

# Breast-feeding Patterns in Nine Latin American and Caribbean Countries<sup>1</sup>

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*This article uses data from demographic and health surveys carried out in nine Latin American and Caribbean countries between 1984 and 1988 to compare breast-feeding patterns in those countries, where findings indicate that 6% to 23% of the infants are not breast-fed beyond two months of age. Although wide variations in breast-feeding patterns occurred, a number of general trends were noted.*

*To begin with, the mean rate of breast-feeding declined relatively fast in one group of countries (Brazil, Colombia, the Dominican Republic, Mexico, and Trinidad and Tobago), where half the infants surveyed had been weaned from the breast well before their first birthday. This differs from the situation found in the other four countries (Bolivia, Guatemala, Ecuador, and Peru), where half the infants were still being breast-fed during their second year of life.*

*Within each of the nine countries, the mean breast-feeding duration was longer in rural than in urban areas and among women with relatively low levels of education. The direction of these relationships was similar when analyses were performed across countries. In addition, a strong inverse relationship was found between the percentage of births attended by health workers in the countries surveyed and the mean duration of breast-feeding in those countries.*

**T**he well-documented nutritional, immunologic, and contraceptive advantages of breast-feeding (1–3) have led international health organizations to recommend the promotion and support of this infant feeding method in developing countries (4). In order to identify which parts of the world are in greatest need of breast-feeding promotion programs, however, it is essential to describe recent breast-feeding patterns in different countries and regions and to compare them with patterns observed in the past. Since breast-feeding rates tend to be unevenly distributed in different socioeconomic and cultural subgroups within a country (5–8), it is also important to compare breast-

feeding patterns in urban and rural areas and among women in different socioeconomic groups. In addition, it is important to try and see if there is any relationship between the modern health care system and the degree of successful lactation, due to the potential role that the health care system can play in improving breast-feeding rates worldwide (9, 10).

Exclusive breast-feeding is defined as the infant feeding method employing breast milk as the infant's only food. Since the risk of morbidity increases among infants given fluids by bottle, even if they are breast-fed (11), and since the risk of conception decreases substantially among mothers who practice exclusive breast-feeding (3), this method has been recommended for infants 0–4 months of age (4, 10). For this reason among others, it is important to document the data available on rates of exclusive breast-feeding in developing nations.

This article focuses on breast-feeding

<sup>1</sup>This article is also being published in Spanish in the *Boletín de la Oficina Sanitaria Panamericana*, vol. 114, no. 2, 1993.

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patterns in Latin America and the Caribbean. Assessment of the recent breast-feeding situation in this part of the world is important, because surveys done about a decade ago indicated that breast-feeding performance in this region was substantially worse than in the world's other developing areas (7). The specific aims of this presentation are (1) to summarize and integrate recent information describing breast-feeding patterns in Latin America and the Caribbean, (2) to compare breast-feeding patterns in different countries, (3) to describe secular trends in breast-feeding, (4) to document exclusive breast-feeding rates among infants 0–4 months old, and (5) to assess breast-feeding patterns within and between countries for certain subgroups (i.e., urban vs. rural dwellers, people with low vs. high socioeconomic status, and mothers delivering infants by traditional vs. modern methods).

## MATERIALS AND METHODS

### Information Retrieval

Two computerized literature banks, Medline and Current Contents, were used to identify published results from recent demographic and health surveys (DHS) conducted in Latin America and the Caribbean. Nine surveys involving seven Latin American countries (Bolivia, Brazil, Colombia, Ecuador, Guatemala, Mexico, and Peru—12–18) and two Caribbean countries (the Dominican Republic and Trinidad and Tobago—19, 20) were identified.

### The World Fertility Survey (WFS) and DHS Surveys

A lack of nationally representative breast-feeding data was partly overcome by the WFS begun in the early 1970s (7). Since 1984 the DHS have replaced the

WFS and have become a key source of information on infant feeding practices around the world. This effort has been funded by the United States Agency for International Development and carried out by subcontractor agencies such as the Population Council and the Institute for Resource Development/Macro International in conjunction with local governments.

As indicated above, the assessment presented here is based on data from those Latin American and Caribbean countries found to have published DHS information. The breast-feeding results from the nine countries identified are readily comparable because all nine demographic health surveys were based on representative cross-sectional samples of the national population, employed similar maternal age ranges, were conducted during the second half of the last decade (1986–1989), and reported their results in nine country reports (12–20) compiled by the Population Council and the Institute for Resource Development/Macro International that employed a standardized format.

### Statistical Analyses

Comparisons of relationships in different countries between breast-feeding and urban versus rural residence, economic productivity, and contact with the modern health care system were analyzed by linear regression (21).

### Definitions

Since breast-feeding rates at birth were not reported in isolation, the proportion of infants initiating breast-feeding has been defined for purposes of this analysis as the proportion of infants who were breast-fed between birth and 2 months of age.

The term breast-feeding implies that the infant received breast milk alone or in

combination with other foods. In seven of the surveys (12–15, 17–19) the reported mean breast-feeding duration was estimated taking into account the breast-feeding prevalence reported at each age interval between birth and 36 months of life. Since the mean breast-feeding duration was not reported for Guatemala (16) or Trinidad and Tobago (20), estimation of this parameter was based on the proportion of urban and rural dwellers included in the survey and on the mean breast-feeding duration reported for urban and rural areas in these two countries (16, 20, see Table 1 footnote).

**RESULTS**

**Initiation and Duration of Breast-feeding**

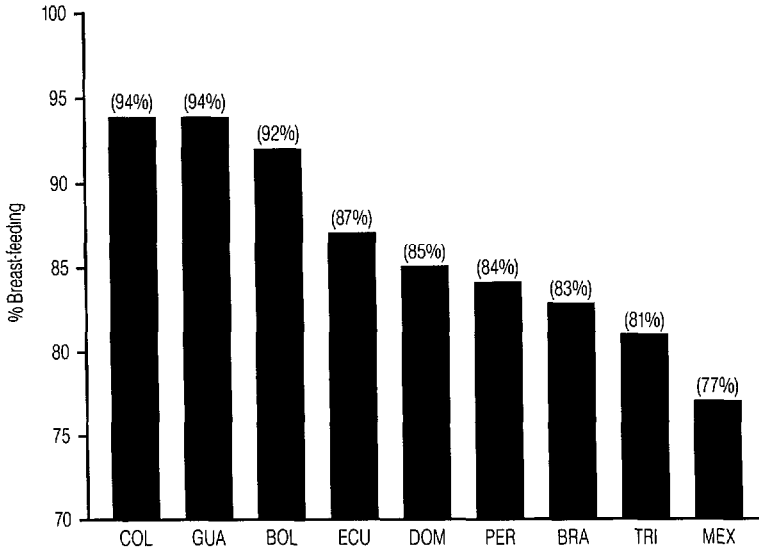
The data in Figure 1 indicate that the observed rate of initiation of breast-

feeding, as defined above, ranged from a low of 77% in Mexico to a high of 94% in Colombia and Guatemala.

As indicated in Table 1, the surveys found that the mean duration of breast-feeding ranged from 9.2 months in Brazil to 20.2 months in Guatemala. Guatemala also tended to have the highest prevalence of breast-feeding throughout the first 3 years of life (Figure 2). In general, the breast-feeding patterns of Bolivia and Guatemala tended to be fairly similar for infants in the first 9 months of life, after which the prevalence of breast-feeding declined considerably faster in Bolivia.

The Figure 2 data also show that infants in five countries (Brazil, Colombia, the Dominican Republic, Mexico, Trinidad and Tobago) experienced a relatively rapid decline in breast-feeding rates during the first year of life. In these countries the median duration of breast-feeding among infants that were ever breast-fed

**Figure 1.** Breast-feeding prevalences found among infants 0–2 months of age in each of the survey countries. The sample size of infants in this age range in each country was as follows: Bolivia 152, Brazil 82, Colombia 83, the Dominican Republic 138, Ecuador 74, Guatemala 146, Mexico 125, Peru 79, and Trinidad and Tobago 43. Data sources: references 12–20.



**Table 1.** Mean breast-feeding durations in the nine survey countries.

|                     | Year of data collection | No. of survey children 0–36 mo | Uran plus rural   | Mean breast-feeding duration (months) |       |
|---------------------|-------------------------|--------------------------------|-------------------|---------------------------------------|-------|
|                     |                         |                                |                   | Rural                                 | Urban |
| Guatemala           | 1987                    | 2 797                          | 20.2 <sup>a</sup> | 21.5                                  | 18.1  |
| Bolivia             | 1989                    | 3 554                          | 16.2              | 17.4                                  | 14.8  |
| Peru                | 1986                    | 1 796                          | 16.0              | 20.0                                  | 13.4  |
| Ecuador             | 1987                    | 1 861                          | 14.5              | 15.8                                  | 13.1  |
| Colombia            | 1986                    | 1 605                          | 11.1              | 13.2                                  | 9.7   |
| Mexico              | 1987                    | 3 452                          | 10.5              | 14.4                                  | 8.2   |
| Trinidad and Tobago | 1987                    | 1 138                          | 10.1 <sup>a</sup> | 10.3                                  | 9.9   |
| Dominican Republic  | 1986                    | 2 668                          | 9.3               | 10.7                                  | 8.4   |
| Brazil              | 1986                    | 1 960                          | 9.2               | 9.9                                   | 8.8   |

<sup>a</sup>Mean breast-feeding duration was not reported for Guatemala or Trinidad and Tobago. Estimations of the mean breast-feeding durations in these two countries were derived by applying the following formula:

$$\overline{BF} = X_u(BF_u) + X_r(BF_r)$$

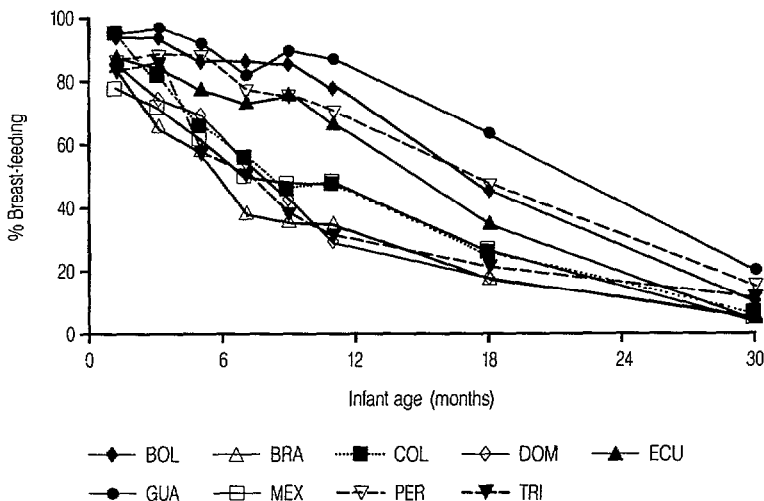
Where  $\overline{BF}$  = mean breast-feeding duration;  $X_u$  = proportion of subjects interviewed who were living in urban areas;  $X_r$  = proportion of subjects interviewed who were living in rural areas;  $BF_u$  = breast-feeding duration in urban areas;  $BF_r$  = breast-feeding duration in rural areas.

ranged from 6.6 months in Brazil to 8.9 months in Colombia (22). The substantial decline in breast-feeding in Brazil during the first six months of life is especially noteworthy.

Infants in the remaining four countries

(Bolivia, Ecuador, Guatemala, Peru) experienced a much slower decline in breast-feeding rates during the first year of life. The median duration of breast-feeding in these countries ranged from 13.9 months in Ecuador to 20.8 months in Guatemala (22).

**Figure 2.** Breast-feeding prevalences among survey children in each of the study countries at six-month intervals over the first three years of life. The sample size in each country of survey children 0–36 months old is shown in Table 1. Data sources: references 12–20.



## Secular Changes in Breast-feeding Duration

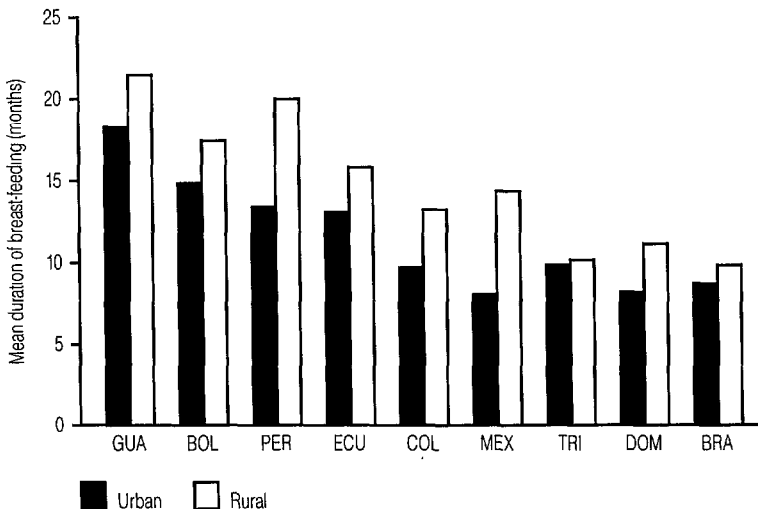
Changes in the duration of breast-feeding over time in different countries have been documented by Sharma et al. (23), who compared the median breast-feeding durations found by the demographic health surveys with those found by the world fertility surveys conducted about a decade earlier. Their results indicated that the secular trends were not consistent across countries. While large increases in the mean breast-feeding duration were observed in Trinidad and Tobago (+2.9 months) and Peru (+1.3 months), Ecuador (+0.3 months) exhibited only a small increase, the situation in Mexico remained essentially unchanged, and Colombia and the Dominican Republic experienced declines of -0.3 month and -1.3 months, respectively. No data were reported for Bolivia, Brazil, or Guatemala.

## Urban vs. Rural Patterns

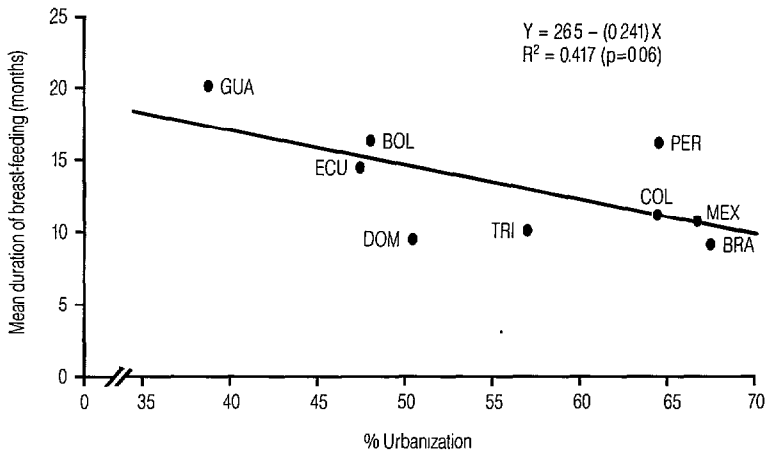
The survey data shown in Figure 3 and Table 1 indicate that in all nine countries the breast-feeding rates were lower in urban than in rural areas. It can also be seen that the better lactation performance observed in Guatemala was due to a longer mean breast-feeding duration in both urban and rural areas relative to the other countries.

Figure 4 depicts the inverse relationship found between mean breast-feeding duration and the percentage of the population living in urban areas in each of the nine countries. From the slope of the regression equation it can be estimated that a 15% rise in urbanization—representing the mean of the difference between the lower (38%) and upper (68%) range of urbanization—was associated with a 3.6-month decline in the mean duration of breast-feeding.

**Figure 3.** A country-by-country comparison of the mean duration of breast-feeding in urban and rural areas. Data sources: references 12–20.



**Figure 4.** The relationship between mean breast-feeding duration in each of the survey countries and the degree of urbanization in each country, showing a decline in the duration of breast-feeding with increasing urbanization. Data sources: references 12–20.

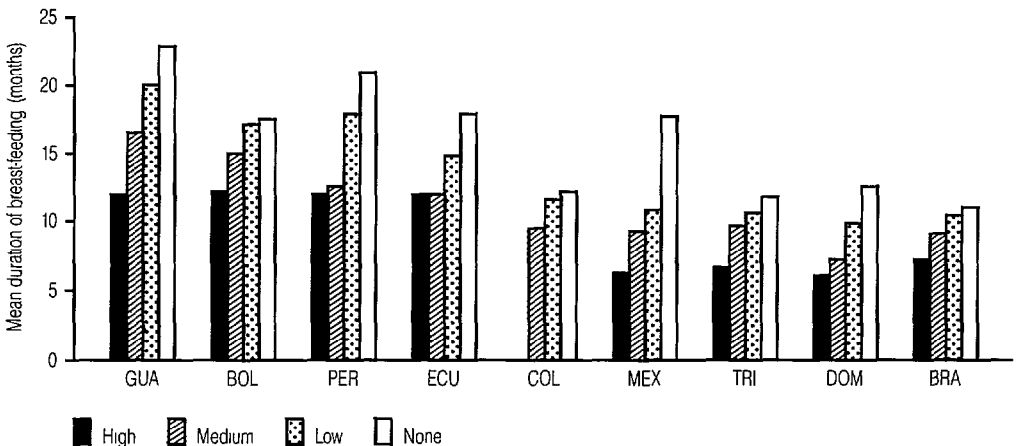


### Socioeconomic Status

As indicated in Figure 5, an inverse relationship was found between maternal education and the mean duration of

breast-feeding in every country. Women with little or no formal education tended to breast-feed their infants longer than women who received more advanced schooling.

**Figure 5.** The relationship between mean breast-feeding duration of the survey children and maternal education in each of the countries studied. None = no formal education; low = little formal education; med = a moderate level of formal education; and high = a high level of formal education. The definitions of low, medium, and high levels of formal education varied in the different survey countries. Only three education categories were reported for Colombia. Data sources: references 12–20.



**Figure 6.** The relationship between mean breast-feeding duration in each of the survey countries and a measure of economic productivity (GNP per capita) in that country. Trinidad and Tobago was not included because per capita GNP there was about five times greater than in the other countries. The years of the GNP estimates shown are 1984 for Brazil; 1985 for Colombia, the Dominican Republic, and Peru; 1986 for Ecuador, Guatemala, and Mexico; and 1988 for Bolivia. Data sources: references 12–20.

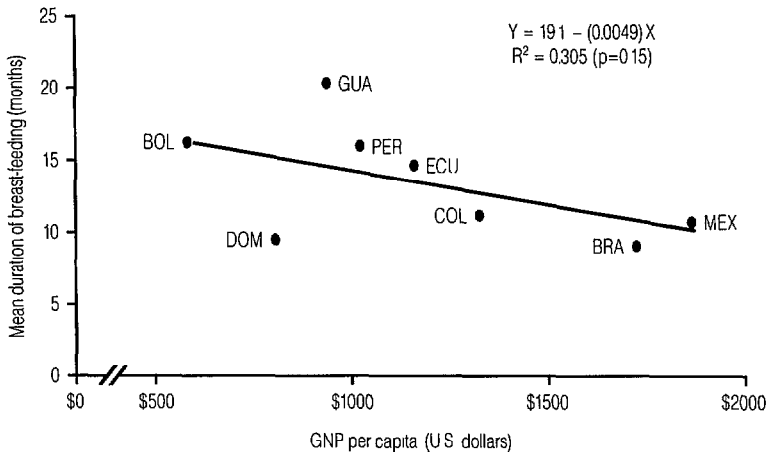


Figure 6 shows the anticipated inverse relationship between mean breast-feeding duration and economic productivity (GNP per capita) in eight of the nine countries. It should be noted, however, that the slope of the regression coefficient did not differ significantly from zero ( $p = 0.15$ ), perhaps due to the small sample size.

### Health Care Systems

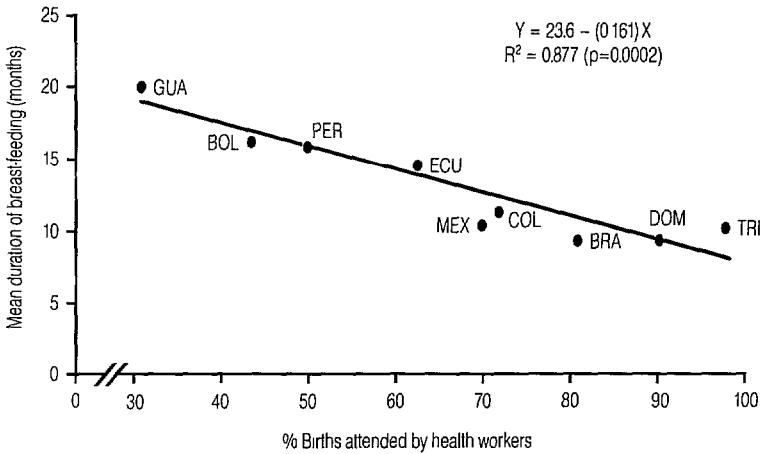
Figure 7 depicts the inverse relationship observed between mean breast-feeding duration and the percentage of births attended by health workers in each of the nine countries. It is important to note the strong linear relationship between these two variables. In this same vein, the percentage of the variance in breast-feeding explained by the propor-

tion of deliveries attended by health care personnel was 88%. From the slope of the regression equation, it is possible to estimate that a 34% increase in the proportion of infants delivered by trained health care workers—which represents the mean of the difference between the lower (29%) and upper (98%) range in the proportion of deliveries attended by health care personnel—is associated with a 5.5-month reduction in the mean duration of breast-feeding.

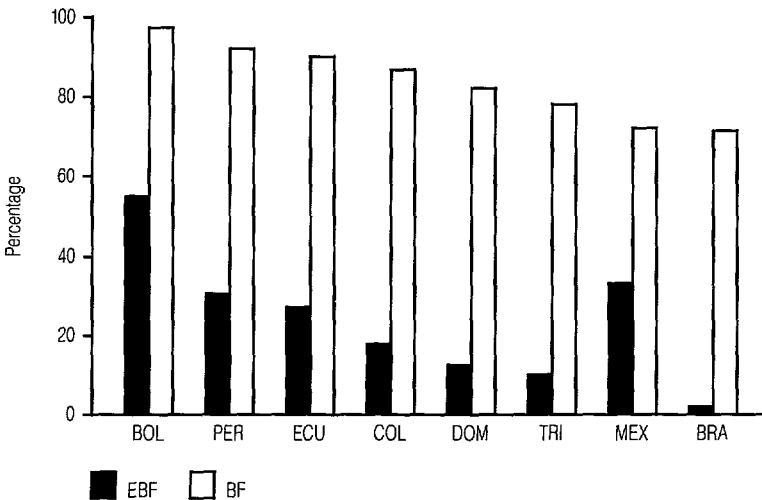
### Exclusive Breast-feeding

The data shown in Figure 8 reveal that rates of exclusive breast-feeding during the first four months of life in eight of the nine countries were far below the desired 100%, ranging from 3% in Brazil to 55% in Bolivia.

**Figure 7.** The relationship between mean breast-feeding duration in each of the survey countries and the proportion of births attended by health workers in that country, showing a decline in the duration of breast-feeding with increasing birth attendance by health workers. A health worker was defined as a trained nurse or physician. In the case of Brazil, delivery in a hospital/clinic (rather than home delivery) was considered a birth attended by health workers. In the Dominican Republic and Trinidad and Tobago trained midwives were included in the "health worker" classification because births attended by nurses and trained midwives were reported as a single category. Data sources: references 12–20.



**Figure 8.** A country-by-country comparison of the prevalence of breast-feeding (BF) and exclusive breast-feeding (EBF) in eight of the survey countries among infants 0–4 months of age. The data shown include only infants breast-fed during the 24 hours preceding data collection. Data source: reference 26. Data for Guatemala were not reported.





## DISCUSSION

As was perhaps to be expected, wide variations were found in the breast-feeding patterns observed in the nine Latin American and Caribbean countries surveyed. Rates of initiation of breast-feeding ranged from 94% (in Guatemala and Colombia) to 77% (in Mexico). The mean breast-feeding duration varied from a high of 20.2 months in Guatemala to a low of 9.2 months in Brazil. Secular trends in mean breast-feeding duration also varied, with some countries recording substantial increases in lactation performance while others experienced declines. Future studies should attempt to identify the principal factors responsible for the diversity of these secular trends observed in different countries.

The prevalence of exclusive breast-feeding also varied. However, in all cases the proportion of women practicing this feeding method was far below optimal, indicating that promotion of exclusive breast-feeding in the survey countries should continue to receive priority.

Comparison of situations prevailing in the different countries pointed to several general breast-feeding patterns. First, certain countries experienced a steep decline in breast-feeding rates during the first year of life; in these countries half of the infants surveyed had already been weaned from the breast well before their first birthday. In contrast, certain other countries experienced a less pronounced decline in breast-feeding rates during the first year of life but a relatively steeper decline during the second and third years of life. Among these latter countries, about half of the infants surveyed were weaned from the breast during the second year of life.

Second, women with higher levels of education (indicating higher socioeconomic status) within each country tended to breast-feed for shorter periods of time

than did their less educated counterparts. An inverse relationship between mean breast-feeding duration and socioeconomic status was also apparent in the comparisons between countries. These findings are in agreement with the results of studies and surveys carried out more than a decade ago in developing countries (5-8).

Third, the mean duration of breast-feeding within each country was longer among rural than among urban dwellers. This finding, which also tended to emerge from the cross-country comparisons, is likewise in accord with the above-mentioned earlier studies (5-8).

Fourth, a strong inverse linear relationship was found between the duration of breast-feeding and the proportion of deliveries that took place within the modern health care system. This suggests that the health care system may not be contributing to improved lactation performance in Latin America and the Caribbean. This matter deserves special attention, particularly because several of the countries surveyed (9, 10) have already put in place large-scale breast-feeding promotion programs in which the health care system plays a major role. It is possible that several of these programs had not been fully implemented or had not had a chance to have a national impact on breast-feeding practices by the time the DHS survey was conducted. It is also important to emphasize that association does not prove causation, and that within-country data and controlled experimental studies are needed in order to better understand what influence the health care system is having upon maternal infant feeding choices.

## CONCLUSIONS

While the present assessment points to wide variations in the breast-feeding patterns of Latin America and the Carib-

bean, some findings were similar in every country surveyed. These similar findings included an inverse relationship between the mean duration of breast-feeding and socioeconomic status, and also an inverse relationship between the mean duration of breast-feeding and the degree of urbanization. Moreover, across-country comparisons suggested that some of the differences in breast-feeding patterns in different countries might have been due to country-level differences in national economic productivity and degree of urbanization. As Popkin has noted elsewhere (7),

Urban areas are more densely populated, have better transport networks, have a more hectic life, more social services, more commercial food outlets ... and [maternal] work may be less compatible with child care.

Recent trends suggest that 80% of the population in Latin America will be living in urban areas by the year 2000 (24, 25). Therefore, it is important that future studies continue attempting to identify components of urban life responsible for the negative relationship between urban living and breast-feeding within each country. This will help provide a basis for interventions capable of effectively promoting breast-feeding; and in this and other ways it will contribute to preventing further declines in lactation performance in countries with high proportions of rural dwellers that are becoming increasingly urban.

Finally, it seems clear that the potential role for the modern health care system as a promoter of breast-feeding worldwide is enormous and will continue to grow as more births in developing countries take place within the system. For this reason, the strong inverse relationship found between delivery of an infant by trained health care workers and breast-feeding duration deserves to be studied in detail.

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## *Nursing Research Conference*

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The First International Conference on Community Health Nursing Research will be held in Edmonton, Alberta, Canada, from 27 to 29 September 1993. Its focus will be research on nursing interventions related to health promotion and illness and injury prevention services in the community. The conference aims to provide an international forum for exchange of ideas and information about these areas of community health nursing research; to produce conference proceedings that will be useful to practitioners, educators, researchers, and policy makers; and to expand community health nursing networks.

For further information on the conference, contact Dr. Shirley Stinson or Ms. Karen Mills, International Conference on Community Health Nursing Research, Edmonton Board of Health, Suite 500, 10216-124 Street, Edmonton, Alberta, T5N 4A3, Canada; telephone (403) 482-1965; fax (403) 482-4194.