

Determinants of optimal breast-feeding in peri-urban Guatemala City, Guatemala

Kirk Dearden,¹ Mekibib Altaye,² Irma de Maza,³ Maritza de Oliva,³
Maryanne Stone-Jimenez,⁴ Ardythe L. Morrow,^{2,4} and Barton R. Burkhalter⁵

ABSTRACT

Objective. This survey was conducted to identify factors affecting early initiation of breast-feeding and exclusive breast-feeding among mothers in peri-urban Guatemala City, Guatemala.

Materials and Methods. In early November 1999 a census was begun in four communities of peri-urban Guatemala City, Guatemala, to identify all children < 6 months old as well as all pregnant women who were expected to deliver during the two-month data-gathering period. After the census was completed, a survey of breast-feeding practices was administered to all mothers of infants < 6 months of age.

Results. The most important determinant of early initiation of breast-feeding was place of delivery. Children born at home (odds ratio (OR) = 4.1, 95% confidence interval (CI): 1.2–13.3) and at Ministry of Health health centers (OR = 4.9, 95% CI: 1.6–15.0) were significantly more likely than children born at private hospitals to initiate breast-feeding early. The most important determinant of exclusive breast-feeding was whether or not the mother worked outside the home. After controlling for infant's age and sex and mother's ethnicity, women who did not work outside the home were 3.2 times as likely (95% CI: 1.6–6.4) to exclusively breast-feed as were women who worked outside the home. Lack of exclusive breast-feeding was often associated with giving a bottle.

Conclusions. Our findings suggest that global efforts must be continued to improve breast-feeding practices in delivery hospitals. In addition, community-based support of breast-feeding is needed well after delivery. Mothers who work outside the home should be provided with options to maintain exclusive breast-feeding when they are physically separated from their infants due to the demands of work.

Key words

Breast-feeding, infant nutrition, child development, health promotion, health education.

¹ Brigham Young University, Department of Health Science, Provo, Utah, United States of America. Send correspondence to: Kirk Dearden, Department of Health Science, Brigham Young University, 213 Richards Building, Provo, UT 84602, United States of America; telephone: (801) 422-4428; fax: (801) 422-0373; e-mail: kirk_dearden@byu.edu. (Much of this work was carried out while he was at the Academy for Educational Development, The LINKAGES Project, Washington, D.C., United States of America.)

² Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, United States of America.

³ La Leche League Guatemala, Guatemala City, Guatemala.

⁴ Academy for Educational Development, The LINKAGES Project, Washington, D.C., United States of America.

⁵ University Research Co., Bethesda, Maryland, United States of America.

Breast-feeding is critical for sustaining the health and well-being of newborns and infants. Infants who are properly breast-fed grow better and experience less sickness and fewer deaths than do infants who are not breast-fed (1–5). Globally, breast-feeding is on the rise (6). However, in most countries a relatively small percentage of mothers practice optimal breast-feeding behaviors that reduce infants' risk of morbidity and mortality, including initiation of breast-feeding in the first hour after birth and exclusive

breast-feeding for the first 6 months of life.

Guatemala has the highest rate of childhood malnutrition in Latin America: 42% of children less than 3 years of age are chronically malnourished. Growth faltering in Guatemala begins in the first 6 months of life and accelerates shortly thereafter (7). Globally, efforts to address malnutrition in children may begin too late. Recent analyses using information from Africa, Asia, and Latin America indicate that virtually all deterioration in weight-

for-age occurs between the ages of 3 and 12 months, that growth faltering in weight-for-height occurs in the first 15 months, and that deterioration in height-for-age begins immediately after birth (8). These data underscore the need to focus on determinants and approaches to promoting and supporting optimal breast-feeding.

The scientific literature on less-industrialized countries suggests that early initiation of breast-feeding is positively associated with deliveries involving traditional birth attendants and negatively associated with delivery in a private hospital or clinic (6). In Guatemala, early initiation of breast-feeding is associated with Mayan heritage, no formal schooling, delivery by a midwife, and home birth (7). However, factors that affect early initiation of breast-feeding are not always the same as factors affecting exclusive breast-feeding. Exclusive breast-feeding in various developing countries is associated with planned duration of exclusive breast-feeding (9–11), lower social class (9), no formal education (6–7), older maternal age (9, 12), place of delivery (at home versus at a medical institution) (9), breast-feeding support at the place of birth and in the community (9, 13–14), traditional birth attendant- or midwife-assisted delivery (7), initiation of exclusive breast-feeding while at the place of birth (11), no maternal employment outside the home (9–11, 15), lack of shift work and weekend work as well as workplace policies that favor breast-feeding (16), social support for breast-feeding (9–10), and lack of bottle use (10). Many of the risk factors identified by these studies can be affected by policy or public health initiatives. Interventions to improve breast-feeding practices should be tailored to the needs of each population.

The study described here is the baseline survey of a four-community intervention trial of the impact of La Leche League's mother-to-mother support program on early initiation of breast-feeding and exclusive breast-feeding. La Leche League Guatemala (LLLG) trains unpaid volunteer breast-feeding counselors in low-income peri-urban areas of Guatemala City, which is the

capital and largest city of the country. The counselors receive training and follow-up from LLLG to carry out breast-feeding promotion and support activities in the communities where they live. Counselors facilitate mother-to-mother support groups; visit women in their homes; contact women informally on buses, in markets, and in other public areas; and refer women to nearby health clinics for lactation management for problems that the counselors are not trained to handle.

The baseline study tests the hypothesis that work outside the home, prenatal care, place of delivery, and existing forms of social support are associated with breast-feeding behaviors. Results for program and control communities are presented separately to allow for comparisons with follow-up data, which are reported in a separate article in this issue of this journal (17). Presenting data from program and control communities also provides a consistency check; associations that are observed in both types of communities should be representative of peri-urban Guatemala City, Guatemala, in general.

MATERIALS AND METHODS

A baseline (pre-intervention) survey examined the breast-feeding behaviors of infants less than 6 months of age living in four noncontiguous peri-urban areas located in northern, southern, eastern, and western sections of Guatemala City. Two of the communities, El Limón and La Esperanza, were La Leche League program sites, and the two others, Guajitos and Ciudad Real II, were controls.

Data collection included a complete census of the four study communities to identify all eligible children and pregnant women who were expected to deliver during the data-gathering period. After the census, a mothers' survey was administered to all eligible respondents. The survey included questions about infant feeding practices, using 24-hour and 7-day recall. The survey also included questions about potential determinants of breast-feeding practices, including sociode-

mographic characteristics, information about health systems (and, in particular, where women delivered their babies), mother's work and childcare, and social support for breast-feeding.

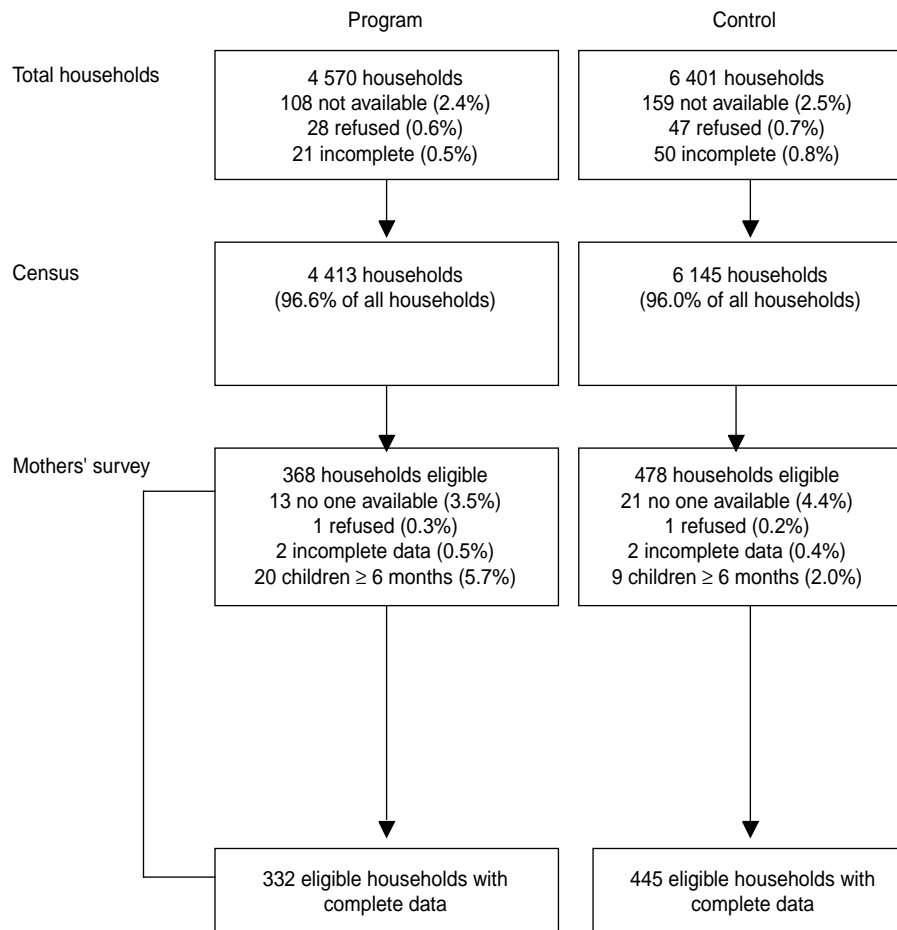
Data collection for this study began in November of 1999. Figure 1 provides a profile of women who were contacted for the study. After completing the census, 368 households in the program communities and 478 households in the control communities were eligible for the mothers' survey. Only about 4% of mothers in program and control areas were unavailable for interview. Rates of participation among eligible households were similar in the program communities and the control communities.

Follow-up data collection occurred one year later, in late 2000, and is reported separately in this issue of this journal (17).

For the purposes of this study, an exclusively breast-fed child is one who received only breast milk in the previous 24 hours, with no other liquids or solids, with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines (18–19). Predominant breast-feeding was defined as breast milk in the previous 24 hours, along with water, water-based drinks (sweetened and flavored water, teas, infusions, etc.), fruit juice, and oral rehydration salts (ORS) solution, but no other liquids or solids (18–19). Data were also collected on feeding patterns in the 7 days prior to interview and also in the period since birth. While this paper focuses on 24-hour recall, data from 7-day recall and since-birth recall are occasionally reported.

All data collection instruments used for this study were developed by a team of individuals with expertise in breast-feeding research and were reviewed by senior staff from La Leche League Guatemala. A local firm with expertise carrying out research in maternal and child health conducted all data collection. The census and mothers' survey were pretested among 30 individuals (15 mothers with children less than 6 months of age for the census and 15 mothers of children less

FIGURE 1. Data collection process for program communities and control communities, study of determinants of optimal breast-feeding, Guatemala City, Guatemala, 1999–2000



care, and social support—affected the breast-feeding behaviors of those mothers. Chi-squares (χ^2) were used to identify factors associated with early initiation and exclusive breast-feeding for mothers from program communities on the one hand and for mothers from control communities on the other hand. Logistic regression analyses were used to identify the characteristics that were associated with primary breast-feeding outcomes. Variables with *P* values less than 0.25 in bivariate analyses were included in initial logistic regression models. For early initiation of breast-feeding, independent variables included the child's sex, household water supply (a proxy for social class), child's place of birth, whether the mother had advised other mothers about breast-feeding, and whether the mother lived in a program community or a control community. Additionally, whether the mother received prenatal care and whether someone spoke to the mother about breast-feeding were included because of their conceptual importance to early initiation. For exclusive breast-feeding, independent variables included in the initial logistic regression model were child's age and sex, mother's native language (Spanish or Mayan), water supply, prenatal care, child's place of birth, mother's work outside the home, and whether someone had spoken to the mother about breast-feeding.

than 6 months of age for the survey) who were living in nonstudy sites that had similar sociodemographic characteristics to the program and control communities. After pretesting, the instruments were modified to make them more culturally appropriate and understandable. Twelve female interviewers with previous experience conducting maternal and child health surveys carried out all the interviews. Training for the census and for the mothers' survey lasted four days and five days, respectively.

Data collection for the census and for the mothers' interviews began the first week of November 1999 and ended the first week of January 2000. Interviewers returned to mothers' houses up to three times to complete

the interviews. The interviewers, field supervisor, and data entry technician checked questionnaires for completeness and consistency. All data were entered and checked using the Access computer software program (Microsoft Corporation, Redmond, Washington, United States of America) and analyzed using SPSS software (SPSS Inc., Chicago, Illinois, United States).

Data analyses compared the breast-feeding behaviors of mothers in program communities to the behaviors of mothers in control communities. Additionally, mothers from program communities were analyzed separately from mothers in control communities to determine what factors—including sociodemographic characteristics, health system characteristics, work and child

RESULTS

Characteristics of survey participants

A majority of mothers were in their twenties, had at least 4–6 years of schooling, learned Spanish as a first language, had at least one prenatal care visit, and gave birth at the Social Security or Ministry of Health (MOH) hospitals (Table 1). Mothers residing in control communities were less likely than mothers in program communities to give birth at MOH health centers and more likely to give birth at home. Nineteen percent of mothers in program communities and 13% of mothers in control communities worked outside the home.

TABLE 1. Characteristics of baseline survey participants in program communities and in control communities, study of breast-feeding in peri-urban Guatemala City, Guatemala, 1999–2000

Characteristic	Program communities	Control communities	P value
	(n = 332)	(n = 445)	
	%	%	
Sociodemographic			
Child's age (months)			0.131
0–1	39.5	32.7	
2–3	33.1	35.6	
4–5	27.4	31.8	
Child's sex (male)	52.1	52.1	0.994
Mother's age (years)			0.274
15–19	24.7	21.0	
20–29	53.9	59.6	
≥ 30	21.3	19.4	
Mother's education			0.505
None	11.1	14.2	
1–3 years	18.4	19.1	
4–6 years	37.7	38.0	
7–9 years	21.7	17.3	
High school or college	11.1	11.5	
Language			0.989
Spanish	91.3	91.2	
Mayan	8.7	8.8	
Water supply			< 0.001
Hose/Purchased by barrel	10.8	3.6	
Public water tap	11.4	21.1	
In house	77.7	75.3	
Health system			
Prenatal care (yes)	81.6	81.3	0.921
Child's place of birth			< 0.001
At home	3.0	11.7	
Ministry of Health center	22.3	8.8	
Ministry of Health hospital	41.3	38.2	
Social Security hospital	29.8	35.3	
Private hospital	3.6	6.1	
Work and child care			
Mother works outside the home	18.7	12.8	0.025
Mother takes child to work (yes) ^a	37.1	45.6	0.346
Social support			
Someone had ever spoken to mother about breast-feeding (yes)	47.6	40.5	0.047
Advised other mothers about breast-feeding (yes)	55.4	52.4	0.397

^a "Mother takes child to work" includes only those mothers who indicated they worked outside the home.

Breast-feeding behaviors

According to survey results, 99% of all mothers had breast-fed at some point and 90%–91% were currently breast-feeding (Table 2). We found that a significantly greater percentage of mothers in program communities initiated breast-feeding in the first

hour after birth (26%, vs. 16% for control communities). Only 18% of mothers in program communities and 23% of mothers in control communities were exclusively breast-feeding at the time of interview (preceding 24 hours). In comparison, overall rates of exclusive breast-feeding using 7-day and since-birth recall were considerably

lower, 11% and 4%, respectively. Of the women who were exclusively breast-feeding according to 24-hour recall, only 53% of them practiced exclusive breast-feeding for the full 7 days preceding the interview. Some 70% of the women had used a bottle to feed their infants in the previous 24 hours; 90% had used a bottle at least once since the child's birth.

Other than breast milk, the two most common substances given in the first month of life were sugar water (given by 41% of caregivers) and infant formula (24%). In the second month of life, 39% of caregivers provided formula to their infants. Bottle use was widespread: in the 24 hours prior to interview, 67% of infants less than 1 month of age and 82% of infants 1–2 months of age were fed using a bottle. Mothers who had given their babies liquids or foods in addition to breast milk were asked directly why they had done so. Insufficient milk (reported by 39% of women) and problems with the child's stomach (18%) were the most frequently cited reasons for not breast-feeding exclusively.

Table 3 identifies factors that influenced early initiation of breast-feeding and exclusive breast-feeding, separately for mothers from program communities and for mothers from control communities. Thus, for example, in program communities, mothers who worked outside the home were significantly less likely than mothers who did not work away from home to exclusively breast-feed (8% vs. 21%, respectively; $P < 0.05$ by χ^2). Likewise, in control communities, mothers who worked outside the home were significantly less likely than mothers who did not work away from home to exclusively breast-feed (9% vs. 25%, respectively; $P < 0.01$ by χ^2). Place of delivery was the factor most closely associated with early initiation. The child's age and the mother working outside the home were significantly associated with exclusive breast-feeding, though the age of the child appears not to be an important determinant of exclusive breast-feeding in program communities.

Multiple logistic regression was used to summarize the significant in-

TABLE 2. Breast-feeding behaviors at baseline in program communities and in control communities, study of breast-feeding in peri-urban Guatemala City, Guatemala, 1999–2000

Outcome	Program communities (n = 332)		Control communities (n = 445)		P value
	No.	%	No.	%	
Primary					
Initiated breast-feeding in first hour	87	26.2	73	16.4	0.001
Exclusively breast-fed in past 24 hours	61	18.4	100	22.5	0.163
Secondary					
Not given a bottle in past 24 hours	89	26.8	141	31.7	0.141
Ever breast-fed	329	99.1	439	98.7	0.567
Currently breast-feeding	300	90.4	405	91.0	0.757
Predominantly breast-fed in past 24 hours ^a	33	9.9	58	13.0	0.185

^a Predominantly breast-fed in past 24 hours = breast milk in the previous 24 hours, along with water, water-based drinks (sweetened and flavored water, teas, infusions, etc.), fruit juice, and oral rehydration salts (ORS) solution, but no other liquids or solids.

dependent factors associated with early initiation and exclusive breast-feeding, accounting for confounding factors (Table 4). Place of delivery and whether the mother lived in a program community were the only significant predictors of early initiation of breast-feeding ($P < 0.001$ and $P < 0.05$, respectively, by the Wald test statistic). Those who gave birth at home or at a health center were more likely than mothers giving birth at a private hospital to initiate breast-feeding in the first hour.

Risk factors for failure to exclusively breast-feed were different from risk factors for failure to initiate breast-feeding early. The mother not working outside the home was the factor most closely associated with exclusive breast-feeding. This was true even after controlling for the child's age and sex and the mother's ethnicity (Table 4).

DISCUSSION

Periurban Guatemala City provides a culture that supports breast-feeding: 99% of all the mothers in our study had breast-fed at some point, and 91% of the mothers of infants less than 6 months of age were currently breast-feeding. However, breast-feeding behaviors were far from optimal: 79% of

mothers in this sample did not initiate breast-feeding in the first hour after birth, 79% did not exclusively breast-feed in the previous 24 hours, and 70% had given a bottle in the previous day. This community-based study identified place of delivery as the only significant predictor of early initiation. Four factors increased the likelihood of exclusive breast-feeding: female child, younger age of child, mother not working outside the home, and mother's first language being Mayan (a proxy for Mayan heritage).

It is worth noting that baseline rates of early initiation were significantly higher in program communities than in control communities. What might explain this difference? Historically, the Ministry of Health health center in El Limón—an intervention community—has been the most active of the four communities studied in promoting optimal breast-feeding. Once a week it conducts support groups for pregnant women who have come for prenatal visits and new mothers who have come for postnatal visits. The health center includes a 24-hour maternity ward and encourages breast-feeding among mothers who have recently delivered. In addition, it coordinates its breast-feeding efforts with other governmental and non-governmental health organizations,

including La Leche League. Health center staff in El Limón include volunteer promoters (who are not affiliated with La Leche League), doctors, and a director who has been trained in lactation management. The health center that provides services for La Esperanza is located in a nearby community where health center staff are less familiar with breast-feeding; however, La Leche League counselors practice new skills there. The two control communities, Guajitos and Ciudad Real II, share the same health center, which is located in another zone outside of these communities. Health center staff in the control communities include midwives and volunteer health workers with basic training in lactation management. As part of their community-based work, volunteers conduct home visits. The health center director is a strong supporter of breast-feeding, but most staff have not received systematic training in breast-feeding promotion or in lactation management.

With respect to study limitations, these results are not likely affected by interviewer bias or selection bias. Data collection procedures were carefully standardized during interviewer training and practice in the field. Levels of participation in the communitywide census and mothers' survey were high; in addition, response rates were similar for program and control sites. However, because data were collected by mother's recall post-delivery, it was not possible to obtain certain information such as whether and how expectant mothers intended to breast-feed.

With respect to early initiation, Haggerty and Rutstein (6) report that around the world infants born in public hospitals and clinics are about as likely as infants born at home to begin breast-feeding in the first hour after birth. However, those researchers found that in many less-industrialized countries the lowest rates of immediate breast-feeding are among children born in private hospitals and in clinics, a finding that we substantiated in Guatemala City. Unlike findings reported by the most recent Demographic and Health Survey in Guatemala (7), our

TABLE 3. Prevalence of optimal breast-feeding behaviors at baseline by characteristics of survey participants, study of breast-feeding in peri-urban Guatemala City, Guatemala, 1999–2000^a

Characteristic	Initiated breast-feeding in the first hour		Exclusively breast-fed in past 24 hours	
	Program (n = 332)	Control (n = 445)	Program (n = 332)	Control (n = 445)
	%	%	%	%
Sociodemographic				
Child's age (months)				
0–1	NA ^b	NA	19.1	25.5 ^{a3}
2–3	NA	NA	21.8	29.6
4–5	NA	NA	13.2	11.3
Child's sex				
Male	21.2 ^{a1}	15.7	15.0	19.4
Female	32.1	17.7	22.0	25.8
Mother's age (years)				
15–19	24.7	17.4	17.1	22.6
20–29	26.4	14.9	19.0	22.7
≥ 30	28.6	21.4	18.3	20.9
Mother's education				
None	21.6	26.2	27.0	25.4
1–3 years	25.0	14.3	23.0	22.4
4–6 years	30.9	12.0	17.6	22.5
7–9 years	26.4	18.2	15.3	18.2
High school or college	18.9	22.0	11.1	25.5
Language				
Spanish	27.2	16.8	18.2	21.2 ^{a1}
Mayan	19.2	15.4	20.7	35.9
Water supply				
Hose/Purchased by barrel	27.8	18.8	27.8	25.0
Public water tap	15.8	14.0	21.1	27.7
In house	27.8	17.3	16.7	20.9
Health system				
Prenatal care				
Yes	27.5	15.1	18.5	20.2 ^{a1}
No	21.7	23.5	18.0	32.5
Child's place of birth				
At home	44.4	27.1 ^{a3}	30.0	30.8
Ministry of Health health center	37.8	43.6	27.0	17.9
Ministry of Health hospital	22.8	16.0	14.6	22.9
Social Security hospital	22.4	9.0	17.2	21.7
Private hospital	16.7	7.4	8.3	14.8
Work and child care				
Mother works outside the home				
Yes	NA	NA	8.1 ^{a1}	8.8 ^{a2}
No			20.7	24.5
Mother takes child to work ^c				
Yes	NA	NA	21.7	15.4
No			0	3.2
Social support				
Someone had ever spoken to mother about breast-feeding				
Yes	29.5	15.3	17.1	20.0
No	23.7	17.5	19.5	24.2
Advised other mothers about breast-feeding				
Yes	30.6	16.2	17.4	23.2
No	21.2	17.1	19.6	21.7

^a Chi-square (χ^2) tests were used to identify factors, within program communities and within control communities, that were significantly associated with early initiation and exclusive breast-feeding. For example, the child's age was significantly associated with exclusive breast-feeding in the control communities (but not in the program communities); male infants in the program communities were significantly less likely than female infants in program communities to initiate breast-feeding in the first hour after birth (but there were no significant differences in rates of initiation between male and female children in the control communities). The combination of the superscript letter and number indicates the level of statistical significance: ^{a1} = $P < 0.05$, ^{a2} = $P < 0.01$, ^{a3} = $P < 0.001$.

^b NA = Not applicable.

^c The characteristic of "Mother takes child to work" only includes the mothers who work outside the home.

study did not find that indigenous groups and those with less education were more likely to initiate breast-feeding early. While our study did not collect information on who attended the birth, other research in Latin America (6) and in particular in Guatemala (7) suggests that women who are attended by doctors and other health personnel at delivery are less likely to initiate breast-feeding in the first hour after birth.

The results from our study are consistent with other studies that point to work outside the home as one of the greatest deterrents to exclusive breast-feeding. Perez-Escamilla and colleagues (9) found that mothers in Brazil, Honduras, and Mexico who were not employed outside the home were significantly more likely to exclusively breast-feed, a finding also reported by Li et al. in Thailand (11). In the four peri-urban areas of Guatemala City that we studied, we found that the mother not working outside the home was the single most important predictor of exclusive breast-feeding.

Unlike other studies, however, our findings do not provide convincing evidence that social class (as measured here by access to water), maternal education, and mother's age affect exclusive breast-feeding. Studies by Nath and Goswami (20) and Perez-Escamilla et al. (9) document lower rates of exclusive breast-feeding among women of higher income and social class. In many less-industrialized countries, women with more formal schooling are less likely to exclusively breast-feed (6). Giugliani and colleagues (12) report that in the United States of America, young mothers are less likely to exclusively breast-feed, a finding substantiated in a three-country study by Perez-Escamilla et al. (9) but not confirmed by our study in peri-urban Guatemala City.

A separate study in Mexico by Perez-Escamilla and colleagues (10) points to social support as a major determinant of exclusive breast-feeding. Our Guatemala study does not provide evidence that social support (as measured by whether someone had spoken to the mother about breast-feeding) is

TABLE 4. Results of multiple logistic regression, characteristics significantly associated with optimal breast-feeding practices (odds ratio (OR) and 95% confidence interval (CI)), study of breast-feeding in peri-urban Guatemala City, Guatemala, 1999–2000^a

Characteristic	Initiated breast-feeding in the first hour		Exclusively breast-fed in past 24 hours	
	OR	95% CI	OR	95% CI
Child's place of birth				
At home	4.1	1.2–13.3		
Ministry of Health health center	4.9	1.6–15.0		
Ministry of Health hospital	1.9	0.7–5.6		
Social Security hospital	1.4	0.5–4.2		
Private hospital	1.0 ^b	^b		
Mother lives in program community				
Yes	1.7	1.1–2.4		
No	1.0 ^b	^b		
Child's age (months)				
0–1			1.9	1.1–3.1
2–3			2.6	1.6–4.2
4–5			1.0 ^b	^b
Child's sex				
Female			1.5	1.1–2.2
Male			1.0 ^b	^b
Language				
Mayan			1.8	1.03–3.3
Spanish			1.0 ^b	^b
Mother works outside the home				
No			3.2	1.6–6.4
Yes			1.0 ^b	^b

^a This table presents the results of two models, one for early initiation and one for exclusive breast-feeding (the shaded areas do not represent missing data). For the early initiation model, Hosmer and Lemeshow goodness-of-fit test, chi-square = 4.3, $P = 0.634$; for the exclusive breast-feeding model, chi-square = 7.4, $P = 0.192$.

^b The last category for each variable represents the reference category; no odds ratios are calculated for reference categories.

associated with optimal breast-feeding practices; however, the measures of social support used in our study were limited.

Unlike most studies on breast-feeding, our research examines two major breast-feeding behaviors as primary outcomes: early initiation of breast-feeding and exclusive breast-feeding. This study is also important because it suggests that there are few common risk factors underlying the failure to practice optimal breast-feeding practices. Consequently, efforts to improve breast-feeding will need to include a variety of strategies and target groups. With respect to peri-urban areas of Guatemala in general, there are several important findings for policy-makers, program implementers, and evaluators. First, the widespread use of sugar water and infant formula among

many infants less than 2 months of age suggests that these substances are not simply being given as prelacteals. Second, at least in peri-urban areas of Guatemala City, current infant-feeding culture supports both breast-feeding and bottle-feeding at an early age. As Winikoff and Laukaran (21) point out, mothers resort to bottle use for a variety of reasons, but not usually as an attempt to wean. Third, while work outside the home is an important deterrent to exclusive breast-feeding, it is not the only barrier. Most artificially fed babies do not have mothers who work away from home. Fourth, 24-hour recall overestimates exclusive breast-feeding. Nearly half of the women in this sample who reported exclusively breast-feeding their infants in the 24 hours prior to the survey did not exclusively breast-feed in the pre-

vious week, a finding that has been reported elsewhere (22).

In Guatemala's peri-urban areas, efforts to improve early initiation and exclusive breast-feeding should be targeted first at staff in public and private hospitals to support and strengthen the Baby-Friendly Hospital Initiative (part of the international BFHI effort of the World Health Organization (WHO) and The United Nations Children's Fund (UNICEF) to support and promote breast-feeding). Community-based initiatives are needed to address ongoing postpartum needs, including support to mothers who work outside the home. Such initiatives should be geared toward women during pregnancy, when decisions about infant feeding are made, and again during the first 1–2 months of the infant's life (13). These efforts should encourage mothers to modify one or two key behaviors found to be most detrimental to exclusive breast-feeding, with a particular focus on discouraging bottle use as well as the use of sugar water and infant formula. Breast-feeding counseling should provide mothers options for exclusive breast-feeding, even when they work outside the home.

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RESUMEN

Determinantes de la amamentación óptima en la zona periurbana de la ciudad de Guatemala

Objetivos. El objetivo de esta encuesta consistió en identificar los factores que influyen sobre el comienzo temprano de la amamentación y la lactancia exclusivamente materna en mujeres de la zona periurbana de la ciudad de Guatemala.

Métodos. A principios de noviembre de 1999 se inició un censo en cuatro comunidades periurbanas de la ciudad de Guatemala para identificar a todos los niños de menos de 6 meses y a todas las embarazadas que esperaban dar a luz durante los dos meses que duró el período de recolección de los datos. Una vez completado el censo, se realizó una encuesta sobre las prácticas de amamentación a todas las madres de niños de menos de 6 meses.

Resultados. El principal determinante del inicio temprano de la amamentación fue el sitio donde tuvo lugar el parto. La probabilidad de iniciar tempranamente la amamentación fue significativamente mayor en los niños nacidos en casa [razón de posibilidades (*odds ratio*): OR] = 4,1; intervalo de confianza del 95% (IC95): 1,2 a 13,3] y en los centros de salud del Ministerio de Salud (OR = 4,9, IC95: 1,6 a 15,0) que en los nacidos en hospitales privados. A su vez, el principal factor determinante de la lactancia exclusivamente materna fue que la madre trabajara o no fuera de casa. Después de controlar los efectos de la edad y el sexo del niño y de la etnia de la madre, las mujeres que no trabajaban fuera de casa tenían mayor probabilidad de alimentar a sus hijos exclusivamente con leche materna que las que trabajaban fuera de casa (OR = 3,2; IC95: 1,6 a 6,4).

Conclusiones. Estos resultados indican que hay que proseguir los esfuerzos generales para mejorar las prácticas de amamentación en las maternidades, pero además es necesario seguir proporcionando apoyo a la lactancia materna en la comunidad mucho después del parto. A las madres que trabajan fuera de casa se les deberían proporcionar alternativas para seguir con la lactancia exclusivamente materna cuando las