



Research report

Association of fathers' feeding practices and feeding style on preschool age children's diet quality, eating behavior and body mass index [☆]



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ABSTRACT

The associations of parental feeding practices and feeding style with childhood obesity have gained more attention in the literature recently; however, fathers are rarely included within these studies. The aim of this research was to determine the relationship of paternal feeding practices on child diet quality, weight status, and eating behavior, and the moderating effect of paternal feeding style on these relationships in preschool age children. This study included a one-time, one-on-one interview with biological fathers of preschoolers ($n = 150$) to assess feeding practices (Child Feeding Questionnaire), feeding style (Caregiver Feeding Style Questionnaire), child eating behaviors (Child Eating Behavior Questionnaire), and diet quality (24 hour recall, Healthy Eating Index). Height and weight for each father and child were also measured and Body Mass Index (BMI) or BMI z-score calculated. Linear regression was used to test the relationship between paternal feeding practices, style and child diet quality and/or body weight.

Overall, the findings revealed that a father's feeding practices and feeding style are not associated with children's diet quality or weight status. However, child eating behaviors are associated with child BMI z-score and these relationships are moderated by paternal feeding practices. For example, child satiety responsiveness is inversely ($\beta = -.421$, $p = 0.031$) associated with child BMI z-score only if paternal restriction scores are high. This relationship is not significant when paternal restriction scores are low ($\beta = -.200$, $p = 0.448$). These results suggest that some child appetitive traits may be related to child weight status when exposed to certain paternal feeding practices. Future studies should consider the inclusion of fathers as their feeding practices and feeding style may be related to a child's eating behavior.

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Introduction

Parental feeding style and practices are now recognized as a potential influence on child dietary intake, child eating behaviors, and risk of child obesity, although most define "parent" as the mother (Birch, Fisher, & Davison, 2003; Birch et al., 2001; Birch, McPhee, Shoba, Steinberg, & Krehbiel, 1987; Fisher & Birch, 1999; Hoerr et al., 2009; Hughes, Shewchuk, Baskin, Nicklas, & Qu, 2008). While it is true that women still have primary responsibility for feeding children (Tippett & Cleveland, 2001), women's employment patterns

have changed in that they have less time to devote to feeding their young children (Savage, Fisher, & Birch, 2007); thus fathers may be more involved in child feeding than they have been previously. Furthermore, children develop health behaviors early in life (Dattilo et al., 2012), and therefore, it may be beneficial to identify relationships between paternal feeding behaviors and child eating behaviors and weight while children are young (ages 3–5 years old).

Fathers' feeding styles are rarely studied and relatively few studies have examined the impact of paternal feeding practices on child obesogenic behaviors or child weight status. A recent review on paternal feeding practices concluded that fathers commonly use pressuring feeding practices and were not as likely to monitor their child's intake compared to mothers (Khandpur, Blaine, Fisher, & Davison, 2014). Furthermore, a study comparing feeding practices used by mothers and fathers found that fathers were significantly less likely to use neutral prompts, reasoning, and praise with their kindergarten children compared to mothers (Orrell-Valente et al., 2007). Studies including data on the impact of paternal feeding practices on children have found that paternal restriction and control were associated with higher child body weight (Johannsen,

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Johannsen, & Specker, 2006; Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2013; Musher-Eizenman, de Lauzon-Guillain, Holub, Leporc, & Charles, 2009; Musher-Eizenman, Holub, Hauser, & Young, 2007; Tschann et al., 2013), and paternal pressure to eat was associated with lower child body weight (Blissett & Haycraft, 2008; Brann & Skinner, 2005; Loth et al., 2013; Tschann et al., 2013; Zhang & McIntosh, 2011). However, other studies have not found a significant relationship between paternal feeding practices and child weight status (Blissett, Meyer, & Haycraft, 2006; Haycraft & Blissett, 2008a, 2008b). With the exception of a few, these studies must be interpreted with caution due to the homogenous sample of white, non-Hispanic, educated, mid- to high-income parents, and ambiguous inclusion criteria for “fathers” (Blissett & Haycraft, 2008; Blissett et al., 2006; Haycraft & Blissett, 2008a, 2008b; Johannsen et al., 2006; Khandpur et al., 2014; Musher-Eizenman et al., 2009).

While feeding practices are context-dependent and goal-direct behaviors, feeding style provides the emotional climate of the meal (Hughes, Power, Fisher, Mueller, & Nicklas, 2005). The sole influence of a father's feeding style on child diet, eating behavior, or weight has not been studied. In studies of mostly mothers, the authoritative feeding style is believed to be the most desirable for parents (Vollmer & Mobley, 2013), as it has been positively associated with child vegetable and dairy intake (Hughes et al., 2007; Patrick, Nicklas, Hughes, & Morales, 2005), and lower child intake of low-nutrient dense foods and fats and oils (Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2012). The authoritative feeding style has also been associated with a lower risk of child overweight or obesity (Hughes et al., 2005; Tovar et al., 2012). Conversely, the indulgent feeding style has been positively linked to child weight status (Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2010; Hughes et al., 2005, 2008, 2011; Tovar et al., 2012), even explaining up to 26 percent of the variance in child weight after controlling for parent BMI (Tovar et al., 2012). Based on the existing literature, children of parents with an indulgent feeding style are at a higher risk of becoming obese compared to those children who have parents with the authoritative feeding style (Vollmer & Mobley, 2013).

The relationship between parent–child interactions at meal-time is very complex (Rhee, 2008; Ventura & Birch, 2008), and while the relationship between feeding practices and child eating behaviors has been examined, aspects of a child's eating behavior are rarely examined in conjunction with parental feeding practices or styles and how these may interact to influence a child's weight. Child eating behaviors can be divided into two groups: food approach and food avoidant. Food approach eating behaviors increase a child's risk for obesity and include food responsiveness, emotional over eating, desire to drink, and enjoyment of food (Carnell & Wardle, 2007). Conversely, food avoidant behaviors are believed to lower a child's risk for obesity and include satiety responsiveness, slowness in eating, food fussiness, and emotional under eating (Carnell & Wardle, 2007). Lower satiety responsiveness and higher food cue responsiveness of children have been associated with increased weight status in children, although it is not entirely clear how parent feeding behaviors may influence the development of these child eating behaviors (Carnell & Wardle, 2007, 2008). To the authors' knowledge, two studies have examined the relationship between a father's feeding practices and child eating behavior (Haycraft & Blissett, 2012; Orrell-Valente et al., 2007). One found that father restriction and pressure to eat were positively related to a child's slowness in eating and emotional under eating (Haycraft & Blissett, 2012). Another study examining both mother and father feeding practices and child eating behavior response found that children showed both compliance and non-compliance in response to parental controlling feeding practices (Orrell-Valente et al., 2007). Thus, the evidence suggests that controlling feeding practices may interfere with the child's own feelings of hunger and fullness (Golan & Bachner-Melman, 2011; Patrick, Hennessy, McSpadden, & Oh, 2013).

There is convincing evidence that, although mothers are the primary caregivers, fathers are becoming more involved in meal-times and child feeding (Jones & Mosher, 2013; Mallan et al., 2013). If this is indeed the case, then further research is needed to understand the complex relationship between feeding practices, feeding style, child eating behavior, and child weight status, especially among fathers, as much of the existing literature is maternal focused. Thus, the aim of this exploratory study is to determine the relationship of paternal feeding practices on child diet quality, weight status, and eating behavior, and the moderating effect of paternal feeding style on these relationships in preschool age children. It was hypothesized that (1) paternal restrictive feeding practices will be inversely associated with child diet quality scores and positively associated with child body weight, but will be attenuated by the authoritative feeding style, and (2) paternal controlling and restrictive feeding practices will be associated with both child food approach and avoidance eating behaviors.

Materials and methods

Subject population and recruitment

Sample size was determined using G*Power analysis software (GPower for Windows version 3.1.5, 2012, Germany (Faul, Erdfelder, Lang, & Buchner, 2007)). To test the relationship between paternal feeding practices and feeding style on overall child diet quality scores, with .80 power, significance set at 0.05, and effect size between .3 and .4 (medium), the minimum sample size was determined to be 128 fathers. This number was increased to 150 fathers to account for incomplete interviews.

The study was approved by the University of Connecticut-Storrs Institutional Review Board for Human Subjects. A convenience sample of fathers was recruited primarily from local preschool centers. Inclusion criteria were: biological father of at least one child between 3 and 5 years old who eats at least 1 meal per week with that child, at least 18 years of age, and able to read and understand English. Fathers could be of any race or ethnicity, education level, or income level.

Data collection and measures

Written informed consent was obtained from each father prior to the interview. Fathers also provided consent for their preschool age child's height and weight to be measured and were offered a copy of the consent form once it was signed. Each father completed a one-time, one-on-one interview with a trained researcher, who was a registered dietitian (RD), which lasted 60 to 90 minutes. The interview took place in a semi-private location, such as the child's school or the community library, at a time that was convenient for the father. Each question was read aloud to each father by the interviewer from the included questionnaires (Child Feeding Questionnaire, Caregiver Feeding Style Questionnaire, and Children's Eating Behavior Questionnaire), and responses were recorded on a computer by the interviewer. This procedure was chosen to minimize incomplete data and to prevent potential literacy issues for some fathers. A \$25 gift card incentive was provided at the end of the interview to each father. Each father reported demographic information, including race, ethnicity, education level, and age. To establish income levels, each father was asked if he or his child were eligible for government assistance programs, such as Head Start, Supplemental Nutrition Assistance Program (formerly food stamps), or Special Supplemental Assistance Program Women, Infants, and Children (WIC). If a father had more than one preschool age child, the interviewer specified that the father should answer the questions regarding his youngest child between the ages of 3 and 5 years old. Father and child height and weight were measured using

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