

# Feeding in the First Month of Life, by Social Strata, in Córdoba, Argentina<sup>1</sup>

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*A study was made of the feeding history from birth to 1 month of age in a cohort of children born and residing in the city of Córdoba, Argentina, in 1993. The sample was divided into six social strata, in accordance with the occupation of the individual primarily responsible for family support. A total of 620 mothers were surveyed 1 month (mean = 31 days; SD = 1.2 days) following delivery in order to obtain information on the occupational, housing, and demographic characteristics of the family. In addition, information was collected on the first food given to infants following birth as well as on the type of food received at 1 month of age, the latter being based on 24-hour recall. The living conditions and demographic characteristics of the families were associated with their social strata. Families in Stratum I (high) and strata II and III (intermediate) tended to have higher standards of living and to have parents who were older when the children were born than did families in the lowest strata (V and VI), while families in Stratum IV tended to approach the average values found for the entire sample.*

*With regard to feeding practices, it was found that 98% of the children had begun breast-feeding during the first week of life. A statistical association was observed between first food and social strata, with breast-feeding being more prevalent among the very low strata (V and VI) and use of bottle feeding being more prevalent in strata I and III.*

*At 1 month of age, 26% of the sample was receiving complete natural breast-feeding, 60% was receiving partial natural breast-feeding, and 14% was being entirely bottle-fed. A significant association ( $P < 0.05$ ) was observed between type of breast-feeding and social strata, with a figure of 38% complete natural breast-feeding recorded for Stratum I as compared to 16% for Stratum IV and 17% for Stratum V. Other findings of this study that stood out were that a high percentage of children in all the strata were initially breast-fed; a high percentage of the children were given breast-milk substitutes during the first month of life; and a low prevalence of complete natural breast-feeding was observed at 1 month of age.*

**W**ith advances in scientific and technologic knowledge, professional and institutional health interventions came to incorporate practices previously reserved for the private sector or traditional medicine. However, by including such

practices as care during pregnancy and childbirth and feeding of the neonate in the physician's professional repertoire, these interventions limited the ability of mothers and children to assume responsibility for crucially important stages in their lives without outside interference.

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Since biblical times, breast milk has been recognized as the best and most complete nourishment available; moreover, it can be given exclusively, at least in the first 4 to 6 months of life, to children born of healthy mothers (1–4). Historical data also show that natural breast-feeding was a constant practice in all cultures up through the initial decades of the twentieth century (5).

There should be no reason to assume the occurrence in recent decades of significant physiologic changes that might account for the increase in the prevalence of hypogalactia to a level in excess of 5–10% (1, 6). However, several epidemiologic studies documented a sharp decline in the frequency and duration of natural breast-feeding, beginning in the 1930s and 1940s (7–9). This decline coincided with the growth of the breast milk substitute industry, which at that time introduced into the market products of improved quality and composition. The power of the companies involved influenced the trend toward bottle-feeding (10). Beyond that, the new milk formula products did more than just enter the market through normal marketing and advertising channels; they also received the blessings of health professionals and health organizations, which contributed to their legitimacy by distributing them free of charge following childbirth.

This institutional contribution to the abandonment of natural breast-feeding did not end with the distribution of breast milk substitutes. New procedures and technologies for care during childbirth—such as widespread use of sedatives, anesthetics, and surgery—unfavorably influenced lactigenous mechanisms (11, 12). In addition, keeping the newborn child in a neonate ward during the immediate postpartum period interrupted contact between the mother and her baby and led to unnatural feeding practices.

More recently, thanks to promotional activities and warnings by health profes-

sionals and nongovernment agencies (such as La Leche League and the International Baby Food Action Network) as well as international organizations (such as PAHO and UNICEF), successful efforts have been made to gradually recover previous levels of breast-feeding frequency and duration. This recovery process, which began in the 1970s in countries such as Colombia, Costa Rica, Guatemala, Panama, and the United States (13, 14), was accompanied by an increase in the percentage of children being given formula at a very early age. Hence the process, which has taken some 20 years, has been defining a new feeding profile for neonates in which very often both natural breast-feeding and bottle-feeding play a role.

Changes in infant feeding practices tend to originate among the urban elite in industrial countries (9, 15) and from there spread outward toward broad areas of the Third World. Poor population centers copy these habits, with the disadvantage that they do so within an extremely unfavorable socioeconomic and environmental context (16). Within this context, the abandonment of exclusive natural breast-feeding affects different social groups differently; while in some groups it may constitute an innocuous practice for babies, in others it carries with it risks of psycho-affective privation and may lead in more extreme cases to sickness and premature death (17–18).

Insufficient epidemiologic information is available to describe breast-feeding patterns in Argentina, much less evaluate the extent to which the heterogeneous urban population is meeting the goal proposed by WHO and UNICEF (2, 19) of extending exclusive breast-feeding to all children in their first 4 to 6 months of life. Consequently, a decision was made to study the prevalence and social distribution of breast-feeding practices, analyze factors associated with infant feeding profiles, and evaluate their effects on

growth and development. With this aim in mind, an interinstitutional team was established in the city of Córdoba, Argentina, to represent the university, the municipality, the state, and both pediatric and gynecologic-obstetric associations. That team designed and implemented the research project described below—because it was felt that the type of information sought was necessary for carrying out interventions that would favorably affect breast-feeding and nutrition patterns of young children.

## MATERIALS AND METHODS

A prospective study was conducted on a cohort of children born in Córdoba in May 1993. Information was collected in three stages (at ages approximating 1, 6, and 12 months) during the children's first year of life. This article reports the results of the first phase.

The study design was descriptive with regard to characterization of social strata and breast-feeding modalities and explanatory with respect to analysis of factors determining feeding, growth, and development profiles.

Taking as our universe all children born in Córdoba in 1993, a sample was selected as follows: Over a 12-day period, all births occurring in the city's 54 health facilities with obstetric services were recorded. The following exclusion criteria were applied to these births: mother's residence outside the urban perimeter, birth weight less than 2 500 g, multiple birth products, and certain predefined congenital malformations. Of the 879 births recorded, 158 were excluded on the basis of these criteria, while 12 others were excluded because the mother refused to participate in the study.

The first household survey was conducted between 28 and 35 days (mean = 31 days, SD = 1.2 days) following the birth of each child by 40 students in their last year of nutrition and medical studies

at the National University of Córdoba. These students, who were trained and supervised by the project researchers, worked in pairs. Before the survey began, a pilot test was carried out at three municipal health centers to assess the validity and reliability of the survey instrument, calculate the time required for its application, and identify any difficulties inherent in the relationship between the surveyors and the subjects being surveyed.

With regard to the survey proper, each pair of survey workers was assigned approximately 35 interviews in a specific geographic area, a schedule of household visits, and the materials necessary to carry out the task. During the scheduled period, 620 (87.4%) of the 709 mothers selected were interviewed. The remaining 89 mothers were not interviewed during the survey period because the interviewers did not have their correct residential addresses or because the mothers had moved or were away from home for an extended period. As part of the on-going study, two additional surveys were scheduled at approximately 6 and 12 months postpartum.

For purposes of the study, the population was divided into social strata classified by the occupation of the person mainly responsible for family support. This information was obtained from responses to a series of occupation-related questions administered to the mother during the interview. Of various models proposed for analysis by social strata (20–23), the researchers selected the model developed by Bloch et al. (22).

To accomplish the division into social strata, the following socioeconomic information was collected about the person mainly responsible for family support: level of economic activity (stable, temporary, or retired); characteristics of the activity (manual or nonmanual labor); category of occupation (employer, self-employed person, or salaried worker); size of the organization where employed;

means of production (type and quantity); and professional status and skill at the job.

Based on this information, 45 socioeconomic situations identified in the sample were grouped into six social strata, taking into account the socioeconomic position and consumption and social prestige profiles of different occupational groups within Argentine society. The six strata, designated I through VI, represent a full range of living standards ranked from highest (I) to lowest (VI). These strata and the various groups included in them are shown in Table 1.

To characterize the types of breast-feeding observed, recommendations formulated by a group of WHO and UNICEF experts were followed (19). The mother was asked about her child's ingestion of milk (breast milk, formula, both, neither) and other foods during the 24 hours preceding the interview, and the following definitions were adopted:

- Complete natural breast-feeding: includes both "exclusive" natural breast-feeding and "predominant" natural breast-feeding. Exclusive natural

breast-feeding means the baby is consuming only breast milk (except for intake of vitamins, minerals, or medicine). Predominant natural breast-feeding means the baby is receiving water, juices, or other non-milk liquids in addition to breast milk.

- Partial natural breast-feeding: The baby is receiving both breast milk and milk from another source.
- Bottle-feeding: The baby is consuming only non-breast milk.

The study family living conditions recorded by the survey workers were classed as being good, fair, or poor depending on housing quality (type of construction and construction materials) and sanitary indicators (water supply, excreta and waste disposal methods). The study subjects' living conditions were considered poor if they resided in slum areas or in homes with one or more of the following: dirt floors, walls or roof made of sheet metal or cardboard, absence of either a waste disposal or an excreta disposal system, or no piped water (water being obtained from rivers, canals, or streams). Living conditions were deemed fair if the

**Table 1.** Six socioeconomic strata into which the study children's families were grouped, based on the occupation of the person primarily responsible for family support. Stratum I is considered high, II and III intermediate, IV low, and V and VI very low. Córdoba, Argentina, 1993.

Strata	Occupational group	No. of subjects
I	Employers, professionals, technicians with third-level degrees, high-salaried staff in the private or public sector, security personnel (officers)	106
II	Skilled self-employed people with or without a trade, and those devoted to the transportation of commodities or people	101
III	Salaried employees in stable nonmanual jobs, public or private sector employees, administrative personnel in industry, commerce, and services, and enlisted security personnel	122
IV	Salaried employees in stable manual jobs, industrial and service workers	87
V	Unskilled salaried employees or self-employed workers, maintenance and service sectors	70
VI	Temporary workers, construction workers, domestic servants, and other part-time services	134
Total		620

residence did not meet the "poor" criteria but consisted of rented quarters (house, boarding house, or apartment not owned by the study family) or had one or more of the following: a cement or brick floor, latrines, waste disposal via burial or burning, or water obtained from a standpipe located outside the dwelling. Families whose residences had none of the attributes of the first two groups were classed as enjoying good living conditions. In addition, a crowding index was derived from the relationship between the number of persons living in the home and the number of rooms in the home—not including bathrooms, kitchens, halls, or garages.

The data collected were tabulated and statistical tests were run to determine whether significant differences existed between the groups defined by the foregoing variables. This was done first for each of the social strata (overall analysis), and second for the social strata taken two at a time. For the overall analysis, the  $\chi^2$  (chi-square) test was applied for proportions and analysis of variance was used to compare means. When the analysis was based on pairs of social strata, the chi-square test and Scheffé's test were applied, the latter being used to assess differences between the means of different pairs. Statistical processing was carried out with the SPSS (SPSS/PC + 4.0) package at the Institute of Statistics and Demography of the National University of Córdoba.

## RESULTS

### Demographic Profile by Social Strata

Table 2 shows some of the socioeconomic and demographic characteristics of the 620 study subjects' families. It was observed, for example, that 90% of the families in Stratum I enjoyed good living conditions as defined above, while only

43% of those in Stratum V and 29% of those in Stratum VI did so.

With regard to schooling, 94% of the mothers in Stratum I had at least some secondary education, as compared to only 30% in Stratum VI. For this indicator, a significant difference ( $P < 0.05$ ) was found when strata I (94%), II (81%), and III (83%) were compared to strata V (47%) and VI (30%).

The crowding index, also used to assess the family's social status, had a mean value of 2.57 (SD = 1.45) for all the study families combined, ranging from a mean of 1.76 in Stratum I to a mean of 3.38 in Stratum VI. (The mean crowding indexes for strata II, III, IV, and V were 2.21, 2.19, 2.78, and 3.18 respectively.)

Both mean maternal age and parental education (of both mothers and fathers) reflected differences relating to social strata. The mean maternal age was 26.6 years (SD = 6.3), ranging from a high of 29.1 years in Stratum I (SD = 5.5) to a low of 24.6 in Stratum VI (SD = 6.8). The mean maternal ages in the other strata were 27.9 years in II, 27.1 in III, 26.1 in IV, and 24.5 in V. A statistically significant difference ( $P < 0.05$ ) was found between mean maternal age in the two highest strata as compared to the two lowest.

Both paternal age and paternal education exhibited distributions similar to those of maternal age and maternal education in all of the social strata. The prevailing marital status of the survey couples was also found to be influenced by social strata, a significantly higher prevalence of disintegrated nuclei (single or separated mothers) being found in the two lowest strata relative to the highest and the two intermediate strata (see Table 2).

### Newborn Characteristics

Forty-five percent of the births took place in public maternity wards, 51% in

**Table 2.** Percentage distribution of the socioeconomic and demographic characteristics of the study children, by social strata. Córdoba, Argentina, 1993.

Characteristic	Social strata						Total
	I	II	III	IV	V	VI	
<i>Family living conditions (%)</i> :							
Good	90	81	71	52	43	29	61
Fair	7	15	22	29	34	25	21
Poor	3	4	7	19	23	46	18
(No. of responses)	(106)	(101)	(122)	(87)	(70)	(134)	(620)
<i>Mother's place of origin (%)</i> :							
City of Córdoba	81	78	84	86	84	81	82
Other urban area	16	20	13	9	10	12	14
Semiurban or rural area	3	2	3	5	6	7	4
(No. of responses)	(104)	(99)	(121)	(86)	(69)	(134)	(613)
<i>Maternal education (%)</i> :							
Incomplete primary	0	2	2	13	16	28	10
Complete primary	6	17	15	26	37	42	24
Secondary or higher	94	81	83	61	47	30	66
(No. of responses)	(106)	(101)	(122)	(86)	(70)	(134)	(619)
<i>Paternal education (%)</i> :							
Incomplete primary	1	1	5	5	12	27	9
Complete primary	2	16	19	30	38	42	24
Secondary or higher	97	83	76	65	50	31	67
(No. of responses)	(104)	(101)	(119)	(81)	(68)	(123)	(596)
<i>Mother's marital status (%)</i> :							
Married	88	76	84	55	48	40	66
Stable union	8	21	12	31	36	44	25
Single or separated	4	3	4	14	16	16	9
(No. of responses)	(106)	(101)	(122)	(87)	(70)	(134)	(620)

private health facilities, and 4% in social security institutions. An analysis by social strata showed that strata I and III mothers tended to deliver their babies in private health facilities, and that most of the strata V and VI mothers delivered their babies in public maternity wards, while the strata II and IV deliveries were distributed about equally between the public and private sectors.

Certain biologic characteristics—including the newborns' gestational age and sex, as well as the birth weight of male newborns—appeared independent of social stratification. (The mean gestational age at delivery was 38.8 weeks, with a standard deviation of 1.4 weeks.)

Among female newborns the mean birth weight for all strata was found to be 3 290

g (SD = 391 g). In contrast to the males, a statistically significant difference ( $P < 0.05$ ) was found between the mean birth weights of Stratum I females (3 444 g) and those of Stratum IV (3 201 g) and Stratum VI (3 205 g). We have no hypothesis to account for this difference. Study of the evolution of the weight variable through the first year of life, which could shed light on whether this is an association that persists, is still pending.

Mean birth order for the newborns in the various strata was as follows: Stratum I, 2.07; Stratum II, 2.24; Stratum III, 2.17; Stratum IV, 2.61; Stratum V, 2.69; and Stratum VI, 3.09. This mean birth order, relatively low among newborns in the first three strata, was significantly higher among newborns in Stratum VI.

## Feeding Profiles

As indicated in Table 3, breast milk was the first food of over half the children in strata V (53%) and VI (62%), where births occurred predominantly in public maternity wards. However, most of the neonates in strata I and III (whose deliveries typically occurred outside the public sector) received milk formula, water, or a sugar solution in a bottle, only 32% and 31% respectively receiving breast milk as their first food. In strata II and IV, breast milk was the first food of 44% and 49%, respectively.

In a similar vein, nearly two-thirds of the children in strata V and VI (62% and 67%, respectively) were breast-fed within six hours of delivery, as compared to 44% and 43% of those in strata I and III and 56% and 59% of those in strata II and IV, respectively.

The type of breast-feeding being practiced when the study infant was 1 month old was evaluated on the basis of the mother's 24-hour recall (see Table 3). Overall, 26% of the infants were said to be receiving complete natural breast-feeding (95% confidence interval, CI: 21–31%), while 60% were receiving partial breast-feeding (95% CI: 55–65%) and 14% were bottle-fed (95% CI: 7–21%). Within the different strata, a higher prevalence of complete natural breast-feeding (38%) was found in Stratum I, compared to only 16% and 17% in strata IV and V, respectively, though the prevalence in Stratum VI was a relatively higher 29%. As Table 3 indicates, roughly one out of five mothers providing no milk other than breast milk supplemented her breast milk with water or other liquids, reducing the overall proportion of month-old infants who were exclusively breast-fed to 21%.

**Table 3.** Percentage distribution of study children feeding characteristics at 1 month of age, by social strata. Córdoba, Argentina, 1993.

Feeding characteristic	Social strata						Total
	I	II	III	IV	V	VI	
<i>First food after birth (%):</i>							
Breast milk	32	44	31	49	53	62	45
Milk formula	46	43	57	38	39	32	43
Water or sugar solution	22	13	12	13	8	6	12
(No. of responses)	(96)	(96)	(113)	(78)	(64)	(127)	(574)
<i>First breast-feeding (%):</i>							
Before 6 hours	44	56	43	59	62	67	55
6–24 hours	26	21	23	17	31	12	21
After 24 hours	30	23	34	24	7	21	24
(No. of responses)	(99)	(95)	(117)	(82)	(69)	(129)	(591)
<i>Type of breast-feeding at 1 month (%):</i>							
Complete natural	38	27	22	16	17	29	26
<i>Exclusively natural</i>	35	20	18	6	11	24	21
<i>Predominantly natural</i>	3	7	4	10	6	5	5
Partial natural	52	56	65	72	61	57	60
Bottle-feeding	10	17	13	12	22	14	14
(No. of responses)	(106)	(101)	(122)	(86)	(70)	(133)	(618)
<i>Other foods at 1 month of age (%):</i>							
None	41	39	48	39	50	48	45
Vitamins/minerals	53	48	44	36	29	28	39
Water/liquids	13	26	22	35	37	30	26
(No. of responses)	(105)	(98)	(118)	(83)	(70)	(132)	(606)

However, Figure 1 shows that variations in the prevalence of complete natural breast-feeding in different strata produced a roughly U-shaped association, in which relative frequencies decreased from Stratum I to Stratum IV and then increased markedly in Stratum VI.

When each infant's feeding history for the first month of life was reconstructed, it was determined that in 98% of all cases natural breast-feeding had been attempted in the first week of life, and also that 88% of the infants had received milk formula at least once between birth and 1 month of age.

With respect to the intake of non-milk foods during the 24 hours preceding the interview, it was found that consumption of vitamins and minerals predominated in the high and intermediate strata. In contrast, consumption of water and other liquids was more common in the low and very low strata, being especially marked in strata IV and V where low levels of complete natural breast-feeding prevailed (see Table 3).

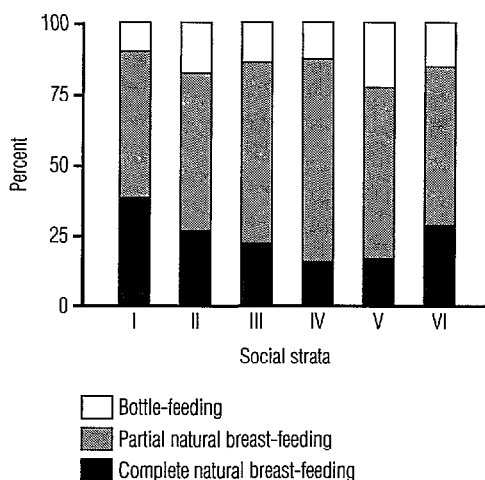
The interviewers also obtained information about newborn feeding advice the mothers had received from health profes-

sionals working with them during gestation as well as in the postnatal period until they were discharged from the hospital. In all, 56% indicated that the obstetrician had given them no instructions while 38% said the obstetrician had recommended natural breast-feeding. However, 60% said their pediatrician had recommended exclusive breast-feeding, while 36% indicated the pediatrician had recommended that breast-feeding be supplemented with artificial milk "if the baby is still hungry."

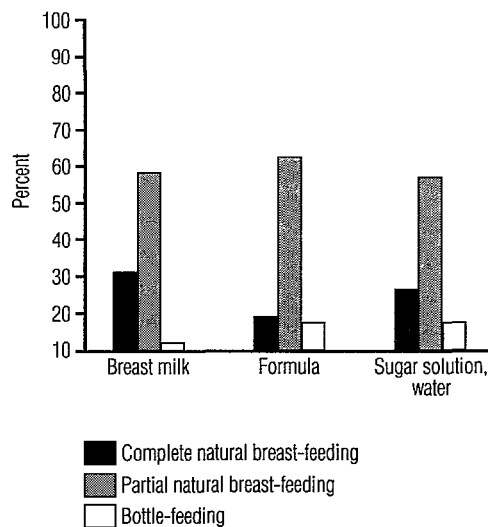
### Breast-feeding and Initial Feeding Experiences

To study the impact of initial feeding experiences on the neonate and future breast-feeding patterns, an analysis was performed on the relationship between type of breast-feeding at 1 month and two variables, initial food following birth and time between birth and initial breast-feeding. Figures 2 and 3 show the results of this analysis.

**Figure 1.** Types of breast or formula feeding the study children were receiving at 1 month of age, by social strata.

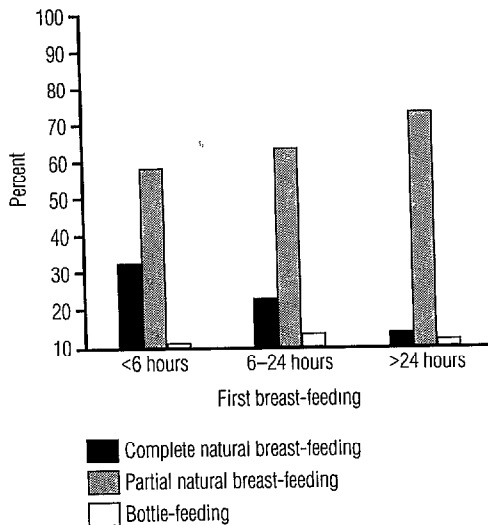


**Figure 2.** Types of breast and formula feeding received at 1 month of age by the study children grouped according to the type of food first received.





**Figure 3.** Types of breast and formula feeding received at 1 month of age by the study children grouped according to the time that elapsed between birth and the first breast-feeding.



The data charted in Figure 2 indicate that 31% of the infants whose first food was breast milk were receiving complete natural breast-feeding at 1 month of age. However, only 19% of those initially given milk formula were receiving complete natural breast-feeding at that age. An even greater difference was found with respect to the time that elapsed between birth and initial breast-feeding. As Figure 3 shows, complete natural breast-feeding was being received at 1 month by 32% of the infants who were first breast-fed less than 6 hours postpartum, as compared to only 15% of those not breast-fed in the first 24 hours.

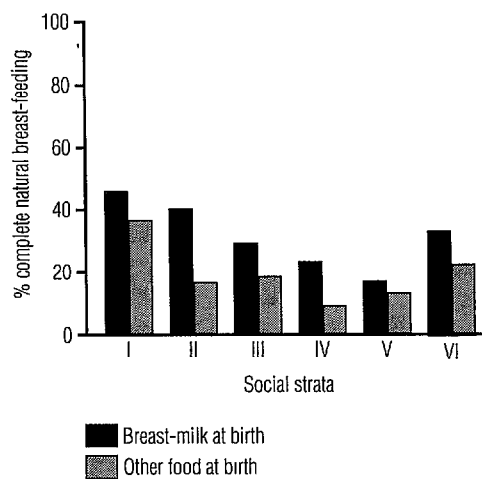
In analyzing the survey data by social strata, a statistical association ( $P < 0.05$ ) was found between the newborns' initial food and the prevalence of complete natural breast-feeding at 1 month in strata II and IV. In Stratum II, 41% of the babies whose first food was breast milk continued on with complete natural breast-feeding through 1 month, as compared

to only 15% of those whose initial food had been other than breast milk. In Stratum IV these proportions were 24% and 7%, respectively. In strata III and VI the differences were less pronounced, and in strata I and V the differences were even smaller (Figure 4).

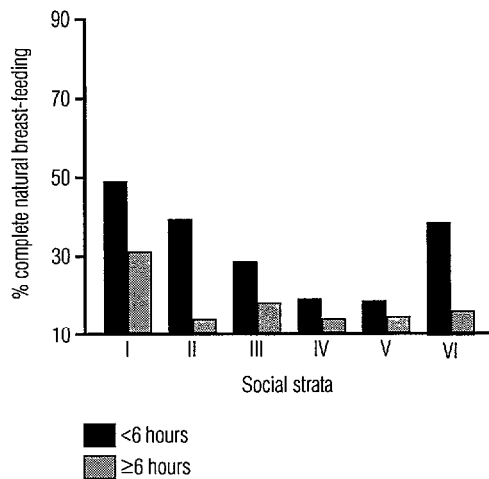
Significant differences were also observed in strata II and VI with respect to the time elapsed between birth and initial breast-feeding and the percentage of infants receiving complete natural breast-feeding at 1 month (Figure 5). In Stratum II, over one-third of those breast-fed before 6 hours postpartum were receiving complete natural breast-feeding at 1 month, as compared to only 14% of those first breast-fed later ( $P = 0.025$ ); in Stratum VI the respective proportions were close to those in Stratum II.

In Stratum I, although the difference was not significant, it was found that 49% of the children breast-fed prior to 6 hours postpartum were receiving complete natural breast-feeding at 1 month, as compared to 30% of the children first breast-fed later. In strata IV and V the period

**Figure 4.** The percentages of study children receiving complete natural breast-feeding at 1 month, grouped by the first food received postpartum (mother's milk or other) and by social stratum.



**Figure 5.** The percentages of study children receiving complete natural breast-feeding at 1 month, grouped by social strata and the length of time (<6 hours, ≥6 hours) that elapsed between birth and the first breast-feeding.



between birth and first breast-feeding appears to have had relatively little influence on the percentage of children receiving complete natural breast-feeding at 1 month, partly because the percentages receiving complete natural breast-feeding at 1 month were so low.

## DISCUSSION AND CONCLUSIONS

The social strata examined in this study included high (I) and intermediate (II and III) strata comprised of professionals, employers, self-employed people, and salaried workers performing stable, non-manual labor who generally enjoyed good living conditions, low rates of crowding, high levels of education, and nuclear homes. In contrast, the very low strata (V and VI) were comprised of temporary and unskilled workers confronting very different conditions with respect to all the socioeconomic indicators studied. Stratum IV was comprised of manual workers with socioeconomic circumstances

approaching the averages found for the entire study population.

The aim of the overall study, only part of which is reported here, was to assess how social differences influence infant feeding, against a backdrop of different types of breast-feeding found in different social groups and in countries with differing degrees of development (4, 7, 17). It also sought to help define the impact of different types of artificial infant feeding upon malnutrition and upon rates of morbidity and mortality in poor Latin American communities (24–26).

The data reported here, on the study infants' feeding history at 1 month, brought out three related points. First, a high percentage of the study children from all strata were initially breast-fed. Second, a high percentage of these children received artificial milk during the first month of life. And third, relatively few of the children were receiving complete natural breast-feeding at the end of their first month of life.

In much of Latin America, demographic and health surveys conducted between 1986 and 1994 (27–29) have shown that over 90% of all newborns studied were initially breast-fed. In countries including Bolivia, Chile, Ecuador, Guatemala, and Peru, the percentages of study children who initiated natural breast-feeding surpassed 95%. In Brazil, Cuba, and Mexico the percentages were slightly lower, in the range of 80–90%. This widespread affirmation of an intent to breast-feed, which was also found in our survey, conforms with a trend evident in the United States beginning in the 1970s toward a return to natural breast-feeding (7, 30).

The fact that at 1 month 86% of the study infants continued to receive some breast-feeding could be an encouraging indication, provided the trend is upward. However, given the lack of prior information, it could also be the beginning of a downswing similar to the one that be-

gan in 1985 (31–33). In any case, it should be noted that exclusive breast-feeding was not very frequent, considering that the study children were only 1 month old. Moreover, the results of the study indicate that the median length of the complete natural breast-feeding period occurs within the first month of life. As this suggests, early introduction of formula was very prevalent, with 74% of the study infants receiving artificial milk by their first month of life—14% being exclusively bottle-fed at that time and 60% receiving partial natural breast-feeding.

Abandonment of exclusive natural breast-feeding appears to be occurring at an average age when bottle-feeding entails morbidity and mortality risks 10 to 15 times greater than those experienced when it begins at 3–4 months of age, especially in poor populations (34). In addition, there are presumed medium- or long-term consequences, not yet assessed from an epidemiologic perspective, such as higher frequencies of metabolic diseases and arterial hypertension (4).

Beginning with initial feeding experiences, it is possible to distinguish differences associated with social strata and institutional practices. As in other studies conducted in industrialized countries (30, 35–38), we confirmed that in high and intermediate strata (I through III) exclusive natural breast-feeding was more prevalent than in strata IV and V. Indeed, a significant decrease was observed in the latter strata that subsequently reversed itself in Stratum VI.

Another noteworthy finding is that the prevalence of complete natural breast-feeding was identical among Stratum I women (38%) and married Stratum VI women, but dropped almost to the level of Stratum V (19%) among single Stratum VI women. Although the subsample of single women from Stratum VI was quite small ( $n = 23$ ), a significant difference was detected in the average age of this subgroup (20.9 years) compared to mar-

ried Stratum VI women (26.3 years). (A study with a larger sample, still pending, is seeking to assess whether maternal age determines a lower prevalence of exclusive maternal breast-feeding at age 1 month in this stratum.) No significant differences in breast-feeding patterns were found associated with maternal work outside the home, parental education, crowding, or general living conditions.

Although our results show certain relationships existing between strata with regard to complete natural breast-feeding, it would be interesting to see whether the observed relationships also exist with regard to abandonment of natural breast-feeding. (Other studies have found an increase in the frequency and duration of breast-feeding in lower strata—4, 28, 39.)

Previous research has shown institutional practices to significantly delay achievement of the proposed goals for prolonging complete natural breast-feeding. Our own study confirmed the persistence of such practices. Notably, 55% of the study children were given a bottle of milk formula or sugar water as their first food following birth, and 48% were not breast-fed for 6 hours following delivery.

These institutional practices are contrary to educational programs being implemented in Latin America to promote natural breast-feeding. The repeated administration of milk formula or water impacts negatively on the duration of exclusive natural breast-feeding (40) and interferes with the infant's demand to suck. Within this context, it has been demonstrated that early and prolonged contact between the mother and her baby increases the prevalence of exclusive breast-feeding. It is difficult to achieve this early and close contact when current practices appear to be more linked to institutional needs than to the needs of mothers and their newborns (41–43).

All of these circumstances which are harmful to natural breast-feeding are, in

theory, controllable and may be considered "soft" variables addressable by intervention. For example, it is likely that introduction of changes in care during pregnancy, childbirth, and postpartum will increase breast-feeding levels among women seen in private institutions, since despite the fact that the practices currently prevailing in those institutions do not promote breast-feeding, our study found that the prevalence of complete natural breast-feeding at 1 month was higher among women attending them.

The strategies proposed by WHO and UNICEF (34) for eliminating the constraints that impede exclusive breast-feeding include, among others, assisting mothers to initiate breast-feeding during the first hour following delivery; not giving newborn infants any food or liquid other than breast milk; and allowing babies to be with their mothers 24 hours a day.

In addition to developing strategies that will favor complete natural breast-feeding during the initial months of life, it will be necessary to analyze how this practice is affected by socioeconomic and cultural changes associated with productive processes in developing countries. Efforts should be made to identify the reasons underlying the relatively low prevalences of breast-feeding in lower social strata, where most mothers give birth in public maternity wards. Although these institutions typically have practices that are less detrimental than those of most private institutions, our study found that prevalences of complete natural breast-feeding at 1 month by women in these strata were very low.

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### *Use of Oral Polio Vaccine*

The World Health Organization believes that the campaign to eradicate polio worldwide must continue to be based on the use of oral polio vaccine (OPV). WHO reaffirmed its position in response to a decision in October by the Advisory Committee on Immunization Practices (ACIP) of the United States of America to change that country's immunization schedule to two doses of injectable polio vaccine (IPV) and two doses of the oral vaccine. The change is an attempt to prevent some of the 5 to 10 cases of OPV-associated polio that occur in the United States each year.

Dr. Jong-Wook Lee, Director of the WHO Global Program for Vaccines, stated that "the eradication of polio from the world can only be achieved using oral polio vaccine." He pointed out that OPV, which is made from a live attenuated virus, not only protects the individual who receives it but also spreads protection to that person's contacts. In addition, the cost per dose of OPV is less than one-tenth that of IPV.

The core agencies working toward polio eradication—WHO, UNICEF, Rotary International, and the U.S. Centers for Disease Control—all recommend the use of OPV in the effort. The ACIP affirmed its support for the global polio eradication initiative and noted that polio was eradicated in the United States through the exclusive use of OPV.

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*Source:* World Health Organization. WHO reaffirms commitment to oral polio vaccine. Geneva: WHO; 20 October 1995. (Press release WHO76).