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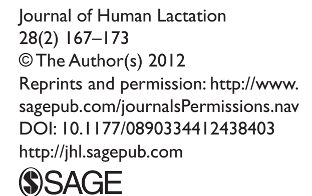

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Association between Acculturation and Breastfeeding among Hispanic Women: Data from the Pregnancy Risk Assessment and Monitoring System

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Abstract

Background: Breastfeeding rates are typically higher among Hispanic women; however, they vary by acculturation status in that those more acculturated are less likely to breastfeed than those who are less acculturated. This study examined the association between acculturation and breastfeeding behaviors using population-based data.

Methods: Data (N = 8942) from the Pregnancy Risk Assessment Monitoring System (PRAMS) were used for analysis. Acculturation status was determined using self-reported Hispanic ethnicity and the language in which the women responded to the PRAMS survey, either English or Spanish. Hispanic women who responded to the survey in Spanish were categorized as less acculturated than those who responded in English. Breastfeeding indicators used were: initiation, duration to ≥ 10 weeks, and exclusive breastfeeding to ≥ 10 weeks.

Results: The prevalence rates of breastfeeding initiation, duration, and exclusive breastfeeding to ≥ 10 weeks were significantly higher among less acculturated than among highly acculturated. More acculturated were less likely to initiate breastfeeding (prevalence ratio [PR] = 0.88; 95% CI, 0.86-0.90), less likely to breastfeed ≥ 10 weeks (PR = 0.77; 95% CI, 0.72-0.82), and less likely to report exclusive breastfeeding to ≥ 10 weeks (PR =,0.70; 95% CI, 0.58-0.85). The relationship between breastfeeding continuation and acculturation persisted after adjusting for covariates in that more acculturated were less likely to breastfeed to ≥ 10 weeks (adjusted prevalence ratio [APR] = 0.81; 95% CI, 0.75-0.87), as did the relationship between exclusivity and acculturation; more acculturated were less likely to report exclusive breastfeeding (APR = 0.69; 95% CI, 0.55-0.87).

Conclusions: Breastfeeding promotion efforts must include culturally/linguistically supportive services to assure that women are able to make optimal infant feeding decisions.

Keywords

breastfeeding, acculturation, Hispanic, PRAMSÁ

Well Established

Hispanic women in general have higher breastfeeding prevalence than other racial or ethnic groups.

Newly Expressed

Data from Pregnancy Risk Assessment and Monitoring System (PRAMS) show that different acculturation status of Hispanic women US is associated with breastfeeding initiation, duration to ≥ 10 weeks, and exclusive breastfeeding.

Background

The prevalence of breastfeeding in the United States varies by race and ethnicity[1] and is higher than the national average among Hispanic women,[2] possibly because of the influence of cultural norms and the effects of women's interactions with the social networks and health care system.[1-16] Among Hispanics, those considered less acculturated tend to have higher breastfeeding rates than those considered more acculturated to the United States.[5-13] Studies have shown that language use, nativity status, and length of stay in the United

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States have been used to assess acculturation and its relationship with breastfeeding initiation and duration among Hispanic women.[4-16] Language use is one of the more common indicators used as a proxy for measuring acculturation, and it is a strong and consistent predictor of breastfeeding practices and other health-related behaviors.[2-12,20,21]

One important determinant of whether women will breastfeed is their exposure to maternity care practices at the hospital or birthing center where they deliver a baby.[15-18] During the 1990s, the World Health Organization launched the Baby-Friendly Hospital Initiative, a global program that "assists hospitals in giving mothers the information, confidence, and skills needed to successfully initiate and continue breastfeeding their babies" (www.babyfriendlyusa.org/eng).[15] As of August 2011, 115 US hospitals had implemented the practices recommended by the initiative. The relationship between hospital maternity care practices and breastfeeding has been examined previously,[15-18] and, given the growth in the US Hispanic population,[19] it is important to examine breastfeeding behaviors among Hispanic women and to develop culturally and linguistically appropriate strategies to promote and sustain breastfeeding in this growing group. Given the influence of the host culture in changing traditional practices (ie, breastfeeding) and norms, it is important to examine the acculturation process and breastfeeding behaviors. The aim of our study was to examine Hispanic women's breastfeeding behaviors by their acculturation status using data from the Pregnancy Risk Assessment and Monitoring System (PRAMS).

Methods

Data

This study involved analysis of data from the Pregnancy Risk Assessment Monitoring System, which collects population-based information on maternal behaviors and experiences during pregnancy from women in participating jurisdictions who have recently given birth to a live-born infant. The PRAMS Projects are collaborative efforts between states and the PRAMS Program at the Centers for Disease Control (CDC) through a cooperative agreement with each state. Each month, a stratified sample of 100-300 women is selected from the PRAMS jurisdictions, and a survey questionnaire is mailed to them approximately 2-6 months after delivery. Several attempts are made to contact selected women by mail, and if that fails, PRAMS attempts to contact and interview them by phone. The PRAMS survey questionnaire is linked to items on the birth certificate, and a selected set of items from the birth certificate is included in the PRAMS data set. The data are statistically weighted to adjust for sampling design, noncoverage, and nonresponse. More information about PRAMS methodology is available at: http://www.cdc.gov/reproductivehealth/prams/methodology.htm.

For this study, we used 2004-2006 PRAMS data from the following jurisdictions that had response rates of ≥ 70% during this period, had information about ethnicity and language of survey response, and collected data on maternity care practices: Colorado, Florida, Illinois, Nebraska, New Jersey, New York State, New York City, and Oregon. The New York State data exclude New York City as the two entities have separate data collection systems. Florida data were available for 2004-2005 only, and the rest of the entities had data available for all years. Our study sample consisted of 8942 Hispanic women with known breastfeeding status whose infant was living with them. The percentage of missing data was 3% or less for most variables. The study was conducted using PRAMS data, and CDC-IRB approves the collection and use of these data.

Measures

PRAMS participants can respond to the questionnaire in either English or Spanish. Because language is often used as an indicator of acculturation status,[9,10,12,19-21] Hispanic women were classified as having "low" US acculturation if they responded to the survey in Spanish (n = 4985) and those who responded to the survey in English (n = 3957) as having "high" US acculturation. Breastfeeding indicators by their acculturation status were examined. Specific indicators were breastfeeding initiation, breastfeeding through at least 10 weeks postpartum, and exclusivity as feeding infant breast milk only for at least 10 weeks postpartum. The question used to ascertain exclusive breastfeeding was as follows:

> How old was your baby the first time you fed him or her anything besides breast milk? Include formula, baby food, juice, cow's milk, water, sugar water, or anything else you fed your baby.

Response options were: (1) ____ weeks or ______ months, (2) My baby was less than 1 week old, and (3) I have not fed my baby anything besides breast milk. Among women who had initiated breastfeeding, those who reported exclusive breastfeeding only or those who reported giving their baby something other than breast milk after 10 weeks were categorized as exclusively breastfeeding for ≥ 10 and the rest as nonexclusive feeding for < 10 weeks. The rationale for selecting 10 weeks postpartum (vs a longer duration) as the cut point for breastfeeding duration was because women may respond to the questionnaire as early as 10 weeks, and we wanted to ensure that all women who responded to the PRAMS survey had an equal opportunity to be included in the analysis. More information about PRAMS data collection system is available at http://www.cdc.gov/prams.

Maternal and Infant Factors

Maternal and infant characteristics examined included: parity (primaparas or multiparas); plurality (single or multiple birth); mean maternal age; maternal education (< high

school, high school, or > high school); marital status (married or not married); participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (yes or no); tobacco use (yes or no); vaginal delivery (yes or no); infant birth weight (< 2500 grams or ≥ 2500 grams); infant stay in the intensive care unit (yes or no); and length of infant stay in the hospital (1-2 days or ≥ 3 days). Since data on women's experiences with maternity care practices were available, we examined overall prevalence of selected practices. Determination of maternity care experiences was based on participants' responses (yes or no) to the following statements:

a. Hospital staff gave me information about breastfeeding.
b. My baby stayed in the same room with me at the hospital.
c. I breastfed my baby in the first hour after my baby was born.
d. Hospital staff helped me learn how to breastfeed.
e. My baby was fed only breast milk at the hospital.
f. Hospital staff told me to breastfeed whenever my baby wanted [to do so].
g. The hospital gave me a gift pack with formula.
h. The hospital gave me a telephone number to call for help with breastfeeding.
i. My baby used a pacifier in the hospital.

All experiences except g and i are considered to encourage breastfeeding, and several states included a limited set of these items on their surveys, namely, New Jersey (excluded item a) and Nebraska (excluded a, b, c, g-i). Items a, b, c, d, e, f, h, and the inverse of g and i (not giving a gift pack with formula and not giving baby a pacifier) are similar to practices promoted by the Baby-Friendly Hospital Initiative.

Analyses

We used Software for Survey Data Analysis (SUDAAN) for all analyses. Procedures used included prevalence estimates, chi-square tests, and both bivariate and multivariable logistic regression to generate prevalence ratios. Multivariable models were constructed to examine breastfeeding duration (< 10 weeks vs ≥ 10 weeks) and exclusive breastfeeding (< 10 weeks vs ≥ 10 weeks) among those who initiated by acculturation status. The multivariable model adjusted for demographic and infant variables found to be significant in the bivariate context. These covariates included the following: parity, maternal age, education, WIC participation, tobacco use, infant birth weight, and length of infant stay in the hospital. We used marginal predictions to calculate adjusted prevalence ratios (APRs) because the prevalence of breastfeeding was high in the group.[22] To account for variation across jurisdictions, full models adjusted for the jurisdiction from which the PRAMS data were obtained.

Results

A majority of study participants were multiparas, delivered a singleton infant, had less than a high school education, participated in the WIC program, did not use tobacco, and had a vaginal delivery; the mean age of study participants was 27 years, and 6% of the infants had a low birth weight (< 2500 grams) (Table 1). Of the total sample of Hispanic women, 43% responded in English and thus were considered as having "high" US acculturation status and 57% in Spanish and thus "low" US acculturation status. Those considered highly acculturated were on average younger, less likely to be enrolled in WIC, and more likely to be primiparas, to have had more than a high school education, to use tobacco, to have delivered a low birth weight infant, and to have had an infant whose stay in the hospital was only 1-2 days (Table 1).

Overall, 86% initiated breastfeeding, and among those who did, 62% breastfed for ≥ 10 weeks (Table 2). Overall prevalence of exclusive breastfeeding to ≥ 10 weeks was 15.1% among those who initiated breastfeeding. Those who responded to the survey in English were less likely to initiate breastfeeding (prevalence ratio [PR] = 0.88; 95% CI, 0.86-0.90) and, among the initiators, less likely to breastfeed ≥ 10 weeks (PR = 0.77; 95%CI, 0.72-0.82). Also, among initiators, those who responded to the survey in English were less likely to report exclusive breastfeeding to ≥ 10 weeks than those who were less acculturated (PR = 0.70; 95% CI, 0.58-0.85). Mutivariable analysis examining the association between breastfeeding to < 10 weeks or ≥ 10 weeks and acculturation after adjusting for a number of covariates showed that acculturation measure was significantly associated with breastfeeding duration. Specifically, we adjusted for the following covariates: parity, maternal age, education, WIC participation, tobacco use, infant birth weight, and length of infant stay in the hospital. Those who were more acculturated were less likely to report breastfeeding ≥ 10 weeks as compared to those who were less acculturated (APR = 0.81; 95% CI. 0.75-0.87). Similarly, acculturation was associated with exclusive breastfeeding in the multivariable model (APR = 0.69; 95% CI, 0.55-0.87), indicating that more acculturated women were less likely to report exclusive breastfeeding to ≥ 10 weeks.

Because the states included in the analysis collect information about women's recall of maternity care practices, we examined the prevalence of exposure to these practices among Hispanic women. Overall prevalence of practices showed that women recalled experiencing the following at the hospital where they delivered: 29.3% giving breast milk only, 48.4% mother recalled initiating breastfeeding within the first hour after birth, 50.6% reported that their infant was not given a pacifier at the hospital, 68.8% were told by staff to breastfeed on demand, 77.4% reported infant rooming in, 11.4% reported that they were not given a gift pack with formula, 71.4% reported receiving assistance, 70.4% reported that the hospital gave them a telephone number to call, and

Table 1. Selected Characteristics of Hispanic Women Who Delivered a Live-Born Infant, Overall and by Acculturation Status, Pregnancy Risk Assessment Monitoring System (PRAMS) 2004-2006

Characteristic	All Women (N = 8942)	% (SE)[a]	Low Acculturation[b] (n = 4985) % (SE)	High Acculturation[b] (n = 3957) % (SE)
Parity				
Primiparas	3475	39.5 (0.75)	34.4 (0.95)	46.3 (1.20)[c]
Multiparas	5452	60.5 (0.75)	65.6 (0.95)	53.7 (1.20)
Plurality				
Single	8704	98.9 (0.13)	99.0 (0.16)	98.7 (0.22)
Multiple	232	1.1 (0.13)	0.99 (0.16)	1.27 (0.22)
Maternal age (mean)	8927	26.6 (0.09)	27.0 (0.12)	25.8 (0.14)[c]
Maternal education				
< High school	4054	43.4 (0.75)	56.8 (1.00)	25.6 (1.00)[c]
High school	2644	30.8 (0.71)	29.7 (0.92)	32.3 (1.10)
> High school	2150	25.8 (0.69)	13.5 (0.70)	42.1 (1.20)
Marital status				
Married	4472	48.5 (0.76)	47.7 (0.99)	49.6 (1.20)
Nonmarried	4470	51.5 (0.76)	52.3 (0.99)	50.4 (1.20)
WIC participation[d]				
Yes	6150	68.4 (0.72)	77.7 (0.85)	56.1 (1.20)[c]
No	2713	31.6 (0.72)	22.3 (0.85)	43.9 (1.20)
Tobacco use				
Yes	786	07.3 (0.40)	2.5 (0.31)	13.8 (0.81)[c]
No	8017	92.7 (0.40)	97.5 (0.31)	86.2 (0.81)
Vaginal delivery				
Yes	6009	69.1 (0.71)	69.1 (0.93)	69.0 (1.09)
No	2928	30.9 (0.71)	30.9 (0.93)	31.0 (1.09)
Infant information				
Birth weight				
< 2500 grams	2049	6.2 (0.17)	5.5 (0.22)	7.0 (0.28)[c]
≥ 2500 grams	6888	93.8 (0.17)	94.5 (0.22)	93.0 (0.28)
Infant in the ICU at birth[e]				
Yes	1766	13.2 (0.48)	13.6 (0.65)	12.7 (0.69)
No	7043	86.4 (0.48)	86.4 (0.65)	87.3 (0.69)
Length of infant stay in the hospital				
1-2 days	4129	50.2 (0.77)	46.8 (1.01)	54.7 (1.20)[c]
3 days	4616	49.8 (0.77)	53.2 (1.01)	45.3 (1.20)

[a]SE, standard error
[b]Low acculturation was defined as those who responded to the survey in Spanish and high as those who responded in English.
[c]Differences between the two acculturation groups were significant at $P < .05$.
[d]WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.
[e]ICU, intensive care unit.

90.3% reported receiving information on breastfeeding from the facility where they delivered.

Discussion

PRAMS data showed that the prevalence rates of breastfeeding initiation, breastfeeding ≥ 10 weeks, and exclusivity varied significantly by Hispanic women's acculturation status. Those who responded to the PRAMS survey in English or were considered "highly" acculturated to the US culture were less likely to initiate breastfeeding and, if they breastfed, more likely to quit before 10 weeks than were those who responded in Spanish. In addition, while the overall exclusive breastfeeding prevalence was low, those highly acculturated women were less likely than less acculturated to report this practice.

Our study results show that breastfeeding indicators are associated with acculturation and that cultural context, and its implications to infant feeding practices, is important to assess. One qualitative study that investigated Latinas' infant feeding decisions provided insights about cultural and family beliefs that influence breastfeeding, supplementation with formula, and myths such as "best of both or los dos." This practice/belief encourages women to use combination

Table 2. Prevalence of Breastfeeding Behaviors among Hispanic Women, Overall and by Acculturation Status, Pregnancy Risk Assessment Monitoring System (PRAMS) 2004-2006

	All Women (N = 8942) % (SE)[a]	Low Acculturation[b] (n = 4985) % (SE)	High Acculturation[b] (n = 3957) % (SE)
Breastfeeding behaviors			
Initiation			
Did not initiate breastfeeding	13.9 (0.54)	9.2 (0.58)	20.1 (0.96)
Initiated breastfeeding	86.1 (0.54)	90.8 (0.58)	79.9 (0.96)[c]
Duration among those who initiated			
Any breastfeeding for < 10 weeks	37.8 (0.81)	30.7 (0.98)	48.4 (1.34)
Any breastfeeding for ≥ 10 weeks	62.2 (0.81)	69.3 (0.98)	51.4 (1.34)[c]
Exclusivity among those who initiated			
Exclusive breastfeeding for ≥ 10 weeks	15.1 (0.57)	17.3 (0.92)	12.2 (0.99)
Nonexclusive breastfeeding for < 10 weeks	84.9 (0.68)	82.7 (0.92)	87.8 (0.99)[c]

[a]SE, Standard error.
[b]Low acculturation was defined as those who responded to the survey in Spanish and high as those who responded in English.
[c]Differences between the two acculturation groups were significant at $P < .05$.

feeding (ie, supplement breastfeeding with formula feeding) and is thought to be a common practice among the Latinas who are thought to be more acculturated to the dominant US culture.[5,11] In the context of breastfeeding promotion among women with different acculturation status, this practice or belief must be taken into account when counseling Latinas about breastfeeding.[5,8,11] In addition, the practice of giving gift packs with formula needs to be reconsidered in the context of "best of both or los dos," and targeted education needs to occur around the belief that formula may provide additional or better nutrition than breast milk.[1,5,23-25] This is a practice that would not provide optimal benefit to the baby, therefore, the use of combination feeding and the cultural context around it merits further investigation.

In the United States, 115 hospitals have been designated Baby-Friendly™ facilities. Given the association between Baby-Friendly maternity care practices and women's subsequent breastfeeding behaviors,[15-17] there is a need to facilitate adoption and maintenance of such practices at US hospitals and birthing centers and to identify practices that may lead to early breastfeeding termination[23-26] of breastfeeding among women in various demographic groups, especially the practice of providing formula in the discharge gift packs. If states are to meet the breastfeeding goals in Healthy People 2020 and beyond (http://www.cdc.gov/breastfeeding), multiple efforts, including assessment of existing practices, cultural norms/beliefs, and implementation of Baby-Friendly recommendations, are needed.[2-12] PRAMS results showed that the breastfeeding behaviors of Hispanic women differed by their acculturation as indicated by the language in which they responded to the PRAMS survey.

It is important to keep in mind, however, that US Hispanics are not a monolithic group and that the relationship between breastfeeding practices and acculturation may vary among cultural groups and ethnic identity.[2-12] Results of one recent study, for example, showed that acculturation was associated with the breastfeeding behaviors of Mexican American women but not with those of Puerto Rican women.[13] A number of studies have explored the association between breastfeeding and acculturation with the concept encompassing language preferences/use, nativity of the mother, nativity of the mother's parents, and length of time in the United States[4,9,10,12] and found that language preference is a strong predictor of breastfeeding initiation and duration[9-12] and other health behaviors.[20,21,27] Another limitation is that the PRAMS survey does not identify women who may be bilingual and therefore may have acculturated to a different degree than those who responded to the survey in English or Spanish. Issues that may also need further exploration may include level of literacy in the preferred language, which might be important for breastfeeding promotion among different acculturation groups; income; and work situations that might impact women's decisions. As pointed out in the Bunik study, low-income Latinas may experience specific cultural and social barriers in seeking assistance.[11]

Strengths of this study include its use of a large, multiyear, population-based data source representative of Hispanic women who have given birth to live-born infants in US hospitals. Its limitations include possible recall bias or other errors in PRAMS participants' reports of their experiences several months after delivery and use of respondents' choice of language as a proxy for the multidimensional concept of "acculturation." Nevertheless, the results of our study are consistent with those from previous studies[2,4,6,9,12,20,21,27] and also with studies that have used language as a measure of acculturation.[9,12] An important issue to consider is that language skills vary from being fluent in both English and Spanish to being fluent in one of the languages, and an

additional dimension that could come into play is women's comfort in communicating with health care staff who may not be fluent in their language. Future work on this topic may want to use multidimensional scales measuring acculturation that take into account more than language use.[4,26]

Conclusion

Given that Hispanics are projected to be the fastest growing group in the United States,[19] insights into acculturation and breastfeeding behaviors could be useful for tailoring of breastfeeding programs at the community and health care facilities. The results of our study suggest that language as a proxy for acculturation may be an important factor for breastfeeding practices in populations that are linguistically and culturally different from the dominant US culture. Comprehensive examination of support provided to culturally diverse groups may be necessary to ensure that all women can make optimal infant-feeding decisions.

CDC Disclosure Statement

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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