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Research report

Associations between family food behaviors, maternal depression, and child weight among low-income children ☆

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ABSTRACT

Although low-income children are at greater risk for overweight and obesity than their higher income counterparts, the majority of poor children are not overweight. The current study examined why such variation exists among diverse young children in poor families. Cross-sectional data were collected on 164 low-income, preschool aged children and their mothers living in two Rhode Island cities. Over half of the sample was Hispanic (55%). Mothers completed measures of family food behaviors and depression while trained assistants collected anthropometric data from children at seven day care centers and a Supplemental Nutrition Assistance Program outreach project. Multivariate analysis of covariance revealed that higher maternal depression scores were associated with lower scores on maternal presence when child eats ($P < .05$), maternal control of child's eating routines ($P < .03$), and food resource management skills ($P < .01$), and with higher scores on child control of snacking ($P < .03$) and negative mealtime practices ($P < .05$). Multiple regression results revealed that greater maternal presence whenever the child ate was significantly associated with lower child BMI *z* scores ($\beta = .166$, $P < .05$). Logistic regression analyses indicated that higher scores on food resource management skills reduced the odds of child overweight (odds ratios = .72–.95, $P < .01$). Maternal depression did not modify the relationship between family food behaviors and child weight. Overall, caregiver presence whenever a child eats, not just at meals, and better parental food resource management skills may promote healthier weights in low-income preschoolers. Further research is needed to identify the mechanisms that connect caregiver presence and food resource management skills to healthier weights for this age group.

Introduction

Child overweight is more highly concentrated among low-income children as compared with the general population. Nationally, 26.7% of the preschool-age population is overweight (Ogden, Carroll, Kit, & Flegal, 2012). Among low-income households, those below 200% of the federal poverty line, about one-third of preschool-aged children are overweight (Dalenius, Borland, Smith, Polhamus, & Grummer-Strawn, 2012; Edmunds, Woelfel, Dennison, Stratton, Pruzek, & Abusabha, 2006). Rates vary, however, by race and ethnicity. For example, low-income Hispanic preschool-aged children are more likely to be overweight or obese (35%) than their non-Hispanic white (27.8%) or non-Hispanic black counterparts (25.7%) (Dalenius et al., 2012). This high prevalence is of particular concern as studies suggest that experiencing overweight during the preschool years increases the likelihood of experiencing overweight in adolescence (Nader et al., 2006) and adulthood (Lin, Huang, & French, 2004). Although most research links poverty and child weight, the majority of low-income preschool aged children are not overweight. This study examines why such variation exists among young children in poor families with a focus on family food behaviors that have been associated with income (Coon, Goldberg, Rogers, & Tucker, 2001; Flores, Tomany-Korman, & Olson, 2005) and maternal depression, which disproportionately impacts low-income mothers (Ertel, Rich-Edwards, & Koenen, 2011) and may inhibit the use of effective family food behaviors (McCurdy, Gorman, & Metallinos-Katsaras, 2010).

Family food behaviors

In studies of middle class and nationally representative samples, eating meals as a family has been linked to better dietary intake

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(Woodruff & Harding, 2013). Findings are mixed regarding its association with child overweight (Gable, Chang, & Krull, 2007; Hammons & Fiese, 2011), though one recent review found a stronger relationship between eating family meals and lower weight among younger children as compared with adolescents (Valdes, Rodriguez-Artalejo, Casquero, & Royo-Bordonada, 2012). Much of this research, however, is limited by single item measures of the family meal; the failure to consider other mealtime behaviors that may promote healthy food habits, such as consistent eating routines (Baughcum et al., 2001); a focus on samples with older children and youth (Kroller & Warschburger, 2008); and limited attention to adult presence whenever child eating occurs, which may be of particular importance to the health of preschool aged children who eat several times a day (Ziegler, Hanson, Ponza, Novak, & Hendricks, 2006). Furthermore, although low-income and minority families have been found to eat fewer meals together than higher income and nonminority families (Hammons & Fiese, 2011; Melgar-Quinonez & Kaiser, 2004), few studies have assessed the association between family eating and child weight within these populations.

Much of the literature on family food behaviors examines parental restriction of or pressure to eat certain foods. These intrusive practices are posited to reflect an authoritarian feeding style (Patrick, Nicklas, Hughes, & Morales, 2005), and have been associated with heavier weight among young children in predominately white samples (Faith, Scanlon, Birch, Francis, & Sherry, 2004; Ventura & Birch, 2008). In contrast, studies of low-income, minority families fail to find this association (Hughes, Anderson, Power, Micheli, Jaramillo, & Nicklas, 2006; Hughes, Power, Fisher, Mueller, & Nicklas, 2005; Larios, Ayala, Arredondo, Baquero, & Elder, 2009; Melgar-Quinonez & Kaiser, 2004). Socioeconomic variation in the effects of these intrusive practices has prompted a shift toward identifying other ways parents shape their children's consumption that may better explain child weight in low-income and minority families (Chaidez & Kaiser, 2011).

Allowing the child to control food choices is one parenting practice that may explain weight variation in low-income families. Afternoon snacking has been found to be especially prevalent among Hispanic toddlers (Ziegler et al., 2006), while allowing children to freely snack in between meals corresponded to healthier child weight among low-income, Mexican American preschoolers (Melgar-Quinonez & Kaiser, 2004). A related study found that greater child control of food intake corresponded to higher intake of fruits and vegetables among preschoolers (Kroller & Warschburger, 2008). In contrast, greater child control over food intake increased consumption of unhealthy foods among a sample of low-income Hispanic toddlers; however, this study included intrusive parental practices (e.g., offering the child sweetened beverages) as indicating greater child control of food (Chaidez & Kaiser, 2011). To date, the relationship between nonintrusive parental practices around the child's opportunity to control food choices and child weight remains an under-investigated line of inquiry, especially as to potential protective effects against child overweight in low-income families.

Maternal efforts to provide consistency in eating routines and schedules have been hypothesized to foster healthy eating habits among children (Fischer & Silverman, 2007). While such practices have received limited empirical attention, recent research highlights the need for further study. One study examined primarily low-income, non-Hispanic white families and found that mothers of healthy weight preschoolers were more likely to provide greater structure during feeding, such as established routines, as compared with mothers of overweight preschoolers, though this association disappeared after adjusting for income (Baughcum et al., 2001). A second study linked consistent mealtime schedules to reduced grazing between meals and more positive mealtime environments in a sample of 2- to 6-year-old children in predominately white families (Berlin, Davies, Silverman, & Rudolph, 2011).

Other family food behaviors that have been found to be more prevalent among low-income families may contribute to child overweight in this population. For example, low-income families often report difficulty managing their food dollars (Ziegler et al., 2006). To date, skills associated with managing food resources have received limited attention as a correlate of child weight. Low-income families are more likely to allow their children to eat in front of the television (Hammons & Fiese, 2011) and are more likely to live in neighborhoods with higher concentrations of fast food restaurants (Reidpath, Burns, Garrard, Mahoney, & Townsend, 2008) than higher income families. Television watching while eating has been associated with heavier BMI *z* scores in older children (MacFarlane, Cleland, Crawford, Campbell, & Timperio, 2009), and with increased consumption of unhealthy foods among middle school children (Coon et al., 2001). Consumption of fast food among Mexican American families (Duerksen et al., 2007) and older children (MacFarlane et al., 2009) has been linked to child overweight, though few studies have examined whether such practices are associated with variation in child weight *among* low-income families.

Maternal depression

One major barrier low-income families may face in the struggle to provide a healthy family food environment is maternal depression. As posited by Conger and others, the stress associated with poverty impacts maternal mental health which, in turn, inhibits the use of competent and responsive parenting behaviors, with negative effects on children (Conger & Elder, 1994; Conger, Wallace, Sun, Simons, McLoyd, & Brody, 2002). In support of this theory, rates of depression are substantially higher among low-income women (Ertel et al., 2011) and maternal depression has been found to exert strong and long-lasting effects on child behavior and cognition (Letourneau, Salmani, & Duffett-Leger, 2010; Sobolewski & Amato, 2005). Findings are mixed, however, as to the relationship between maternal depression and child weight (Bronte-Tinkew, Zaslow, Capps, Horowitz, & McNamara, 2007; Lytle et al., 2011) and few studies have investigated this association in preschool age children. One national study of 3- to 10-year-old low-income children found that cumulative maternal stressors, including maternal depression, predicted a greater likelihood of overweight among food secure children as compared with food insecure children (Gundersen, Lohman, Garasky, Stewart, & Eisenmann, 2008). Further, depression has been associated with more authoritarian and distant feeding styles among low-income mothers of infants (Hurley, Black, Papas, & Caufield, 2008), and reduced use of positive family meal practices, such as eating meals as a family or not allowing the child to watch TV during meals among primarily white, well-educated parents of youth (Lytle et al., 2011). Such findings support the proposition that depression may inhibit low-income parents from utilizing family food behaviors that foster healthy weight among young children (McCurdy et al., 2010), though research testing this hypothesis has been limited.

The current study addresses these gaps in the empirical literature by examining associations between family food behaviors, including family mealtime practices and food resource management skills, maternal depression, and child weight in a sample of ethnically diverse, low-income families. The following hypotheses were tested: 1) maternal depression will correspond to less involved and more disorganized family food behaviors; 2) more involved and organized family food behaviors will be associated with healthier child weights; and 3) maternal depression will reduce the association between more involved and organized family food behaviors and healthier child weights.