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Barriers to Physical Activity and Healthy Diet Among Children Ages 6 Through 13 in a Mississippi Elementary School[1]

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The purpose of this study was to identify barriers to adequate physical activity and a healthy diet, investigate differences in the perceived barriers among subgroups, and determine predictors of high versus low total barrier scores in one inner-city elementary school. A mixed method design was used and included students ages 6 through 13 (n = 110) and parents, teachers, and community leaders (n = 20). Data were collected using questionnaires and focus groups. Quantitative findings revealed no differences in total barriers based on age, gender, number of parents, or household income; however, subscale differences among groups were noted. Qualitative findings indicated that perceived barriers to physical activity were knowledge-related, and barriers to healthy diet concerned access to healthy foods.

CHILDHOOD OVERWEIGHT AND obesity rates have tripled since the previous generation, leading many health officials to label it an epidemic in the United States (U.S.) (Centers for Disease Control and Prevention [CDC], 2008, 2012). Recent statistics indicate that more than 23 million children and adolescents are overweight or obese in the U.S. (Centers for Disease Control and Prevention [CDC], 2008). Childhood overweight and obesity can lead to many health-related conditions including cardiovascular disease, diabetes, sleep apnea, arthritis, and certain types of cancer (Daniels, 2006; Ebbeling, Pawlak, & Ludwig, 2002). Being overweight or obese may also have a significant impact on a child's psychological health (Daniels, 2006) and academic performance (Taras & Potts-Datema, 2005). Further, an overweight child has an 80% chance of becoming an overweight or obese adult (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). The health care costs associated with childhood overweight and obesity have a significant impact on state and national health care expenditures in the U.S. and are estimated at approximately $14 billion per year (Pekruhn, 2009).

The causes for the high prevalence of overweight and obese children in this country are multiple and complex (Brown, Broom, Nicholson, & Bittman, 2010; Landhuis, Poulton, Welch, & Hancox, 2008). Age, gender, socioeconomic status, and number of parents in the household have been implicated as factors in a child's risk for being overweight or obese (Fryar, Carroll, & Ogden, 2012; Gibson et al., 2007; Long, Mareno, Shabo, & Wilson, 2011; Murasko, 2009; Schmeer, 2012). Several investigators also indicate that perceived barriers may have a negative effect on

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one's engagement in weight-regulating behaviors such as physical activity and food choices (Ar-yuwat, Clark, Hunter, & James, 2013; Piana et al., 2013). Due to the multi-faceted nature and complexity of the problem, a tailored approach to weight-related interventions in the pediatric population is important to success (Glover et al., 2011; Grow et al., 2010). School-based interventions (Foster et al., 2010; Foster et al., 2008; Kriemler et al., 2010; Zenzen & Kridli, 2009), and interventions which involve parents and communities through a community-based approach hold promise in curbing childhood overweight and obesity (Findholt, 2007; Pyle et al., 2006; Wofford, 2008).

In Mississippi, obesity among children has been the highest in the nation (Mississippi Department of Education Office of Healthy Schools, 2009) and has been difficult to combat. Parents and school personnel at one inner-city public elementary school in Mississippi requested a school-based program to address the problem of overweight and obese children under their care. As a first step in developing a tailored program to address the problem, the health care providers at the school felt that it was important to understand factors that prevented engagement in physical activity and consumption of healthy foods among students attending the school and whether the barriers were the same for all groups of children. Accordingly, the purpose of this study was to identify the perceived barriers to a healthy lifestyle in terms of physical activity and a healthy diet for students, investigate differences in the perceived barriers among subgroups, and determine predictors of high versus low total barriers scores. Detailed in this manuscript are results of the healthy lifestyle barriers assessment, which will be used for development of a school-based, population-specific healthy lifestyle program.

Methods

Pender's Health Promotion Model provided the theoretical foundation for this study (Pender, Murdaugh, & Parsons, 2002). Of particular relevance are Pender's theorized relationships in the model that perceived barriers can have a negative effect on commitment to a behavior; situational or environmental influences affect commitment to and engagement in a given behavior; persons are more likely to engage in a behavior if they have positive role modeling and support; and that families, peers, and health care providers are important sources of support for promoting a given behavior (Pender et al., 2002).

A descriptive, convergent parallel mixed methods design was used to identify and understand the perceived barriers to physical activity and a healthy diet among students in one elementary school in Jackson, Mississippi. Quantitative data were collected via self-administered surveys distributed to eligible students, and qualitative information was collected via focus groups with adult stakeholders. This study was conducted during the 2011–2012 academic school year. At the time of the study, the student body was 99% African-American, and the majority of students lived in households with an annual income of less than $25,000.

Participants

Students in grades 1st through 5th were eligible for inclusion in the survey ($N = 260$). Students in grades pre-K and kindergarten were not included in this study due to their lack of ability to read.

Participants included in the focus groups were teachers and school administrators, parents of the children enrolled at the school, and community leaders. Initial focus group participants were identified with the help of school personnel as likely having interest in the study and being able to provide useful insight, with subsequent participant identification occurring via snowball technique. Of the 20 total focus group participants, the average age was 39.8. All but one participant were female, and eighty percent were African-American ($n = 16$).

Measures

The Barriers to Physical Activity Scale (Zabinski, Saelens, Stein, Hayden-Ware, & Wilfley, 2003), a 21-item 5-point Likert-scale instrument, was used to measure the student's total level of perceived barriers to engaging in physical activity. Rating of each item ranged from *never* (1) to *very often* (5). Instrument items were summed to derive a total barriers score (range = 21–105), as well as five subscale scores (body-related, range = 3–15, convenience, range = 3–15, resources, range = 5–25, social, range = 5–25, & fitness, range = 5–25). Higher scores (total barriers scores & subscale scores) indicated a higher level of perceived barriers.

The body-related subscale items addressed self-consciousness about one's body during physical activity, while the convenience subscale dealt with concepts related to time and environmental constraints. The resource subscale items addressed environmental, personal, and physical issues regarding physical activity, and the social subscale focused on interpersonal matters in relation to physical activity. Finally, the fitness subscale items included items about individual physical issues in relation to performing physical activity, particularly discomfort. This scale has demonstrated good internal consistency for four of the five barrier subscales (body-related, resources, social, and fitness, $\alpha > .7$), moderate consistency for the convenience subscale ($\alpha = .58$) (Allison, Dwyer, & Makin, 1999), excellent reliability for the total scale ($\alpha = .9$), and established validity for use with children and adolescents 8 to 16 years of age (Zabinski et al., 2003).

The Pediatric Barriers to a Healthy Diet Scale (Janicke, Storch, Novoa, Silverstein, & Samyn, 2007), a 17-item 5-point Likert-scale instrument, was used to measure the