

# An Ecological Approach to Exploring Rural Food Access and Active Living for Families With Preschoolers\*

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## ABSTRACT

**Objective:** To identify factors using the Ecological Model of Childhood Overweight related to accessing nutritious foods and physical activity opportunities from the perspectives of rural parents of preschoolers.

**Methods:** A mixed-methods study using a quantitative survey (Active Where?) and qualitative interviews. Analyzed interview themes provided context to the survey results. The setting was Head Start centers, county human service offices, and Women, Infants, and Children Program sites in rural counties in the Midwest. Rural parents ( $n = 377$ ) of preschoolers took part in the survey in 7 Midwestern states; 15 similar participants were interviewed from 1 of the states. Transcribed interviews were coded. Frequencies and chi-square tests were computed; significance was set at  $P < .05$ .

**Results:** The Active Where? survey and interviews revealed that close proximity to recreation spaces and traffic safety issues influenced physical activity. For food access, close proximity to full service grocery stores did not influence access to healthy foods because respondents traveled to urban communities to purchase healthy foods.

**Conclusions and Implications:** Public transportation solutions and enhanced neighborhood safety are potential community-wide obesity prevention strategies in rural communities. However, interventions should be tailored to the community's stage of readiness. Strong social networks should be considered an asset for community change in these regions.

**Key Words:** preschool children, obesity, rural communities, environment, ecological model (*J Nutr Educ Behav.* 2015;47:548-554.)

Accepted August 24, 2015.

## INTRODUCTION

Childhood obesity disproportionately affects low-income, minority, and rural children.<sup>1-3</sup> Children living in

rural areas in the US are about 25% more likely to be overweight or obese than their urban counterparts.<sup>4</sup> Some argue that the reason children in rural areas are more obese is because fewer

opportunities exist for urban children to exercise.<sup>4</sup> The geography and infrastructure (built environment) of rural areas make residents especially prone to obesity.

Built environmental factors for physical activity include safe playground equipment, sidewalks or safe streets, green spaces, and accessible indoor gym facilities. Built environmental factors for healthy eating include access to healthy foods in rural grocery stores where food deserts are commonly found.<sup>5</sup> The availability of conveniently located retail food outlets that sell nutritious foods at affordable prices is an important factor in providing individuals with healthy food choices that reduce their risk for obesity.<sup>6,7</sup>

The purposes of this study were to understand the rural built environment from the perspectives of parents with preschoolers and to identify barriers to providing nutritious foods and physical activity opportunities. The researchers used the Ecological

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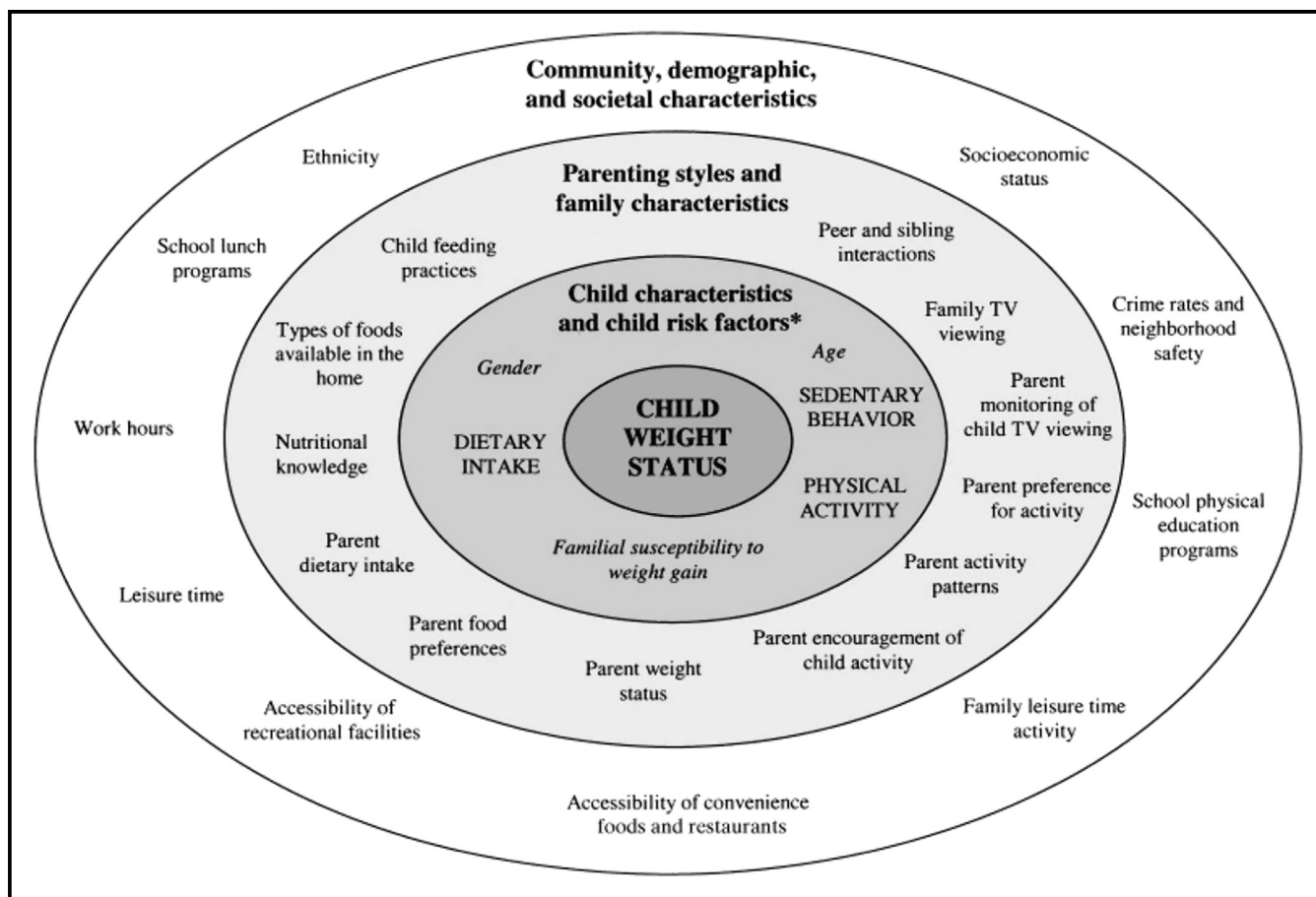
\*This online article was corrected after publication to include Carol Smathers in the author list.

*Conflict of Interest Disclosure:* The authors' conflict of interest disclosures can be found online with this article on [www.jneb.org](http://www.jneb.org).

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<http://dx.doi.org/10.1016/j.jneb.2015.08.020>



**Figure.** Ecological Model of Predictors of Childhood Overweight. (Reprinted with permission from Davison and Birch 2001.)

Model of Childhood Overweight<sup>8</sup> (Figure) to illustrate how community characteristics such as the built environment affected multiple aspects of a child's environment. Although it is a popular tool in emerging obesity prevention research, its application in rural settings has been limited.<sup>9</sup> This study aimed to discover how the community portion of the ecological model affected the barriers and facilitators for accessing fruit, vegetables, and physical activity opportunities for rural parents with preschoolers.

## METHODS

This study used mixed methods in a developmental approach with complementary intent.<sup>10</sup> The Active Where? Parent Survey provided a quantitative, descriptive assessment of participants' perceptions. Qualitative interviews provided themes and added context to the Active Where? survey responses.

Research participants for both the survey and interviews were rural parents and caregivers with children

aged 3–5 years. Rural status was defined as an area with a population density < 1,000 people per square mile.<sup>9</sup> Participants were asked to consider how questions applied to the preschooler(s) in their households. All procedures were approved by the North Dakota State University Institutional Review Board.

### Active Where? Parent Survey

This survey was a sub-study of the Communities Preventing Childhood Obesity (CPCO) study examining the influence of coalition building on policy, systems, and environments of preschool children to prevent childhood obesity.<sup>11</sup> A convenience sample of 377 individuals was recruited from 14 rural communities in 7 Midwestern states at local Head Start programs, county human services offices, and Special Supplemental Nutrition Program for Women, Infants, and Children clinics. Surveys were administered by researchers in an

interview format at recruitment sites in fall, 2012. A consent statement was read aloud before administering the survey. Participants received \$30 after completing the survey, which took approximately 45–60 minutes.

The survey was adapted, with permission, from the Active Where? Parent–Child Survey developed by Grow et al.<sup>12</sup> The Active Where? survey measures parental perceptions of how the built and physical environment affects the physical activity and eating behaviors of their children. The adapted version included a parent demographic section and 11 sections assessing home and neighborhood environment characteristics. Three sections were included in this CPCO sub-study: recreation places and sports facilities where your child plays ( $\alpha = .81$ ), barriers to activity in the local neighborhood ( $\alpha = .88$ ), and a brief food frequency questionnaire ( $\alpha = .70$ ). Descriptive and nonparametric statistics (frequencies and chi-square tests) were conducted in SAS

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