

# Associations between Introduction of Age-Inappropriate Foods and Early Eating Environments in Low-Socioeconomic Hispanic Infants

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## ABSTRACT

**Purpose:** To examine the associations between feeding practices and eating environments of low-socioeconomic Hispanic infants.

**Methods:** Secondary analysis of cross-sectional data from a sample of 62 low-income immigrant Hispanic mothers and

their infants (age range = 4-12 months). Measures of infant *feeding practices* (food groups and beverages consumption) and *eating environment* domains were included using the Infant Feeding Scale.

**Results:** TV exposure and allowing the infant to play with toys during meals significantly correlated with intake of energy-dense foods in 4- to 6-month-olds ( $p = .05$ ). Among 7- to 9-month-olds, mealtime TV watching correlated with consumption of snacks ( $p = .05$ ) and sweetened beverages ( $p = .01$ ). Consumption of energy-dense foods was significantly different among groups with higher mean intake in older infants ( $p < .01$ ).

**Conclusion:** Findings highlight the need for culturally and socioeconomically sensitive approaches to improve infant feeding practices and support low-income Hispanic families in providing healthy and nurturing eating environments required to prevent later obesity risk. *J Pediatr Health Care.* (2017) ■■, ■■-■■.

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## KEY WORDS

Breastfeeding, eating environment, Hispanic mother, infant feeding, obesity

## INTRODUCTION

American children from disadvantaged households are at greater risk for obesity. Studies on the social determinants of obesity indicate that low socioeconomic

status mediates disparities in feeding practices and eating environments, partially explaining the higher obesity prevalence seen among African American and Hispanic young children (Gibbs & Forste, 2014; Perez-Escamilla & Bermudez, 2012). The obesity prevalence (weight-for-length  $\geq$  97.7th percentile) in Hispanic children ages 2 years or younger has remained unchanged for over a decade at approximately 9% (Ogden, Carroll, Kit, & Flegal, 2014). Disparities in infant feeding practices, including inadequate breastfeeding, introduction of age-inappropriate foods and beverages, and exposure to obesogenic home environments place Hispanic children at increased obesity risk (Taveras, Gillman, Kleinman, Rich-Edwards, & Rifas-Shiman, 2010, 2013). These data suggest that racial/ethnic disparities in childhood obesity prevalence have their origins in the earliest stages of life (Taveras et al., 2010) and highlight the need for greater understanding of the association between feeding practices and early eating environments contributing to rapid infant weight gain in Hispanics.

Inadequate exclusive breastfeeding practices and tendency to begin early complementary foods may contribute to age-inappropriate infant feeding and overfeeding among some Hispanic mothers (Cartagena et al., 2014). The American Academy of Pediatrics supports exclusive breastfeeding for at least 6 months with continued breastfeeding throughout the first year. Feeding is considered *age inappropriate* if the infant receives any solids or beverages except for breast milk or formula before 4 months of age; cow's milk or soy milk instead of breast milk or formula; or juice, meat, eggs, cheese, junk food, fast foods, or sweets at 6 months; cow's milk or soy milk, junk food, fast foods, or sweets at 9 months; and flavored milks, junk food, fast foods, or sweets at 12 months (American Academy of Pediatrics, 2014). Recently published guidelines on responsive feeding of infants and toddlers highlight the importance for mothers to avoid age-inappropriate, energy-dense foods and beverages and to continue breastfeeding for at least 1 year (Perez-Escamilla, Segura-Perez, & Lott, 2017).

Extensive research on the breastfeeding practices of low-income Hispanic mothers indicates their preference for *las dos cosas*, or favorable tendencies to supplement breast milk with formula feedings (Bartick & Reyes, 2012). For reasons not totally understood, some mothers consider combining breast milk and formula as acceptable and more beneficial to infant (Cartagena et al., 2014). The breastfeeding initiation rate of Hispanic mothers corresponds with the Healthy People 2020 target of 81.9% (Centers for Disease Control and Prevention & National Immunization Surveys, 2016); however, recent studies have shown that approximately 25% of Hispanic mothers began formula supplementation within the first week after birth (Cartagena, McGrath, & Masho, 2016; Holmes, Auinger,

& Howard, 2011; Linares, Rayens, Dozier, Wiggins, & Dignan, 2015). Researchers found that early supplementation with formula decreases breastfeeding duration (Holmes et al., 2011) and exclusivity (McCann, Baydar, & Williams, 2007; Vaaler, Stagg, Parks, Erickson, & Castrucci, 2010; Wojcicki et al., 2011). Previous studies have shown that exclusively breastfed infants are less likely to receive age-inappropriate foods than formula-fed infants, a factor that may prove protective against the development of obesity (Gibbs & Forste, 2014; Grummer-Strawn, Scanlon, & Fein, 2008; Thompson & Bentley, 2013).

*Infant feeding practices* refer to types and frequency of foods and beverages offered to young children. The feeding practices of Hispanic mothers are determined in part by cultural traditions and beliefs that support early introduction of solids. Reifsnider and Ritsema (2008) found that low-socioeconomic, overweight Hispanic infants often consumed age-inappropriate foods, including beans and rice. Research by Kuo, Inkelas, Slusser, Maidenberg, and Halfon (2010) on the factors associated with early- or late-introduced solids showed that both English- and Spanish-speaking Hispanic mothers had higher rates of introduction of solids between 4 and 6 months compared with African American and White mothers. Their findings concur with previous results from the 2002 Feeding Infants and Toddlers Study (Mennella, Ziegler, Briefel, & Novak, 2006), which showed that 4- to 5-month-old Hispanics were more likely to be eating pureed baby foods on a daily basis than non-Hispanics. This trend is concerning because results from a large longitudinal study of 2,906 infants followed up from birth through 12 months showed that early introduction of solid foods was a risk factor for both earlier cessation of breastfeeding and increased consumption of fatty and sugary foods by 12 months (Grummer-Strawn et al., 2008). In a study of 240 Mexican American toddlers, children consuming energy-dense foods such as desserts were almost 3 times more likely to be overweight compared with those who did not (Barroso et al., 2015). Early introduction of age-inappropriate foods, inadequate exclusive breastfeeding practices, and unhealthy eating environments may increase long-term obesity risk among infants.

Overweight prevalence in infancy may result from exposure to early obesogenic eating environments fostering unhealthy feeding practices and behaviors (Anzman, Rollins, & Birch, 2010). *Early eating environment* refers to the feeding context in which infants' dietary preferences and habits develop (Perez-Escamilla et al., 2017). Very little is known about the early eating environment of low-income Hispanic infants. A study by Weatherspoon, Horodynski, and Brophy-Herb (2013) examined the mealtime behavior and dietary quality of low-income African American mothers and their toddlers and concluded that mothers play a key role in

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