



## Original article

# Racial and ethnic differences in breastfeeding, maternal knowledge, and self-efficacy among low-income mothers



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## ABSTRACT

**Purpose:** The purpose of this secondary analysis was to examine racial and ethnic differences in the propensity to engage in breastfeeding, maternal knowledge, and self-efficacy in infant feeding among three groups of low-income mothers: non-Hispanic (NH) White, NH African American, and Hispanic.

**Background:** While racial and ethnic differences in infant feeding practices are substantial, these differences have not been broadly examined in relation to breastfeeding, maternal knowledge, and self-efficacy in infant feeding among low-income mothers.

**Methods:** This secondary analysis used baseline data from a randomized clinical trial with a sample of 540 low-income, mother-infant dyads from Michigan and Colorado. All data were collected when infants were approximately one month old via self-report questionnaires.

**Results:** After adjusting for mothers' age, education, marital and working status, the odds of engaging in any form of breastfeeding among Hispanic mothers remained significantly higher than among NH African-American mothers (OR = 2.5, 95% CI: 1.59–3.96) and NH White mothers (OR = 1.7, 95% CI: 1.08–2.81). However, Hispanic mothers had significantly lower maternal knowledge and self-efficacy in infant feeding than the other two groups. No significant correlations were found between maternal knowledge, self-efficacy in infant feeding, and the propensity to breastfeed.

**Conclusions:** Racial and ethnic variations were evident in the propensity to breastfeed, maternal knowledge, and self-efficacy in infant feeding suggesting the importance of tailoring breastfeeding programs to improve breastfeeding, and associated positive health outcomes. Further investigation is needed to find a better way to address breastfeeding disparity in relation to race and ethnicity, maternal knowledge, and self-efficacy in infant feeding.

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## 1. Introduction

Numerous studies have provided compelling evidence about the advantages of breastfeeding for infants and mothers including increased immunity against several pathogens (Stuebe & Schwarz, 2010), reduced risk of infant mortality (Khan, Vesel, Bahl, & Martines, 2015), reduced risk of early childhood obesity (Reynolds, Hennessy, & Polek, 2014), and decreased risk of maternal breast and ovarian cancer (Victoria et al., 2016). Despite the well-documented health benefits of breastfeeding, the percentage of infants in the United States who were exclusively breastfed at three months of age (40.7%) is still below the *Healthy People 2020* goal of 46.2% (Centers for Disease Control and Prevention [CDC], 2014). Additionally, the rate of breastfeeding was significantly lower among low-income mothers (38%) compared with high-income mothers (70%; CDC, 2012), particularly the low-income

women enrolled in the special supplemental nutrition programs (Silk et al., 2010).

Variations in infant breastfeeding practice have been attributed to different factors including maternal race, ethnicity, knowledge, and self-efficacy (Kitsantas, Gaffney, & Kornides, 2012). The gap in breastfeeding initiation and duration between non-Hispanic (NH) African American and NH White women has persisted over the years, with significantly lower rates of breastfeeding reported for African American infants (59%) compared with White infants (75%; CDC, 2016). Literature focused on Hispanic mothers has provided limited information on factors associated with breastfeeding such as geographical location and acculturation (Joshi, Amadi, Meza, Aguire, & Wilhelm, 2016). Racial and ethnic disparities in breastfeeding have been linked to maternal culture, which includes beliefs, traditions, and values transmitted from one generation to the next (Bai, Wunderlich, & Fly, 2011; Street & Lewallen, 2013).

A study in the United States revealed that mothers with knowledge of breastfeeding benefits were significantly more likely to practice

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breastfeeding at two months postpartum (Kornides & Kitsantas, 2013). Likewise, two studies identified breastfeeding self-efficacy, defined as a mother's confidence in her ability to breastfeed successfully, as a significant predictor for breastfeeding duration at two and six months postpartum (de Jager et al., 2015; Dennis, 2006).

Although the differences in breastfeeding practices among low-income mothers of different racial and ethnic groups are substantial (Gibson-Davis & Brooks-Gunn, 2006; Hurley, Black, Papas, & Quigg, 2008; Smith-Gagen, Hollen, Walker, Cook, & Yang, 2014), these differences have not been broadly studied in regards to maternal knowledge and self-efficacy. Therefore, the primary purpose of this analysis was to help close this knowledge gap by examining the racial and ethnic differences in breastfeeding practice, maternal knowledge, and self-efficacy among low-income mothers. An additional purpose was to examine the associations among maternal knowledge, self-efficacy in infant feeding, and the practice of breastfeeding. The Social Cognitive Theory was used to guide this analysis as it posits that human behavior, as related to the practice of breastfeeding for this analysis, is the product of the dynamic interaction of maternal knowledge, self-efficacy related to infant feeding, and racial and ethnic influences (Bandura, 1977).

## 2. Method

### 2.1. Design

This secondary analysis used the baseline data from a randomized, controlled trial that examined the efficacy of the *Healthy Babies through Infant-centered Feeding (HB)* intervention for promoting infant-centered feeding, defined as appropriate maternal responsiveness (Horodynski et al., 2011). Data were collected in the parent study by trained data collectors via home visits at three time points: baseline (before the first lesson when the infant was approximately one month old), post intervention (when the infant was six months old), and follow up (when the infant was 12 months old). In the parent study, the HB intervention was compared to the traditional *Expanded Food and the Nutrition Education Program (EFNEP)* administered in Michigan (MI) and Colorado (CO). However, the information presented here is about the associations among selected variables before the subjects participated in the intervention.

### 2.2. Sample

Participants were recruited in MI and CO through local cooperative extension programs and community agencies providing services to mothers of infants, such as the EFNEP, and The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Only baseline data from the parent study were used for this analysis. The sample included NH African American, Hispanic, and NH White mother-infant dyads with mothers aged 17 years and older who had household incomes at or below 185% of the federal poverty level. All infants were full-term and had appropriate birthweight and no special feeding needs. Since this analysis used pre-existing data with no personal identifiers, it was determined to be exempt from review by the Human Subjects Committee of the University's Institutional Review Board.

### 2.3. Measures

All instruments were available for the participants in either English or Spanish.

*Sociodemographic data* were collected via a self-administered questionnaire on race and ethnicity, mother's age, infant's age, education, working status, history of infant feeding, and marital status.

*Breastfeeding practice* was defined in the parent study as engaging in any breastfeeding practice, regardless of breastfeeding exclusivity, initiation, and duration. Data came from mothers' baseline responses to the closed-ended question "Are you currently breastfeeding your baby?"

Those who answered "yes" to this question were considered breastfeeding mothers.

*Maternal knowledge* about infant feeding was measured by the 13-item self-reported Maternal Knowledge Questionnaire with internal consistency of 0.73 (Horodynski et al., 2011). The maternal knowledge scale was used to assess general maternal knowledge on infant feeding. This scale was comprised of 11 questions with three fixed responses (Yes, No, and Don't know) and two additional questions with multiple responses. The overall knowledge score was computed as the total of all correct answers to the individual items, resulting in a score ranging from 0 to 19. Higher scores indicated a higher level of accurate knowledge.

*Infant feeding self-efficacy* is related to a mother's belief in her ability to succeed in infant feeding. This variable was measured by the four-item Maternal Self-Efficacy Scale that ranges from 1 (very unsure) to 5 (very sure) on a five-point Likert scale (Horodynski et al., 2011). The overall self-efficacy score was computed as the mean of the responses to the four items, with higher scores indicating higher infant feeding self-efficacy. For this study, this unidimensional scale loaded highly on a single factor with acceptable internal consistency (Cronbach's alpha = 0.66).

### 2.4. Data analysis

The data were analyzed using STATA Software, Version 14.0. Descriptive statistics including means and frequencies were used to describe continuous and categorical variables, respectively. The practice of breastfeeding was examined by race and ethnicity using a Chi-square test for bi-variate relationships and logistic regression for multivariate analyses. Linear regression models and *t*-tests were used to examine maternal knowledge and self-efficacy in infant feeding by race and ethnicity. Spearman's correlation was used to assess the relationships between maternal knowledge and breastfeeding, and self-efficacy and breastfeeding.

## 3. Results

### 3.1. Demographics

The 540 mother-infant dyads that met the inclusion criteria from MI and CO were enrolled at baseline, among whom 333 (63.0%) were first-time mothers. Nearly half of the mothers (44.3%) were Hispanic, 32.2% were NH African American, and 23.5% were NH White. The mothers' mean age was 24.2 years ( $SD = 5.29$ ; range 17–45), and their infants' average age was 1.6 months ( $SD = 0.95$ ; range 0.3–5). Other sample characteristics are shown in Table 1.

### 3.2. The propensity/odds of engaging in any breastfeeding practice

After adjusting for mothers' age, education, marital and working status, the odds of breastfeeding among Hispanic mothers remained significantly higher than among both NH African-American mothers (OR = 2.5, 95% CI: 1.59–3.96) and NH White mothers (OR = 1.7, 95% CI: 1.08–2.81). However, the breastfeeding odds among NH White mothers did not differ significantly from NH African American mothers. In addition, the breastfeeding odds increased for each additional year of mother's age by 5% (OR = 1.05, 95% CI: 1.00–1.09,  $p = 0.023$ ), and married mothers had almost twice the breastfeeding odds (OR = 1.9, 95% CI: 1.20–3.01,  $p < 0.005$ ) of single mothers.

### 3.3. Infant feeding knowledge

When examining maternal knowledge about infant feeding by race and ethnicity, NH White mothers had higher mean knowledge scores than did Hispanic mothers ( $\bar{x} = 13.7$  vs.  $\bar{x} = 10.8$ ,  $p < 0.001$ ) and NH African American mothers ( $\bar{x} = 13.7$  vs.  $\bar{x} = 12.8$ ,  $p < 0.001$ ). NH African

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