk; fruit, fruit juice (100% fruit juice) or vegetable; and a grain or bread. Lunch consists of four components: milk; two fruit, fruit juice (100% fruit juice) or vegetable items; a grain or bread; and a meat or meat alternate (4).

Data Analysis

Data from the Director Survey, Building Mealtime Environment and Relationships Inventory, and menus were coded and entered into the Statistical Package for the Social Sciences software (version 16.0, 2007, SPSS Inc, Chicago, IL). Descriptive statistics were calculated to de-