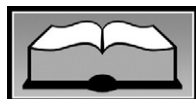


**Review**



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# What Role Can Child-Care Settings Play in Obesity Prevention? A Review of the Evidence and Call for Research Efforts

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## ABSTRACT

Given the widespread use of out-of-home child care and an all-time high prevalence of obesity among US preschool-aged children, it is imperative to consider the opportunities that child-care facilities may provide to reduce childhood obesity. This review examines the scientific literature on state regulations, practices and policies, and interventions for promoting healthy eating and physical activity, and for preventing obesity in preschool-aged children attending child care. Research published between January 2000 and July 2010 was identified by searching PubMed and MEDLINE databases, and by examining the bibliographies of relevant studies. Although the review focused on US child-care settings, interventions implemented in international settings were also included. In total, 42 studies were identified for inclusion in this review: four reviews of state regulations, 18 studies of child-care practices and policies that may influence eating or physical activity behaviors, two studies of parental perceptions and practices relevant to obe-

sity prevention, and 18 evaluated interventions. Findings from this review reveal that most states lack strong regulations for child-care settings related to healthy eating and physical activity. Recent assessments of child-care settings suggest opportunities for improving the nutritional quality of food provided to children, the time children are engaged in physical activity, and caregivers' promotion of children's health behaviors and use of health education resources. A limited number of interventions have been designed to address these concerns, and only two interventions have successfully demonstrated an effect on child weight status. Recommendations are provided for future research addressing opportunities to prevent obesity in child-care settings.

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The prevalence of obesity among US preschool-aged children is at an all-time high. More than 20% of the nation's preschool-aged children (aged 2 to 5 years) are overweight or obese (1). Because childhood obesity is associated with increased risk for obesity during adulthood and a spectrum of adverse health outcomes (2), the identification of risk factors and development of prevention efforts are public health priorities. Epidemiologic studies suggest child care experiences during the preschool years may have an important influence on weight status in childhood (3,4).

Approximately 80% of preschool-aged children with employed mothers are in some form of nonparental care arrangement for an average of almost 40 hours a week (5). More than 63% of mothers with young children are in the labor force and working parents generally choose among several types of child-care arrangements or use multiple



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arrangements (6). The majority of working parents enroll their preschoolers in center-based care arrangements (eg, child-care centers, preschools, Head Start programs) and approximately 10% are enrolled in family child-care homes (5). With such a high proportion of preschool children in attendance, it is imperative to consider the opportunities that these child-care facilities may provide to shape children's dietary intake, physical activity, and sedentary activity behaviors to prevent excess weight gain.

Recent reviews have drawn attention to the role of child-care settings in preventing obesity (7), but to the authors' knowledge, a detailed and integrated review describing opportunities to promote better dietary intake and physical activity for obesity prevention in child-care facilities has not been published. This article reviews studies of US preschool children (aged 2 to 5 years) enrolled in center-based care or family child-care homes that also addressed state regulations relating to nutrition and physical activity, child-care practices and policies with the potential to influence preschoolers' dietary intake and physical activity, and the perceptions and practices of parents with implications for obesity prevention in child-care settings. In addition, this article presents a comprehensive review of interventions conducted in the United States and internationally that were designed to prevent obesity through the promotion of better nutrition, increased physical activity, or reduced time spent in sedentary activities. The research studies presented are discussed in terms of their limitations and implications for future research.

## METHODS

Searches in PubMed and MEDLINE were completed to identify relevant, peer-reviewed research studies published between January 2000 and July 2010. Relevant articles were identified using the following key words: child care, preschool, nursery school, dietary intake, physical activity, sedentary activity, intervention, obesity, and overweight. To be included in this review, articles had to address at least one of the review objectives and describe research of relevance to preschool children (aged 2 to 5 years) enrolled at child-care centers or family child-care homes. Articles describing state regulations, practices and policies in child-care facilities, and the perceptions and practices of parents were included only if relevant to US preschool-aged children. Intervention studies were included only if an evaluation of program impact or feasibility was completed; however, relevant studies completed outside the United States were not excluded. Multiple publications evaluating the same program were considered together as evidence for the efficacy of one intervention. The bibliographies of identified articles were also reviewed to ensure that all relevant studies were retrieved. In addition to peer-reviewed studies, reports for federal agencies were included to describe the most recent data on the Child and Adult Care Food Program (CACFP) and the Head Start Program (8,9).

## RESULTS

### State Regulations

A primary way to reach children in child-care settings is through policy and regulations. Head Start programs are

subject to federal performance standards; however, child-care facilities are regulated primarily by states. Each state establishes its own set of regulations for licensed child-care facilities and sets some minimum enforcement standards to assess compliance. Most states license a number of different categories of child-care facilities, but the majority of states differentiate between child-care centers and family child-care homes. Four recent reviews of state regulations found that most states lacked strong regulations related to healthy eating and physical activity (10-13). Child-care centers tended to be the most heavily regulated and have more specific regulations, followed by large family and group child-care homes (11). Small family child-care homes tended to have the fewest and most general regulations (11).

One review examined state regulations and recorded key nutrition and physical activity items that related to childhood obesity, including water is freely available, sugar-sweetened beverages are limited, foods of low nutritional value are limited, children are not forced to eat, food is not used as a reward, support is provided for breastfeeding and provision of breast milk, screen time is limited, and physical activity is required daily (10). The findings indicate considerable variation exists among states in regulations related to obesity. Tennessee had six of the eight regulations for child-care centers, and Delaware, Georgia, Indiana, and Nevada had five of the eight regulations. In contrast, the District of Columbia, Idaho, Nebraska, and Washington had none of the eight regulations. For family child-care homes, Georgia and Nevada had five of the eight regulations; Arizona, Mississippi, North Carolina, Oregon, Tennessee, Texas, Vermont, and West Virginia had four of the eight regulations. California, the District of Columbia, Idaho, Iowa, Kansas, and Nebraska had none of the regulations related to obesity for family child-care homes.

Another review focused on child-care regulations related to physical activity and playground safety and found that many state regulations did not comply with national health and safety standards (12). The review focused on 17 standards outlined in *Caring for Our Children: National Health and Safety Performance Standards: Guidelines for Out-of-Home Child-Care Programs* (14). Caring for Our Children standards were created through a joint effort by a number of national organizations, including the American Academy of Pediatrics and the American Public Health Association. State regulations were found to address only six of the 17 standards for child-care centers and five for family child-care homes. The results indicate state regulations did not pay sufficient attention to the size of outdoor play areas, equipment height, equipment inspections, and play area surfacing. In general, the results showed that states had greater numbers of regulations to support physical activity vs playground safety.

### Child-Care Practices and Policies of Relevance to the Promotion of Healthy Eating

Practicing healthy eating behaviors during early childhood is critical to support optimal growth and development, to achieve and maintain a healthy weight, and to ensure overall health (15). The preschool years are an especially important time for developing eating skills and

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