



Research report

Low demanding parental feeding style is associated with low consumption of whole grains among children of recent immigrants



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ARTICLE INFO

Article history:

Received 3 October 2014

Received in revised form

27 May 2015

Accepted 8 June 2015

Available online 26 June 2015

Keywords:

Feeding styles

Acculturation

Obesity

Immigrants

Dietary intake

Children

ABSTRACT

We explored the influence of immigrant mothers feeding style on their children's fruit, vegetable and whole grain intake and how this relationship differed by mother's time in the U.S. Baseline data were collected on mother-child (3–12 yrs) dyads enrolled in Live Well (n = 313), a community-based, participatory, randomized controlled lifestyle intervention (2008–2013). Socio-demographics, years of residence in the U.S., behavioral data, and responses to the Caregiver's Feeding Styles Questionnaire (CFSQ) were obtained from the mother. Measured heights and weights were obtained for both mother and child. Child dietary intake was assessed using the Block Food Screener. Separate multiple linear regression models were run, adjusting for child and mother covariates. Interactions between feeding styles and years in the U.S. (<5 and ≥ 5 years), ethnicity, and child age were tested. Sixty-nine percent of mothers were overweight or obese, 46% of the children were overweight or obese. For mothers in the U.S. for < 5 years, having a low demanding/high responsive style was associated with lower child intake of whole grains in adjusted models vs. a high demanding/high responsive style (p < 0.05). This was not seen for mothers in the U.S. for ≥ 5 years. Thus, the influence of feeding style on dietary intake may change with length of time in the U.S. These hypotheses-generating findings call for future research to understand how broader socio-cultural factors influence the feeding dynamic among immigrants.

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1. Background

Among children, the prevalence of obesity has doubled from the 1970's to the early 21st century (Kim et al., 2006; Mei et al., 1998; Sherry, Mei, Scanlon, Mokdad, & Grummer-Strawn, 2004). Although evidence suggests that rates have stabilized among some populations, disparities among racial/ethnic and socioeconomically

disadvantaged populations persist (Wang, Gortmaker, & Taveras, 2010; Rifas-Shiman et al., 2009; Wang & Beydoun, 2007). In particular, immigrant populations have high rates of overweight and obesity, which increase with length of time in the U.S. (Akresh, 2007; Barcenas et al., 2007; Koya & Egede, 2007; Roshania, Narayan, & Oza-Frank, 2008; Sanchez-Vaznaugh, Kawachi, Subramanian, Sánchez, & Acevedo-Garcia, 2008; Singh, Siahpush, Hiatt, & Timsina, 2011). The increase in weight over time has been attributed to several factors, including financial, linguistic, and social stressors, in addition to changes in dietary and physical activity behaviors (Thomas, 1995). These behavioral changes are influenced by the U.S.'s "obesogenic" environment (Swinburn, Egger, & Raza, 1999). This environment is characterized by the availability of inexpensive, energy-dense foods, limited

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opportunities for meal-centered food preparation or sufficient physical activity, all of which could contribute to weight gain (Abraido-Lanza, Chao, & Florez, 2005; Akresh, 2007; Barcenas et al., 2007; Berrigan, Dodd, Troiano, Reeve, & Ballard-Barbash, 2006; Koya & Egede, 2007; Roshania, Narayan, & Oza-Frank, 2008; Wolin, Colditz, Stoddard, Emmons, & Sorensen, 2006). Given that immigrant parents often arrive to this new environment with their children, they need to figure out how to navigate the “obesogenic” food landscape while concurrently addressing other important stressors.

Parents play a critical role in determining their child's behaviors, habits, and attitudes, and in dictating the child's physical and social environment (Davison & Birch, 2001; Ritchie, Welk, Styne, Gerstein, & Crawford, 2005). Among many other factors, parenting style may play an important role in how immigrant children navigate the food environment (Collins, Duncanson, & Burrows, 2014). For example, a parent who sets rules and structure may not allow a child to have unlimited access to unhealthy foods. More specifically, parenting style describes how parents interact with their child (Darling & Steinberg, 1993) and one typology is based on two dimensions of parental behavior: responsiveness/nurturance to and demanding/control of the child (Baumrind, 1971). Combining the two dimensions results in four parenting style typologies: authoritarian, authoritative, permissive, and uninvolved (Baumrind, 1971; Maccoby et al., 1983). This general parenting framework has been applied to the feeding domain (e.g., parental feeding styles) (Hughes, Power, Fisher, Mueller, & Nicklas, 2005). Although there are scant data from racial/ethnic minority and immigrant populations, findings to date suggest that the more predominant styles of feeding are a high demanding/low responsive and a low demanding/high responsive style (Hughes et al., 2008; Hoerr et al., 2009; Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2010; Hughes et al., 2005, 2011a, 2011b; Olvera & Power, 2010; Tovar et al., 2012). Furthermore, those parents who are responsive to their child's emotional states but refrained from setting appropriate boundaries (low demanding/high responsiveness) are at the greatest risk for obesity (Hennessy et al., 2010; Hughes et al., 2005, 2011a, 2011b; Olvera & Power, 2010; Tovar et al., 2012).

Contributing to the elevated obesity prevalence is poor child dietary intake (Nicklas et al., 1988; Perry et al., 2015; O'Connor, Yang, & Nicklas, 2006; Pala et al., 2013). In particular, diets that are high in fruits, vegetables and whole grain intake provide important nutrients and reduce the risk of overweight and diabetes (Bradlee, Singer, Qureshi, & Moore, 2010; Davis et al., 2007; Ogata & Hayes, 2014). Whole grain intake has been associated with lower body mass index z-scores (BMI-z) and lower risk of overweight in children and young adults (Choumenkovitch et al., 2013; Quick et al., 2013). The protective health benefits of fruits, vegetables and whole grains can be attributed to the presence of important nutrients, vitamins, antioxidants, and dietary fiber (Clemens & et al., 2012; Wang et al., 2014). Parental feeding styles that are more responsive to their child's requests and which set few demands have been associated with healthier diets in children (Blissett, 2011; Hennessy, Huges, Goldberg, Hyatt, & Economos, 2012; Hoerr et al., 2009; Papaioannou et al., 2013; Peters, Dollman, Petkov, & Parletta, 2013). Given the unique situation that immigrant parents and children face in navigating a new social, cultural and physical environment, feeding styles may exert a particularly strong influence on child dietary intake. Recent immigrants, in particular, are in the process of acculturating to a new environment where psychological changes occur from simple every day behavioral changes to difficult and stressful situations (Berry, 1992). In addition, the pace of acculturating to a new country may differ for parents and children (Hwang, 2006; Renzaho & Karantzas, 2010). Parents may continue to maintain values,

norms, and behaviors of their culture of origin while children may embrace the cultural attitudes and behaviors of the host country more quickly (Ying & Han, 2007). In relation to their diets Renzaho for example found that children of immigrants preferred Australian foods (i.e.-energy dense snack foods) because they wanted to fit in with their peers and as a result their parents tried to control their dietary intake in hopes of retaining their traditional eating habits (Wilson and Renzaho, 2014). Unfortunately there is little evidence to understand this complex dynamic among immigrant children and parents in the U.S. although a recent study found that children of non-U.S. born parents had healthier dietary behaviors while the parents had several obesity protective behaviors (Cespedes et al., 2013) suggesting differential effects of an “obesogenic” environment on parents and children.

We sought to provide some of the first information about the influence of recent immigrant mothers to the U.S. feeding style on their children's dietary intake. We hypothesized that children of mothers with a low demanding/high responsive feeding style would have lower consumption of fruits, vegetables and whole grains compared to children of mothers with a high demanding/high responsive feeding style. Given the role that a new food environment may play in influencing diet behaviors among children, we explored this relationship and how it might differ for immigrants who have lived in the U.S. for up to 10 years.

2. Methods

2.1. Study overview

The data for this analysis were collected at baseline (different cohorts had different baseline time points between 2009 and 2011) from Live Well, a community-based, participatory research study conducted in the greater Boston, MA area, which featured a randomized controlled lifestyle intervention. The central premise of Live Well was that an appropriately timed and culturally nuanced intervention, co-created by community partners and academic researchers, can prevent excess weight gain in recently arrived immigrant mothers. A total of 387 mother-child dyads had data collected at baseline. Dyads were eligible if the mother met the following criteria: resided for < 10 years in the U.S., of Haitian, Latino or Brazilian descent, 20–55 years of age, not pregnant (or ≥ 6 months postpartum), had a child 3–12 years of age, lived in the Greater Boston area, and was willing to be randomized in to an intervention or wait-list control group. There was no weight criterion to participate in the study. Informed consent was obtained from all participants, assent for children over 7 years of age and written consent from a caregiver for children less than 7 years. Mother-child dyads attended a measurement day at a nearby community setting to complete baseline measurements. Study staff interacting with participants were bilingual in each of the participant's languages. The study was approved by the Health Sciences Boston Campus Institutional Review Board of Tufts University.

3. Measurements

3.1. Caregiver's Feeding Styles Questionnaire (CFSQ)

The CFSQ is a self-administered, 31-item instrument (although 19 of the items were used in the analysis) that collects information on parenting approaches in the context of feeding (e.g., feeding styles) (Hughes et al., 2005). The dimensions are measured through a series of questions, and scored on a 5-point Likert scale (never, rarely, sometimes, most of the time, always). Information about the development, reliability, and validity testing of this instrument is published elsewhere (Hughes et al., 2005, Hughes, Shewchuk,

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