Extended abstract

Household Structure and Infant Feeding Behavior among Low-Income African Americans. Borja, Judith B, Hamilton, Jean, Mendez, Michelle, Bentley, Margaret E, and Carby-Shields, Kenitra

Background

The rising rate of overweight and obesity in the U.S. is a serious public health concern. These conditions are associated with increased mortality and morbidity from various diseases including heart disease, high blood pressure, and diabetes. Obesity is especially high among low income and minority populations. Most alarming is the high rate of obesity among African American children. The prevalence of overweight (weight-for-length >= 95^{th} percentile) among infants from birth through 23 months old in the United States is currently estimated at 11.4%. Non-Hispanic blacks have higher rates (18.5%) compared to non-Hispanic whites (10%) (Ogden et al, 2002).

As part of the effort to understand the cause of rising rates of overweight and obesity, researchers are investigating feeding patterns during infancy, the incidence of infant risk of obesity, and the role it plays in subsequent obesity (Stettler et al, 2002; Gunnarsdottir and Thorsdottir, 2003). Infancy is a time when parents and other caregivers have virtually total control of what, where, when, and how infants eat. Parents and caregivers play important roles in influencing children's eating patterns. Recent data suggest that mothers' child-feeding behaviors predict obesity-proneness among children (Faith et al, 2004; Lederman et al, 2004). Experiments conducted by Fisher and Birch (1999) revealed that excessive parental control of children's intake may be counterproductive and impair their children's internal mechanisms for regulating hunger and satiety.

Our research examines early infant feeding patterns among low-income African Americans in North Carolina and explores the influence of household structure on infant growth and development. We address two main research questions: 1. Do infant feeding behaviors differ by household structure? 2. Which types of infant feeding behaviors associated with infant overweight and obesity do we find in various household types? Household structure matters because its affects the investments of money, time, and energy that a mother (or other primary caregiver) is able to make in his/her child (Thomson et al, 1994). The literature points to poorer outcomes for children living in single parent and cohabiting households compared to married households (Brown, 2004). While much research focuses on how household structure affects child well-being for educational achievement, behavioral and emotional problems, and teenage pregnancy, relatively little research examines if and how infant feeding behavior (and therefore the probability of child obesity) is affected by household structure (Bentley et al, 1999).

The present study divides households into four categories: single not living with father or grandmother, single living with father, single living with a grandmother, and married living with father. We hypothesize that African American mothers in single parent households without fathers or grandmothers are more likely to engage in feeding

behaviors that may lead to overweight in infants and toddlers compared to other household types in our study because of factors that may result in inappropriate feeding behaviors, such as: 1) they may have less time to devote to their children; 2) less support (social, emotional and physical); and 3) higher levels of stress. Even though a mother living with a grandmother may receive more support with child rearing, we expect that a child living with a mother and grandmother may be more likely to be inappropriately fed compared to other household structures except single parent households without fathers or grandmothers. This hypothesis comes from research that finds that grandmothers may have a strong influence on infant feeding patterns and that cultural norms of the community may lead many grandmothers to introduce solid foods early and to over feed a baby (Bentley et al, 1999). We expect the infant feeding behavior of cohabiting parents to be better than that of single mothers. However, how cohabitating parents compare to single mothers with grandmothers is unclear. On the one hand, a father in the household might share in the care of the child, decreasing the time pressure and stress for the mother. On the other hand, cohabitation may imply more instability in the household leading to more maternal stress (Brown, 2004). We expect married mothers living with the father should exhibit optimal feeding behavior since they may have more time and less stress.

Data and Research Methods

Data

Data for this study comes from a pilot study conducted by the Infant Care, Feeding, and Risk of Obesity Study. This is an ongoing longitudinal study that examines a broad range of household, caregiver, and child characteristics associated with the development of obesity in the first two years of life among low-income African-Americans in North Carolina. The pilot study administered the Infant Feeding Styles Questionnaire (IFSQ) on 154 African American mothers with children 2 years and below. The sample was randomly drawn from WIC clinics in Durham, Orange, and Wake Counties in North Carolina. The IFSQ is an instrument that captures different beliefs and behaviors that characterizes specific infant feeding styles among low-income African American mothers. One of the key questions the pilot study aimed to address was: Do prevailing feeding styles in low income African-Americans promote overfeeding or the risk of obesity? Detailed information is gathered on household structure, feeding behavior, demographic, and socioeconomic variables.

Study variables

Our dependent variables are drawn from mothers' responses on questions that characterize their behavior across various infant feeding domains such as control over diet quality or quantity, interaction with child during feeding, feeding strategies for soothing the child, and the environment during feeding. We also examine breastfeeding behavior and age when other liquids/foods were introduced. Our main explanatory variable is household structure where we examine 4 household types: single mother, single mother living with a father, single mother living with grandmother, married mother

living with biological father. Covariates include age of the mother, age of index child, the sex of the child, mother's education, mother's work status, household income, and household size. (Table 1)

Preliminary Findings

Regression Analysis

We estimated logistic regressions for feeding behaviors that have been dichotomized into 0 if the behavior occurs seldom or never and 1 if the behavior occurs half of the time, most of the time or always. Breastfeeding is a dichotomous variable where 1 is if the mother ever breastfed and 0 is she did not ever breastfeed. We compare all other household types to single mothers (no father or grandmother in the household).

We find the most variation in feeding behaviors between households of single mothers with fathers and households of single mothers. Adverse feeding behaviors of propping the bottle and watching TV while feeding the child were more likely in single mothers cohabitating with fathers compared to single mothers. However, single mothers with fathers were also engaged in behaviors thought to promote appropriate eating. They were more likely to talk to the child to encourage her/him to eat and to drink breast milk or formula. They were also more likely to initiate breastfeeding than single mothers. In addition, single mothers with father households were more likely to report other behaviors like pressuring the child to finish breast milk or formula and making sure the child did not eat junk food.

Single mothers living with grandmothers also exhibited some behaviors that were different from single mothers. For appropriate feeding behaviors, they were less likely to prop the bottle and were more likely to talk to the child to encourage him/her to eat. On the other hand, they were no more likely than single mothers to initiate breastfeeding. They were more likely to report not feeding the child too much and not letting the child eat junk food.

The final household structure we examine is married mothers with fathers and no grandmothers. Compared to single mothers, the married group is more likely to breastfeed and less likely to worry when other people feed the child. The married group also reported behaviors such as being careful not to feed the child too much and less likely to let child eat junk food.

Discussion

We pose two basic research questions to which we can provide provisional answers. First, some infant feeding behaviors do seem to differ by household structure among low-income African Americans. Second, we find various types of infant feeding behaviors among these households associated with infant overweight and obesity. However, in these data we do not find a clear pattern where one type of household overall has more appropriate infant feeding behavior.

Our hypothesis that single mothers would exhibit the least optimal behaviors is not supported by the results. However, we found that compared to households with grandmothers or fathers, single mother households were less likely to talk to the child to encourage eating. Also, we did not find that households with grandmothers were engaged in less optimal feeding behaviors than mothers living with the father. In addition, we did not find married mothers engaged in behaviors that made them clearly better than other family structures. The lack of difference among structures for many behaviors suggests that some may be normative for low-income African Americans.

This study is limited by the cross-sectional design and relatively small sample size. For example, it cannot examine if changes in household structure may be causing parent stress that affects feeding behavior. However, with its rich set of explanatory variables, more work will be done to understand the findings and explore the role of other factors like household income, work, and other adults in the household. We also will examine more carefully the pattern of infant feeding behaviors and link it to other parenting behaviors observed among different household structures. Finally, the on going longitudinal study will provide more information to address the possible causal role of household structure on infant feeding behaviors and child health and development outcomes among low-income African Americans in North Carolina.

Table 1. Sample characteristics (n=148)

Characteristics	Percentage/Mean ± SE
Household structure	
Single not living with either child's father or child's grandmother	44.59%
Single living with child's father	21.62%
Single living with child's grandmother	18.24%
Married living with child's father	15.54%
Mother's age (range:18-36 years)	25.40 ± 0.40
Child's age	
< 12 months	60.14%
12-24 months	39.86%
Male children	50%
Parity (range: 1-6)	2.22 ± 0.10
Mother's education	
Less than high school grad	31.76%
High school grad	28.38%
Some college or higher	39.86%
Household size	4.17 ± 0.12
Income categories	
≤ $5,000	25.00%
$5,000-$10,000	15.71%
$10,001-$20,000	19.29%
$20,001-$30,000	24.29%
> $30,000	15.71%
Mother's work	
Not working	53.38%
Part-time	14.86%
Full-time	31.76%

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