Achieved Breastfeeding Before Hospital Discharge on Both Sides of the US-Mexico Border, 2005: The Brownsville-Matamoros Sister City Project for Women’s Health

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Abstract

Introduction

The US-Mexico border region has a growing population and limited health care infrastructure. Preventive health behaviors such as breastfeeding ease the burden on this region’s health care system by reducing morbidity and health care costs. We examined correlates of attempted breastfeeding before hospital discharge on each side of the US-Mexico border and within the border region.

Methods

The cross-sectional study included women who delivered a live infant in Matamoros, Tamaulipas, Mexico (n = 489), and Cameron County, Texas (n = 457), which includes Brownsville, Texas. We interviewed women before hospital discharge from August 21 through November 9, 2005. We used multivariate logistic regression to estimate the odds of attempted breastfeeding before hospital discharge in Cameron County, Texas, the municipality of Matamoros, Mexico, and the 2 communities combined.

Results

Prevalence of attempted breastfeeding before hospital discharge was 81.9% in Matamoros compared with 63.7% in Cameron County. After adjusting for potential confounders, the odds of attempted breastfeeding before hospital discharge were 90% higher in Matamoros than in Cameron County (adjusted odds ratio [AOR], 1.93; 95% confidence interval [CI], 1.31-2.84 for the combined model). In the 2 communities combined, odds of attempted breastfeeding before hospital discharge were higher among women who had a vaginal delivery than among women who had a cesarean delivery (AOR, 1.98; 95% CI, 1.43-2.75) and were lower among women who delivered infants with a low birth weight than among women who delivered infants with a normal birth weight (AOR, 0.26; 95% CI, 0.15-0.44).

Conclusion

The rate of attempted breastfeeding in Matamoros was significantly higher than in Cameron County. Additional breastfeeding support and messages on the US side of the US-Mexico border are needed.

Introduction

Between 1950 and 2000, the US-Mexico border popula-
tion increased by approximately 10 million people (1). This growth is expected to continue. Conservative estimates predict a 34% increase in population between 2000 and 2030, and more liberal estimates suggest a 97% increase (2). Population growth on the border has led to quality-of-life improvements such as paved streets and access to education. However, this population growth is also a potential burden on the health care system, which could result in limited health care access and contribute to significant cross-border use of services (3,4). In a region with limited health care infrastructure, increasing the prevalence of preventive health behaviors such as breastfeeding may ease the burden on the health care system by reducing morbidity and health care costs.

Human milk is a more beneficial form of nutrition for infants than formula (5,6). Breastfeeding has proven short-term and long-term maternal and infant health benefits and reduces health care costs (5-10). Infants who are breastfed have reduced incidence and severity of several infectious diseases (5,6). Breastfeeding has been associated with a lower risk of childhood overweight and obesity, diabetes, asthma, and some cancers (5,6). Women who breastfeed experience increased postpartum weight loss, decreased risk of women’s cancers, and possibly improved bone health during the postmenopausal period (5,6).

Studies of breastfeeding in the US-Mexico border region have focused on samples from the United States (11-23) and have explored acculturation (11-17) and the effect of nativity, ethnicity, and immigration on breastfeeding rates (18-23). Interest in binational approaches to health promotion is increasing, and information is needed to assess the prevalence and correlates of breastfeeding in the border region. Despite this need, differences in data collection, measurement practices, and confidentiality issues, stemming from legal and cultural restrictions, inhibit the sharing of information across the US-Mexico border (24). We eliminated the challenges of binational data collection by using identical sampling and survey instruments on each side of the US-Mexico border.

The purpose of this study was to determine the rates of attempted breastfeeding before hospital discharge among women who recently gave birth in the US-Mexico border region, using data collected in 1 of 14 pairs of sister cities located on the US-Mexico border: Brownsville, Texas, and Matamoros, Tamaulipas, Mexico (25) (Figure).

Methods

Data collection

We used data that were collected as part of the Brownsville-Matamoros Sister City Project for Women’s Health (BMSCP). The BMSCP pilot project was reviewed for human subject concerns by the Centers for Disease Control and Prevention • www.cdc.gov/pcd/issues/2008/oct/08_0058.htm

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Control and Prevention (CDC) and was determined to be “nonresearch” or public health practice. Therefore, institutional review board approval was not required. The study used a stratified, systematic, cluster-sampling probability design to select women who delivered live infants in Matamoros, Mexico, and Cameron County, Texas. Strata were hospitals with 100 deliveries or more per year in either location. We used systematic sampling to select specific days within each stratum, and every woman who gave birth on selected days (within a cluster of days) was included in the sample. Of the 999 women sampled on selected days from August 21 through November 9, 2005 in hospitals with 100 or more deliveries per year, 947 (95%) completed interviews. A more thorough description of the data collection process and other methods used in the BMSCP is available in this issue of Preventing Chronic Disease (26).

Measures

The outcome variable of interest was attempted breastfeeding before hospital discharge. Women were asked, “Have you ever tried to breastfeed your new baby?” One respondent did not provide a response for the outcome variable and was eliminated from the analysis. The final unweighted sample was 946 women, distributed between Matamoros (n = 489) and Cameron County (n = 457). A detailed list of measures used in this study is presented in Table 1.

Data analysis

We weighted the data to account for probability of selection, population noncoverage, hospital noncoverage, and nonresponse. We used SUDAAN version 9.01 (RTI International, Research Triangle Park, North Carolina) to account for the complex survey design. Data were analyzed by place of residence and for the 2 communities combined. We used the χ² test for independence to assess differences in the prevalence of attempted breastfeeding before hospital discharge between women delivering in Matamoros and women delivering in Cameron County. Statistical significance was set at α = .05. We could not account for the complex survey design. Data were estimated separately for Cameron County and Matamoros and for the combined sample.

Results

Distribution of demographic and behavioral variables, by place of residence, is presented in Table 2. Although only 5.0% of all Matamoros residents delivered in the United States, all Cameron County residents, with the exception of 1, delivered their infants in the United States. Nearly all residents in Matamoros completed the interview in Spanish. In Cameron County, the language in which the interview was completed was approximately evenly distributed between English and Spanish. The ethnicity of respondents from Cameron County was primarily Hispanic. Despite having a greater percentage of respondents report early entry into prenatal care, the percentage of low-birth-weight infants was higher in Cameron County than in Matamoros.

Sociodemographic characteristics and attempted breastfeeding

In Matamoros, the rate of attempted breastfeeding before hospital discharge was higher among respondents with fewer years of education (Table 3). In the multivariate model, respondents in Matamoros with fewer than 8 years of education were nearly twice as likely to attempt breastfeeding as were respondents with more than 12 years of education (Table 4). Respondents in Matamoros with 8 to 12 years of education were almost 3 times as likely to attempt breastfeeding as were respondents with more than 12 years of education.

The prevalence of attempted breastfeeding was 81.9% among the women who lived in Matamoros, compared with 63.7% among the women who lived in Cameron
County (data not shown). In the multivariate analysis, residing in Matamoros was associated with nearly a 2-fold increase in the odds of attempted breastfeeding before hospital discharge (Table 4).

In Cameron County, non-Hispanic women had a greater prevalence of attempted breastfeeding before hospital discharge than did Hispanic women. After adjusting for other factors, Hispanic women who resided in Cameron County had decreased odds of attempted breastfeeding before hospital discharge compared with non-Hispanic women in Cameron County.

Perinatal experiences

Women who delivered vaginally had increased prevalence and odds of attempted breastfeeding in Matamoros and in the 2 communities combined (Tables 3 and 4). Prevalence of attempted breastfeeding was higher among women who delivered vaginally in Cameron County, but odds of attempted breastfeeding among these same women were not significant in the multivariate model.

In Matamoros, Cameron County, and the 2 communities combined, women who delivered a low-birth-weight infant (ie, <2,500 g) had a lower rate of attempted breastfeeding before hospital discharge than did women who delivered an infant of normal weight (ie, ≥2,500 g) (Table 3). In each of the multivariate logistic regression models, women who delivered a low-birth-weight infant were approximately 75% less likely to have attempted breastfeeding before hospital discharge than were women who delivered infants of normal weight (Table 4).

Women with any previous live births had a higher prevalence of attempting to breastfeed in Matamoros, but the same was not true in Cameron County (Table 3). In the multivariate logistic regression model, women in Matamoros who had a previous live birth were nearly twice as likely to attempt breastfeeding before hospital discharge as were women who had not had a previous live birth. However, this was not true of the women in Cameron County (Table 4).

In Cameron County and in the 2 communities combined, women who indicated that their pregnancy was intended had a higher prevalence of attempted breastfeeding before hospital discharge than did women who indicated that their pregnancy was unintended (Table 3). In the multivariate logistic regression model, the odds of attempted breastfeeding before hospital discharge were 50% lower among women who identified their pregnancy as unintended than among women with intended pregnancies. In the combined model, the decrease in odds was 34% (Table 4).

Discussion

The prevalence of attempted breastfeeding before hospital discharge was nearly 20 percentage points higher in Matamoros than in Cameron County, and the adjusted odds of attempted breastfeeding before hospital discharge among Matamoros residents were nearly twice the odds among Cameron County residents. The rates we report in Matamoros and Cameron County are lower than previously reported state rates on both sides of the US-Mexico border. Rates of ever breastfeeding in Texas have been reported to be 75% (27), and rates of ever breastfeeding in northern Mexico, an area that includes Tamaulipas, have been reported to be 91% (28). These statistics suggest that breastfeeding rates in border areas may be lower than statewide rates.

Most women's first breastfeeding experience occurs in the hospital environment, and exclusive breastfeeding rates decline substantially after hospital discharge. Failure to establish breastfeeding during the hospital stay is a factor in breastfeeding cessation following hospital discharge (29). Although the importance of breastfeeding is highlighted in the United States at the national level in documents like Healthy People 2010 (30), no national policy exists to support breastfeeding.

Unlike the United States, Mexico has federal regulations that support breastfeeding. Mexico's official norms for breastfeeding, or Ministry of Health clinical practice guidelines (La Norma Oficial Mexicana), support breastfeeding initiation within the first 2 hours after delivery when conditions permit; support and facilitate breastfeeding on infant demand; and include standards, criteria, and procedures that promote and protect exclusive breastfeeding (eg, standards for training and personnel, requirements that medical units provide appropriate conditions to enable mothers to practice exclusive breastfeeding and to educate mothers about the benefits of exclusive breastfeeding) (31). CAALMA Curso, a training program for hospital personnel, has been implemented throughout Mexico to support these federal regulations (32).
A study in Texas among WIC (Supplemental Nutrition Program for Women, Infants, and Children) recipients who breastfed found that 55% of women were not informed that breastfeeding could occur at the demand of the infant, 56% of women did not initiate breastfeeding in the first hour after delivery, and 74% of women reported their infants were fed something in addition to breast milk (33). At least 1 US study found that hospitals that adopted supportive breastfeeding policies have more patients who breastfeed and who breastfeed longer (34).

Another difference between the United States and Mexico is the provision of infant formula in hospitals. Federal regulations in Mexico restrict the distribution of formula in the hospital, the free distribution or promotion of breast milk substitutes by medical units, and the distribution of incentives to health care providers from the manufacturers of breast milk substitutes (31). Furthermore, in September 2007, an agreement (Acuerdo con Productores de Alimentos y Fórmulas Infantiles) was reached with Mexican health officials and manufacturers of infant formula to restrict the distribution of formula in the hospital, the free distribution or promotion of breast milk substitutes by medical units, and the distribution of incentives to health care providers from the manufacturers of breast milk substitutes (Cuitlahuac Ruiz Matus, MD, written communication, February 14, 2008). Similar regulations are not in place in the United States. In Texas, nearly three-quarters of women who received WIC benefits reported receiving formula before hospital discharge.

Women in our study who delivered infants weighing ≥2,500 g had increased odds of breastfeeding in Matamoros, Cameron County, and in the combined sample. Women who delivered vaginally had increased odds of breastfeeding in Matamoros and in the combined sample. These findings are consistent with previous studies and identify opportunities for cross-border collaboration (35-38). Cross-border work groups may design continuing education for providers or develop protocols and best practices that address the unique breastfeeding needs of women who deliver infants weighing <2,500 g or who have a cesarean delivery. In Mexico, strategies and best practices to increase breastfeeding among women in these vulnerable groups could be disseminated through the CAALMA Curso.

Women who did not intend to become pregnant had decreased odds of attempted breastfeeding before hospital discharge in Cameron County and in the combined sample. Previous research on this association has shown mixed results (39-41). At least 1 study found an association between pregnancy intention and attempted breastfeeding before hospital discharge in the United States (40). However, studies in Bolivia and Paraguay did not find an association between these variables (40,41). Although practitioners should discuss breastfeeding with all pregnant women, more education and counseling may be needed for women whose pregnancy is unintended.

Our study has 2 limitations. The first limitation was with regard to duration of hospital stay. Women who delivered in Matamoros were typically discharged on the same day of their delivery, and women who delivered in Cameron County typically remained hospitalized for up to 48 hours after delivery. Therefore, women who delivered in Cameron County had more time to attempt to breastfeed than did women who delivered in Matamoros. Despite this difference, women who delivered in Matamoros still attempted to breastfeed at a greater rate than did women who delivered in Cameron County, suggesting that differences on the basis of place of residence would be larger if the length of hospital stay after delivery were equal. The second limitation is that previous infant feeding method was not included in the questionnaire. However, the exclusion of this variable most likely affected point estimates within the 2 locations rather than the estimate associated with place of residence.

If breastfeeding rates reached the goal of 75% in the early postpartum period established in Healthy People 2010 (29), the potential cost savings could exceed $1 billion (10). Results from this study are encouraging for Matamoros but indicate a need for additional breastfeeding support and messages in Cameron County. Because of the cross-border mobility of the population, joint US-Mexico strategies to promote breastfeeding are needed.

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Tables

Table 1. Study Measures, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005

| Indicator | Question | Definition |
|-----------|----------|------------|
| Ethnicity | Do you consider yourself to be of Hispanic or Latino origin or descent? | Respondents who resided in Mexico were classified as Hispanic. Respondents who resided in the United States were classified on the basis of their responses to the question (ie, Hispanic or Non-Hispanic). Therefore, ethnicity could not be included in analyses limited to Matamoros only. |
| Age | What is your birth date? | Age was calculated using date of birth and date of interview. On the basis of mean age (25 y), women were divided into 2 groups (<25 y and ≥25 y). |
| Marital status | What is your marital status now? | Marital status was dichotomized: 1) married or living as married and 2) not married. Women who indicated that they were “married” or “live-in significant other/consensual union” were classified as married. Women who indicated they were “single,” “widowed,” or “divorced/separated” were classified as not married. |
| Education | What was the highest grade or level of school you have completed or the highest degree you have received? | Education was divided into 3 groups based on the number of years in school each woman had completed (<8 y, 8-12 y, >12 y). |
| Employment status | During the 3 months before you got pregnant with your new baby, which of the following best describes your employment status? | Women who responded “employed for wages, money, or a paycheck” or “self-employed” were categorized as employed. Women who responded “out of work” were categorized as unemployed. Women who responded “homemaker,” “student,” “retired,” or “unable to work” were categorized as not in labor force. |

Abbrevations: NA, not applicable.
Table 1. (continued) Study Measures, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005

| Indicator | Question | Definition |
|-----------|----------|------------|
| **Mother’s place of birth** | In what country were you born? | Possible responses included “Mexico,” “the United States,” “other,” and “don’t know.” Women who responded “other” and “don’t know” were combined into a single group. |
| **Place of residence** | In what country do you live? | Possible responses included “United States,” “Mexico,” “both,” “don’t know/not sure,” and “refused.” Women who responded “both” or “don’t know/not sure” and women whose place of residence was not recorded were assigned a place of residence on the basis of their place of delivery. |
| **Place of delivery** | NA | Place of delivery was recorded at the time of interview. Interviews were conducted in hospitals in Cameron County, Texas, or Matamoros, Tamaulipas, Mexico. |
| **Language spoken during interview** | The language in which the interview was conducted was recorded by the interviewer. | The language spoken during the interview was used as a proxy for the primary language of the participant. A respondent who used any Spanish during the interview was classified as Spanish speaker. A respondent who did not use any Spanish during the interview was classified as English speaker. |

**Health behaviors**

| Indicator | Question | Definition |
|-----------|----------|------------|
| **Smoking status** | Have you smoked at least 100 cigarettes in the past 2 years? A pack has 20 cigarettes. In the 3 months before you got pregnant, how many cigarettes did you smoke on an average day? A pack has 20 cigarettes. | Tobacco use was created from 2 variables that measured smoked 100 cigarettes in the past 2 years and number of cigarettes smoked on an average day 3 months before this pregnancy. A respondent who had not smoked 100 cigarettes in the past 2 years or had smoked zero cigarettes on an average day 3 months before this pregnancy was classified as a nonsmoker. A respondent who had smoked 100 cigarettes in the past 2 years or who had smoked any cigarettes on an average day 3 months before this pregnancy was classified as a smoker. |
| **Alcohol use** | Have you had any alcoholic drinks in the past 2 years? A drink is 1 glass of wine, wine cooler, can or bottle of beer, shot of liquor, or mixed drink. During the 3 months before you got pregnant, how many alcoholic drinks did you have in an average week? | Alcohol use was created from 2 variables that measured any alcohol in the last 2 years and frequency of alcohol use 3 months before this pregnancy. A respondent who drank any alcohol in the last 2 years and who drank any alcohol during the 3 months before this pregnancy was classified as an alcohol user. A respondent who had not had any alcohol in the last 2 years and who drank in the last 2 years but did not drink alcohol during the 3 months before this pregnancy was classified as an alcohol nonuser. |

**Perinatal/delivery experiences**

| Indicator | Question | Definition |
|-----------|----------|------------|
| **Infant birth weight** | Birth weight was recorded from the birth certificate. | Infants weighing <2,500 g were coded as low-birth-weight. Infants weighing ≥2,500 g were coded as normal-weight. |
| **Parity** | Including your most recent pregnancy, how many times have you been pregnant? | Responses were dichotomized: 1) women who had no previous live births and 2) women who had any (ie, 1 or more) previous live births. |
| **Health care coverage during pregnancy** | During this pregnancy did you have any kind of health care coverage plan or insurance plan? | Women who responded yes were coded as has coverage, and women who responded no were coded as does not have coverage. |

Abbreviations: NA, not applicable.

(Continued on next page)
Table 2. Distribution of Demographic and Behavioral Variables, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005

| Characteristic | Total Sample | Matamoros | Cameron County | P Value<sup>b</sup> |
|----------------|--------------|-----------|----------------|-------------------|
|                | Unweighted No. of Respondents (n = 946) | Weighted No. of Respondents (%) (n = 5,094) | Unweighted No. of Respondents (n = 489) | Weighted No. of Respondents (%) (n = 2,764) | Unweighted No. of Respondents (n = 457) | Weighted No. of Respondents (%) (n = 2,331) |
| Place of delivery | United States | 483 | 2,464 (48.4) | 27 | 139 (5.0) | 456 | 2,325 (99.7) | <.001 |
|                  | Mexico | 463 | 2,630 (51.6) | 462 | 2,624 (95.0) | 1 | 6 (0.3) | |
| Ethnicity<sup>c</sup> | Hispanic | 883 | 4,772 (95.0) | 489 | 2,765 (100.0) | 394 | 2,009 (88.9) | <.001 |
|                  | Non-Hispanic | 49 | 250 (5.0) | NA | NA | 49 | 250 (11.1) | |
| Age, y | <25 | 456 | 2,464 (48.4) | 248 | 1,403 (50.8) | 208 | 1,062 (45.6) | .10 |
|        | ≥25 | 490 | 2,630 (51.6) | 241 | 1,361 (49.2) | 249 | 1,269 (54.4) | |
Table 2. (continued) Distribution of Demographic and Behavioral Variables, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005<sup>a</sup>

| Characteristic               | Total Sample | Matamoros | Cameron County |
|------------------------------|--------------|-----------|---------------|
|                              | Unweighted No. of Respondents (n = 946) | Weighted No. of Respondents (%) (n = 5,094) | Unweighted No. of Respondents (n = 489) | Weighted No. of Respondents (%) (n = 2,764) | Unweighted No. of Respondents (n = 457) | Weighted No. of Respondents (%) (n = 2,331) | P Value<sup>b</sup> |
| Marital status               |              |           |               |
| Not married                  | 165 (84)     | 46 (9.4)  | 258 (9.4)     | 119 (26.3) | .001     |
| Married                      | 773 (82.9)   | 440 (9.6) | 2,489 (90.6)  | 333 (73.7) |
| Education, y                 |              |           |               |
| <8                           | 211 (23.0)   | 156 (32.0)| 55 (12.1)     | <.001     |
| 8-12                         | 416 (44.7)   | 248 (50.9)| 168 (37.2)    |           |
| >12                          | 313 (32.3)   | 84 (17.1) | 229 (45.0)    |           |
| Employment status            |              |           |               |
| Employed                     | 454 (48.5)   | 238 (49.8)| 216 (47.9)    | .01       |
| Unemployed                   | 72 (7.5)     | 24 (4.9)  | 48 (10.7)     |           |
| Not in labor force           | 412 (44.0)   | 226 (46.2)| 186 (41.4)    |           |
| Mother’s place of birth      |              |           |               |
| United States                | 253 (25.5)   | 2 (0.4)   | 195 (43.2)    | <.001     |
| Mexico                       | 678 (73.6)   | 483 (99.0)| 251 (55.5)    |           |
| Other/don’t know             | 9 (0.9)      | 3 (0.6)   | 6 (1.3)       |           |
| Primary language             |              |           |               |
| English                      | 239 (23.9)   | 3 (0.6)   | 236 (51.5)    | <.001     |
| Spanish                      | 707 (76.1)   | 486 (99.4)| 221 (48.5)    |           |
| Smoking status               |              |           |               |
| Smoker                       | 60 (6.3)     | 24 (4.9)  | 36 (7.9)      | .01       |
| Nonsmoker                    | 883 (93.7)   | 464 (95.1)| 419 (92.1)    |           |
| Alcohol use                  |              |           |               |
| User                         | 223 (23.1)   | 66 (13.5) | 157 (35.5)    | <.001     |
| Nonuser                      | 720 (76.9)   | 422 (86.5)| 298 (64.5)    |           |

Abbreviation: NA, not applicable.

<sup>a</sup> Columns do not all total to number in sample size because of missing data.

<sup>b</sup> χ² test used to determine statistical differences.

<sup>c</sup> All respondents who resided in Mexico were classified as Hispanic. Therefore, ethnicity could not be included in analyses limited to Matamoros only.

(Continued on next page)
Table 2. (continued) Distribution of Demographic and Behavioral Variables, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005<sup>a</sup>

| Characteristic                              | Total Sample | Matamoros | Cameron County | P Value<sup>b</sup> |
|---------------------------------------------|--------------|-----------|----------------|---------------------|
| **Health care coverage during pregnancy**   |              |           |                |                     |
| Has coverage                                | 653          | 3,525 (69.3) | 337 1,915 (69.4) | 316 1,610 (69.2) | .93 |
| Does not have coverage                      | 291          | 1,558 (30.7) | 151 843 (30.6)  | 140 715 (30.8)  |     |
| **Delivery method**                         |              |           |                |                     |
| Cesarean                                    | 415          | 2,234 (43.9) | 217 1,224 (44.4) | 198 1,010 (43.3) | .68 |
| Vaginal                                     | 530          | 2,855 (56.1) | 271 1,534 (55.6) | 259 1,320 (56.7) |     |
| **Infant birth weight**                     |              |           |                |                     |
| Low (<2,500 g)                              | 64           | 341 (6.7)  | 24 136 (5.0)   | 40 205 (8.8)   | .01 |
| Normal (≥2,500 g)                           | 878          | 4,731 (93.3) | 462 2,610 (95.0) | 416 2,121 (91.2) |     |
| **Parity**                                  |              |           |                |                     |
| Any previous live births                    | 638          | 3,430 (67.3) | 317 1,793 (64.9) | 321 1,637 (70.3) | .06 |
| No previous live births                     | 308          | 1,664 (32.7) | 172 971 (35.1)  | 136 693 (29.7)  |     |
| **Prenatal care**                           |              |           |                |                     |
| Early                                       | 496          | 2,647 (52.8) | 217 1,224 (45.0) | 279 1,423 (62.0) | <.001 |
| Late or none                                | 435          | 2,366 (47.2) | 264 1,494 (55.0) | 171 872 (38.0)  |     |
| **Pregnancy intention**                     |              |           |                |                     |
| Intended to get pregnant                    | 451          | 2,444 (48.4) | 259 1,466 (53.3) | 192 978 (42.5)  | <.001 |
| Did not intend to get pregnant              | 487          | 2,608 (51.6) | 228 1,286 (46.7) | 259 1,322 (57.5) |     |

Abbreviation: NA, not applicable.

<sup>a</sup> Columns do not all total to number in sample size because of missing data.

<sup>b</sup> χ² test used to determine statistical differences.

<sup>c</sup> All respondents who resided in Mexico were classified as Hispanic. Therefore, ethnicity could not be included in analyses limited to Matamoros only.
Table 3. Prevalence of Attempted Breastfeeding Before Hospital Discharge, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005

| Characteristic                  | Matamoros                  | Cameron County | Total Sample |
|--------------------------------|----------------------------|----------------|--------------|
|                                | Weighted % (95% CI)        | P Value        | Weighted % (95% CI) | P Value | Weighted % (95% CI) | P Value |
| Place of delivery              |                            |                |                |          |                      |         |
| United States                  | 77.8 (62.2-93.4)           | .59            | 63.6 (58.9-68.4) | .27      | 64.4 (60.0-68.9)     | <.001   |
| Mexico                         | 82.1 (79.1-82.3)           | 100.0          | 82.1 (80.0-84.3) |          |
| Ethnicity<sup>a</sup>          |                            |                |                |          |                      |         |
| Hispanic                       | 81.9 (79.7-84.1)           | NA             | 61.7 (56.0-67.4) | .007     | 73.4 (70.8-75.9)     | .28     |
| Non-Hispanic                   | NA                         | 79.7 (68.7-90.7) |                | 79.7 (68.7-90.7) |          |
| Age, y                         |                            |                |                |          |                      |         |
| <25                            | 83.9 (80.3-87.4)           | .15            | 62.6 (54.8-70.5) | .65      | 74.7 (70.6-78.8)     | .41     |
| ≥25                            | 79.8 (76.4-83.2)           |                | 64.7 (59.6-69.7) | 72.5 (69.7-75.3) |          |
| Marital status                 |                            |                |                |          |                      |         |
| Not married                    | 84.7 (76.4-92.8)           | .51            | 58.9 (50.3-67.4) | .14      | 66.6 (60.2-73.0)     | .01     |
| Married                        | 81.9 (79.7-84.1)           | 65.2 (60.4-70.0) |                | 75.1 (72.9-77.4) |          |
| Education, y                   |                            |                |                |          |                      |         |
| <8                             | 85.4 (80.4-90.3)           | <.001          | 65.3 (54.6-76.0) | .94      | 80.5 (76.0-85.1)     | <.001   |
| 8-12                           | 85.5 (82.0-89.0)           |                | 63.8 (55.7-71.9) | 77.3 (73.6-80.9) |          |
| >12                            | 65.4 (56.2-74.7)           |                | 63.0 (56.8-69.2) | 63.7 (58.7-68.7) |          |
| Employment status              |                            |                |                |          |                      |         |
| Employed                       | 79.0 (75.7-82.3)           | .06            | 61.2 (54.5-67.9) | .31      | 71.0 (67.7-74.4)     | .10     |
| Unemployed                     | 91.9 (82.2-100.0)          | 58.5 (44.1-72.9) |                | 70.3 (59.7-80.9) |          |
| Not in labor force             | 84.2 (79.8-88.6)           | 67.7 (60.5-74.9) |                | 77.2 (73.1-81.3) |          |
| Mother’s place of birth        |                            |                |                |          |                      |         |
| United States                  | 50.0 (0.0-100.0)           | .06            | 61.1 (54.9-67.3) | .45      | 61.0 (54.8-67.2)     | .001    |
| Mexico                         | 82.1 (79.7-84.4)           | 66.6 (60.3-73.0) |                | 77.9 (75.6-80.2) |          |
| Other/don’t know               | 100.0                      | 67.0 (32.6-100.0) |                | 78.8 (55.5-100.0) |          |
| Primary language               |                            |                |                |          |                      |         |
| English                        | 0                          | .06            | 60.7 (55.7-65.7) | .09      | 59.8 (54.9-64.8)     | <.001   |
| Spanish                        | 82.4 (80.2-84.6)           | 67.0 (60.4-73.5) |                | 77.9 (75.6-80.1) |          |
| Smoking status                 |                            |                |                |          |                      |         |
| Smoker                         | 70.6 (54.0-87.1)           | .17            | 61.0 (45.7-76.4) | .70      | 65.1 (54.0-76.2)     | .12     |
| Nonsmoker                      | 82.6 (80.4-84.8)           | 64.0 (59.4-68.7) |                | 74.3 (72.0-76.6) |          |

Abbreviations: CI, confidence interval; NA, not applicable.
<sup>a</sup> In Matamoros, all women were considered to be of Hispanic ethnicity. Therefore, no data are reported for non-Hispanic ethnicity, and the χ² is not calculated.
### Table 3. (continued) Prevalence of Attempted Breastfeeding Before Hospital Discharge, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005

| Characteristic                              | Matamoros | Cameron County | Total Sample |
|---------------------------------------------|-----------|----------------|--------------|
|                                             | Weighted % (95% CI) | P Value | Weighted % (95% CI) | P Value | Weighted % (95% CI) | P Value |
| Alcohol use                                 |           |                |              |
| User                                        | 78.9 (71.8-86.0) | .35     | 62.5 (56.2-68.8) | .60     | 67.7 (62.7-72.7) | .005    |
| Nonuser                                     | 82.5 (80.2-84.9) |        | 64.5 (59.0-70.0) |        | 75.5 (73.2-77.8) |        |
| Health care coverage during pregnancy      |           |                |              |
| Has coverage                                | 81.1 (78.5-83.6) | .39     | 63.4 (57.9-68.9) | .81     | 73.0 (70.2-75.8) | .47     |
| Does not have coverage                     | 83.6 (78.7-88.5) |        | 64.3 (57.9-70.6) |        | 74.7 (70.9-78.5) |        |
| Delivery method                             |           |                |              |
| Cesarean                                    | 71.4 (68.1-74.6) | <.001  | 59.6 (54.0-65.3) | .03     | 66.1 (62.2-70.0) | <.001   |
| Vaginal                                     | 90.5 (85.1-95.9) |        | 66.9 (61.0-72.8) |        | 79.6 (76.4-82.7) |        |
| Infant birth weight                         |           |                |              |
| Low (<2,500 g)                              | 54.2 (34.5-73.8) | .01     | 30.1 (15.3-44.9) | .001    | 39.7 (27.9-51.6) | <.001   |
| Normal (≥2,500 g)                           | 83.2 (81.0-85.4) |        | 67.1 (62.8-71.5) |        | 76.0 (73.9-78.1) |        |
| Parity                                      |           |                |              |
| Any previous live births                    | 86.2 (83.2-89.3) | .002   | 60.5 (55.3-65.7) | .01     | 74.0 (71.3-76.7) | .68     |
| No previous live births                     | 73.8 (67.7-80.0) |        | 71.4 (63.4-79.3) |        | 72.8 (68.0-77.5) |        |
| Prenatal care                               |           |                |              |
| Early                                       | 78.5 (74.1-82.9) | .08     | 65.7 (60.7-70.6) | .09     | 71.6 (68.3-74.9) | .07     |
| Late or none                                | 84.4 (80.0-87.9) |        | 60.9 (54.5-67.4) |        | 75.8 (72.6-78.9) |        |
| Pregnancy intention                         |           |                |              |
| Intended to get pregnant                    | 80.7 (77.4-84.0) | .27     | 72.0 (67.1-76.8) | .003    | 77.2 (74.5-79.8) | .009    |
| Did not intend to get pregnant              | 83.5 (80.0-87.0) |        | 57.6 (50.1-65.1) |        | 70.4 (66.4-74.3) |        |

Abbreviations: CI, confidence interval; NA, not applicable.

* In Matamoros, all women were considered to be of Hispanic ethnicity. Therefore, no data are reported for non-Hispanic ethnicity, and the χ² is not calculated.
Table 4. Odds of Attempted Breastfeeding Before Hospital Discharge, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005

| Characteristic                  | Matamoros Model<sup>a</sup> AOR (95% CI) | Cameron County Model<sup>a</sup> AOR (95% CI) | Matamoros and Cameron County Model<sup>a</sup> AOR (95% CI) |
|--------------------------------|-----------------------------------------|-------------------------------------------|---------------------------------------------------------|
| **Place of residence**         |                                         |                                          |                                                         |
| United States                  | —                                       | —                                        | Ref                                                     |
| Mexico                         | —                                       | —                                        | 1.93 (1.31-2.84)                                        |
| **Ethnicity**                  |                                         |                                          |                                                         |
| Hispanic                       | —                                       | 0.42 (0.21-0.85)                         | —                                                       |
| Non-Hispanic                   | —                                       | Ref                                      | —                                                       |
| **Marital status**             |                                         |                                          |                                                         |
| Not married                    | —                                       | —                                        | 1.10 (0.79-1.55)                                        |
| Married                        | —                                       | —                                        | Ref                                                     |
| **Education level, y**         |                                         |                                          |                                                         |
| <8                             | 1.94 (1.11-3.42)                        | —                                        | 1.27 (0.79-2.06)                                        |
| 8-12                           | 2.91 (1.59-5.32)                        | —                                        | 1.39 (0.94-2.05)                                        |
| >12                            | Ref                                     | —                                        | Ref                                                     |
| **Employment status**          |                                         |                                          |                                                         |
| Employed                       | Ref                                     | —                                        | Ref                                                     |
| Unemployed                     | 1.70 (0.42-6.89)                        | —                                        | 1.03 (0.56-1.91)                                        |
| Not in labor force             | 1.01 (0.57-1.77)                        | —                                        | 1.29 (0.92-1.82)                                        |
| **Language**                   |                                         |                                          |                                                         |
| English                        | —                                       | Ref                                      | Ref                                                     |
| Spanish                        | —                                       | 1.40 (0.99-1.99)                        | 1.35 (0.92-2.00)                                        |
| **Alcohol use**                |                                         |                                          |                                                         |
| User                           | —                                       | —                                        | 0.99 (0.73-1.36)                                        |
| Nonuser                        | —                                       | —                                        | Ref                                                     |
| **Delivery method**            |                                         |                                          |                                                         |
| Cesarean                       | Ref                                     | Ref                                      | Ref                                                     |
| Vaginal                        | 3.63 (1.91-6.90)                        | 1.15 (0.83-1.60)                        | 1.98 (1.43-2.75)                                        |
| **Infant birth weight**        |                                         |                                          |                                                         |
| Low (<2,500 g)                 | 0.21 (0.11-0.44)                        | 0.22 (0.10-0.50)                        | 0.26 (0.15-0.44)                                        |
| Normal (≥2,500 g)              | Ref                                     | Ref                                      | Ref                                                     |

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval.

<sup>a</sup> Each column represents a separate logistic regression model and all variables included in the model. Variables that satisfy eligibility criteria for inclusion in one model may not for another model. Dashes indicate that a variable did not meet the criteria for inclusion in that model but did for 1 or more of the other models.

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### Table 4. (continued) Odds of Attempted Breastfeeding Before Hospital Discharge, Brownsville-Matamoros Sister City Project, Brownsville, Texas, and Matamoros, Tamaulipas, Mexico, August 21-November 9, 2005

| Characteristic                        | Matamoros Model\(^a\) AOR (95% CI) | Cameron County Model\(^a\) AOR (95% CI) | Matamoros and Cameron County Model\(^a\) AOR (95% CI) |
|---------------------------------------|-------------------------------------|----------------------------------------|-------------------------------------------------------|
| Parity                                |                                     |                                        |                                                       |
| Any previous live births              | 1.96 (1.18-3.25)                    | 0.64 (0.40-1.03)                       | —                                                     |
| No previous live births               | Ref                                 | Ref                                    | —                                                     |
| Prenatal care                         |                                     |                                        |                                                       |
| Early                                 | 0.89 (0.49-1.63)                    | 1.13 (0.83-1.52)                       | 0.97 (0.74-1.29)                                      |
| Late or none                          | Ref                                 | Ref                                    | Ref                                                   |
| Pregnancy intention                   |                                     |                                        |                                                       |
| Intended to get pregnant              | —                                   | Ref                                    | Ref                                                   |
| Did not intend to get pregnant        | —                                   | 0.50 (0.33-0.77)                       | 0.66 (0.49-0.89)                                      |

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval.

\(^a\) Each column represents a separate logistic regression model and all variables included in the model. Variables that satisfy eligibility criteria for inclusion in one model may not for another model. Dashes indicate that a variable did not meet the criteria for inclusion in that model but did for 1 or more of the other models.