The Epidemiology of Breast-feeding in Mexico: Rural vs. Urban Areas[1]

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This article summarizes published and unpublished data on breast-feeding in Mexico collected between 1958 and 1987. These data suggest that Mexican rates of initiation of breast-feeding (78–83%) are among the lowest found in developing countries, that the median duration of breast-feeding in 1987 was virtually the same as it had been in 1976, and that about half of all Mexican infants are not breast-fed beyond six months of age. A finding that the duration of breast-feeding was shortest in urban areas has important policy implications, since 72% of the population lives in urban zones.

The poor lactation performance that has been observed in Mexico (*1–28*) and other developing countries (*7, 27–30*) is of public health concern due to the well-documented immunologic and nutritional advantages of breast milk (*31, 32*) and the protective effect of breast-feeding on child spacing (*33, 34*) and childhood morbidity and mortality among disadvantaged groups in the developing world (*35*). This concern has been expressed by international agencies that have been calling for the protection, support, and promotion of breast-feeding throughout the world (*36, 37*). However, an essential step for the implementation of appropriate programs is a better understanding of the epidemiology of breast-feeding in each country involved. Moreover, because of the profound socioeconomic and cultural differences between urban and rural areas and prevailing trends toward urbanization in the developing world (*38*), it is very important to document breast-feeding patterns in both urban and rural areas.

Although several published reports have sought to render detailed accounts of the overall breast-feeding situation in Mexico (*5, 6, 39*), a clear need exists to integrate and update this information. Two of the reports (*5, 39*) have suggested that lactation performance was better in rural than in urban areas, but their data were restricted to the 1970s and early 1980s and were based on nonrepresentative samples. The data in the third report (*6*) were collected in 1986 and were based on a representative national sample; but even though profound regional variations were reported, breast-feeding patterns in rural versus urban areas were not compared. Nor did any of the three reports address the issue of differing breast-feeding patterns in metropolitan areas (i.e., Mexico City, Guadalajara, and Monterrey) versus smaller urban areas.

The aim of this article is to summarize available statistics and identify trends regarding the incidence and duration of breast-feeding in Mexico, with emphasis on the differences between metropolitan, urban, and rural areas.

METHODOLOGY

The data presented here were published in journals or circulated as internal

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reports between 1966 and 1990. The reports were identified by means of Medline and by reviewing documents at the Instituto Nacional de Perinatología in Mexico City and the Centro de Investigación, Alimentación, y Desarrollo in Hermosillo, Sonora. All the printed materials that contained data relating to the incidence or duration of breast-feeding in any part of Mexico were included. We also included data from our own recent studies in Hermosillo. With the exception of the national surveys that included representative samples, the studies reviewed examined populations with low socioeconomic status.

In Mexico a "rural" area is defined as a locality with less than 2,500 inhabitants; an "urban" area is defined as a locality having 2,500 or more inhabitants; and a "metropolitan" area is defined as the region encompassed by one of three cities, namely Mexico City (pop. 19.4 million), Guadalajara (pop. 3.1 million), and Monterrey (pop. 2.9 million).

In the following discussion and tables the term "full breast-feeding" is taken to mean that breast milk was the only type of milk fed to the infant regardless of whether this was supplemented with other fluids such as herbal teas or water. "Partial breast-feeding" is taken to mean that the infant was fed with a combination of breast milk and liquid substitutes for breast milk such as infant formula or cow's milk.

RESULTS

Initiation of Breast-feeding

A comparison of surveys conducted in 15 developing nations in the 1970s (*37*) ranked Mexico last in terms of the percentage of mothers who initiated breast-feeding (78%). Another comparison, this one of national surveys conducted in 24 developing countries in 1987 (*7*), ranked Mexico second to last with respect to the rate of initiation of breast-feeding (83%). National surveys including urban and rural populations between 1976 and 1987 indicate that the percentage of Mexican mothers initiating breast-feeding over time in this period ranged from 78% to 83%. Two of these latter surveys, conducted

Table 1. Breast-feeding rates in Mexico, 1976–1987 (national surveys).

References	Year	Population (rural, urban)	Percentage breast-fed at: Birth	≥3 months	≥6 months	≥12 months	No.
1	1976	U+R	80	61	50	37	7,310
2,3	1979	U+R	78	62	52	36	20,000
		U	72	—	—	—	
		R	86	—	—	—	
6	1986	U+R	80	46	—	—	4,846
7,8	1987	U+R	83	71[a]	50	33	9,320
				33[b]	—	—	
		R[c]	89	—	—	—	
		U[d]	82	—	—	—	
		U[e]	80	—	—	—	
		M[f]	78	—	—	—	

[a]Breast-feeding, ≥2 months.
[b]Full breast-feeding, 0–4 months.
[c]<2,500 inhabitants.
[d]2,500–19,999 inhabitants.
[e]≥20,000 inhabitants.
[f]Metropolitan areas (i.e., Mexico City, Guadalajara, and Monterrey).

in 1979 and 1987, indicate that the rate of initiation was higher in rural than in urban areas (Table 1).

Community-based studies conducted in urban areas of Mexico between 1973 and 1987 indicate that the initiation rate ranged from 54% to 94% (Table 2). Similar studies conducted in rural areas between 1960 and 1988 indicate a range of 73–99% (Table 3).

Duration of Breast-feeding

Tables 1–3 also show the rates of breast-feeding at 3, 6, and 12 months postpartum. National surveys conducted in 1976 and 1979 indicated a breast-feeding prevalence of 50–52% at 6 months postpartum (Table 1). Studies conducted in the 1970s in urban areas reported a 30–52% breast-feeding prevalence at 6 months.

Table 2. Rates of breast-feeding in urban areas of Mexico.

City	Year[a]	References	Study design[b]	Percentage breast-fed at: Birth	≥3 months	≥6 months	≥12 months	No.
Mexico City	1973	*9*	R,C	66[c]	58	52	36	5,011
Mexico City	1975	*10*	R,C	78	38	30	15[d]	1,948
Mexico City	1977	*11*	R,C	—	80	—	60[e]	361
Mexico City	1977	*12*	L	86	58	47	0	100
					43[f]	23[f]	0[f]	
Mexico City, Monterrey, Guadalajara	1979	*5*	R,C	—	—	37[g]	—	—
Puebla	1981	*12*	R,C	54[f]	50[f]	35[f]	21[f]	81
Guadalajara	1981	*13*	—	—	36	—	—	—
Mexico City, Guanajuato	1981	*14*	R,C	87	78	52	42	859
				15[f]	2[f]	—	—	
Hermosillo	1981	*15*	R,C	92	67	49	25	465
Hermosillo	1982	*16*	R,C	41[c]	—	—	—	105
Mexico City	1982	*4,5*	R,C	59	19	12	3	1,593
Guanajuato	1982	*4,5*	R,C	83	—	—	—	156
Tlaxcala	1983	*21*	L	85	46	27	5	547
Hermosillo	1986	*17*	R,C	94	56	—	21	52
Hermosillo	1986	*18*	L	79[h]	33	—	111	
				8[f,h]	9[f]	—	—	
Mexico City	1986	*23*	L	78[h]	50	—	25	1,131
Hermosillo	1987	*19*	R,C	88	—	33	15	283
Hermosillo	1987	*20*	L	82[i]	39[i]	—	—	61
				23[f,i]	17[f,j]	—	—	
Guadalajara	1987	*22*	R,C	69	55	33	20	896
				57[f]	40[f]	20[f]	9[f]	

[a]Year of study.
[b]R = retrospective, C = cross-sectional, L = longitudinal.
[c]<1 month.
[d]≥10 months.
[e]≥8 months.
[f]Full breast-feeding.
[g]Of those who initiated breast-feeding.
[h]At 1 month.
[i]At 15 days postpartum.
[j]At 4 months postpartum.

The comparable figure from studies done in the 1980s was 12–52% (Table 2). In the 1960s, the breast-feeding prevalences found at 6 months postpartum were in the range of 41–98% in rural areas, while in the 1970s and 1980s this range was 47–99% (Table 3).

National survey data (Table 4) indicate that the median duration of breast-feeding among infants who were breast-fed was 8.7 months in 1976 and 8.6 months in 1987. The mean duration of breast-feeding ranged from 6 to 12 months in 1976 and from 7 to 14 months in 1987, being lower both years in metropolitan and urban areas than in rural areas. Although the median values for breast-feeding duration from the two surveys can be compared, we caution against comparison of the mean values, because (as the footnotes at the bottom of Table 4 indicate) these means were arrived at by different computational methods.

The few studies reporting rates of full breast-feeding (Table 2) suggest that breast-feeding of Mexican infants is usually accompanied by feeding of breast-milk substitutes.

CONCLUSIONS

Although the situation seems to have improved slightly over the last 10 years, Mexico has one of the worst rates of breast-feeding initiation in the developing world (*7*), and about half of all Mexican infants are not breast-fed beyond 6 months of age. The finding that the median breast-feeding duration was very similar in 1976 and 1987 (*28*) suggests the absence of any substantial change in the average duration of breast-feeding over the past decade.

Both national surveys and community-based studies confirm that the overall breast-feeding situation seems better in rural than in urban areas. Also, surveys conducted in 1976 and 1987 found lower rates of breast-feeding initiation and shorter average breast-feeding duration

Table 3. Rates of breast-feeding in rural areas of Mexico.

State	Year[a]	References	Study design[b]	Percentage breast-fed at: Birth	≥3 months	≥6 months	≥12 months	No.
Morelos	1960	*24*	—	95	—	98	—	—
Morelos	1966	*24*	—	73	—	41	—	—
Tabasco	1958	*12*	R,C	89	—	66	33[c]	98
Tabasco	1971	*12*	R,C	82	—	62		98
Tabasco	1953–62	*25*	R,C	94	—	—	73	80
	1973–78	*25*	R,C	88	—	—	45	251
Indian[d]	1974	*12*	R,C	99	—	99	93	50
Mestizo[d]	1974	*12*	R,C	97	—	93	77	50
Semi-rural[d]	1974	*12*	R,C	92	—	77	56	50
Veracruz[e]	1980	*12*	R,C	83	—	47	18	582
Nayarit	1980	*12*	R,C	84	63	—	—	1,088
Puebla	1981	*12*	R,C	91	84	80	46	89
Guanajuato	1982	*4*	R,C	91	—	—	—	144
Morelos	1988[f]	*26*	—	99	—	—	>50	—

[a]Year of study, except for the last Morelos study.
[b]R = retrospective, C = cross-sectional.
[c]>18 months.
[d]Communities not specified.
[e]Average of 4 regions.
[f]Year of publication.

Table 4. Duration of breast-feeding in rural, urban, and metropolitan areas of Mexico (national surveys).

References	Year	Population (rural, urban, metropolitan)	Mean or median (in months)	Survey sample size
1,7,14,27	1976			7,310
		U+R+M	8.7[a]	
			6.0[b]	
		U+R+M	9.0[c]	
		R	12.3	
		U	8.0	
		M	6.0	
7,8	1987			9,320
		U+R+M	8.6[a]	
		U+R+M	10.5[d]	
		R[e]	14.4	
		U[f]	10.3	
		U[g]	8.3	
		M[h]	6.6	

[a]Median breast-feeding duration among infants who were breast-fed
[b]Median breast-feeding duration of all infants.
[c]Mean breast-feeding duration based on three-month moving averages of current status data with one-month intervals.
[d]Mean breast-feeding duration based on the proportion of breast-feeding women at time of interview and the average monthly birth rate during the previous 36 months.
[e]<2,500 inhabitants.
[f]≥2,500 inhabitants but <20,000.
[g]≥20,000 inhabitants.
[h]Metropolitan areas (i e., Mexico City, Guadalajara, and Monterrey)

in the metropolitan areas than in smaller urban centers. These trends have important policy implications, since 72% of the Mexican population lives in urban areas, and 39% of the urban dwellers live in metropolitan areas (30% in Mexico City) (*38*).

There are very few statistics on the incidence and duration of full breast-feeding in Mexico. This desirable infant feeding method deserves special attention, particularly since community-based studies indicate it is very rare in Mexico and that liquid breast-milk substitutes are typically introduced very soon after delivery.

Finally, it should be noted that even though several national surveys have been conducted in Mexico, trends over time are very difficult to establish due to differences in sampling approaches, computational methodologies, and breast-feeding definitions. In some instances the procedures employed were not fully reported. Future surveys should attempt to use standardized methodologies and to fully report their procedures in order to yield maximum benefits.

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