

# Impact of the Brazilian national breast-feeding programme on mothers in Greater São Paulo

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*A broad-based national breast-feeding programme was launched in Brazil in 1981 that was preceded by an evaluation of infant feeding habits in two metropolitan areas of the country. This paper reports the initial findings of an evaluation of the programme in Greater São Paulo that was carried out in 1987, 6 years after the programme started. The method employed was analogous to that used before the start of the programme in 1981. For this purpose, a representative sample of mothers who were attending child care services open to all income groups were interviewed, together with a number of health professionals. A total of 497 mothers with children aged 0–12 months were covered. A recall interview was also administered on the duration of breast-feeding for all children born to the mothers since 1981.*

*As a result of the programme, the mean duration of breast-feeding rose from 89.4 days to 127.5 days and of feeding only breast-milk from 43.2 days to 66.6 days. The proportion of previous children who were breast-fed for more than 6 months rose from 18.9% for those born in 1981–82 to 37.7% for those born in 1984, when the programme activities were at their highest, and slipped back again to 27.6% in 1985–86.*

## Introduction

A considerable number of reports have appeared on programmes and projects designed to encourage breast-feeding (1). Since the evidence began to accumulate several decades ago that breast-feeding is important for children's health and even survival (2), several countries have set up programmes to promote breast-feeding. It is crucial that for a given country or region the most appropriate ways of planning and implementing such programmes be identified and that their impact be investigated.

In general, the majority of breast-feeding programmes have been carried out at the institutional level, with a definite clientele. The activities that such programmes have focused on to promote and support breast-feeding include the following: midwives, nurses, and physician's education (3); home visits provided by a lactation counsellor (4); and modifications to the health services routines, such as early mother–infant contact (5) or rooming-in (6). The results of these activities can be determined relatively easily by comparing breast-feeding data collected before and after the start of a specific intervention. Evaluations of this type are not difficult to carry out.

provided the population has the same demographic structure both before and after the intervention, and other aspects that could influence the results are also taken into consideration. In contrast, breast-feeding programmes that include activities directed at protecting lactating women, such as national policies or mass media campaigns, are more difficult to evaluate. Clearly, as the complexity of the proposed interventions increases, the smaller are the chances that the programme will be correctly evaluated.

In Brazil, the national breast-feeding programme was disseminated mostly through the mass media, although other activities were also carried out. It is difficult to measure the impact of programmes of this type in view of the large number of factors that can affect a mother's decision to breast-feed. The most suitable gauge is how much the duration of breast-feeding increases. In the evaluation of this impact, the effect of breast-feeding on indicators of infant morbidity and mortality can also be taken into account.

In the early 1980s, the Ministry of Health and the local UNICEF office were convinced that the early weaning rate was alarmingly high in Brazil and that it was important to tackle this problem through a campaign in the mass media. The result was the creation of the national breast-feeding promotion programme, which relied heavily on the mass media but also used other strategies. These included: provision of health professionals with up-to-date information on breast-feeding; encouragement of research activities and scientific meetings on breast-feeding; efforts to motivate and educate health workers on breast-feeding management; implementation of the rooming-in system in clinics; inclusion of information

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on breast-feeding in the training curricula for health personnel and primary grade teachers; preparation and implementation of a code of marketing of breast-milk substitutes based on the WHO/UNICEF International Code of Marketing of Breast-milk Substitutes; enforcement of existing laws that protect the rights of working mothers during pregnancy and lactation; provision of incentives to mother's groups; efforts to increase awareness about the consequences of weaning; and the creation of procedures for informing mothers about breast-feeding, either personally or through the mass media (7).

In order to determine what impact the programme had achieved and any difficulties that had been encountered, the Ministry of Health—through the National Food and Nutrition Institute (INAN) and UNICEF—supported an evaluative study of the programme (8). For this purpose, the Centro Brasileiro de Análise e Planejamento (CEBRAP) first carried out an evaluation of the breast-feeding rates and services available in 1981, before the programme was implemented, in Greater São Paulo and Greater Recife. The services provided to all income groups were investigated. The second stage of the evaluation was carried out in 1987, and involved an assessment of the situation after implementation of the programme.

Here, we describe the initial findings on the impact of the programme on the duration of breast-feeding in Greater São Paulo.

## Materials and methods

### Population and sample

The sampling procedures used in the 1987 evaluation were the same as those employed in 1981, before the implementation of the programme. The services were first chosen by lot from a computer print-out of all those provided for healthy children in Greater São Paulo, in numbers proportional to the demand for them and to their representativeness, according to the income brackets described below.

- Group I—low income: health centres run by the state government, by the São Paulo city government, and by the federal health service.
- Group II—middle income: clinics belonging to private insurance schemes paid for by employers and employees.
- Group III—high income: private consultants and clinics or hospitals covered by private medical insurance schemes.

A list of 500 mothers with infants aged 0–12 months was then drawn by lot from those attending the above-mentioned health services for healthy child care.

A questionnaire was used to record the results of interviews with eligible mothers, who were selected by lot on the day of the interviewer's visit to the health centre.

Finally, a sample of paediatricians, obstetricians, and nurses was also interviewed at the health centres, and the routines used were recorded.

### Data collection

The questionnaire that was administered to the mothers was designed to evaluate the feeding procedures that were being practised with the current infant, in terms of the following variables: demographic (age, parity, etc.), socioeconomic factors, breast-feeding habits, reproductive life, work aspects, impact of health services, and exposure to the breast-feeding promotion campaign.

In order to evaluate the extent of total breast-feeding of previous children born to multiparous women from 1981 onwards, the questionnaire included an inventory of the duration of breast-feeding for each previous child born after the start of the programme.

### Study hypotheses

The study hypotheses outlined below were investigated.

- The number of women starting to breast-feed was greater in 1987 than it was in February 1981.
- The number of women feeding only breast milk throughout infancy was greater in 1987 than it was in February 1981.
- Children born since the programme began were breast-fed for longer than those born beforehand, and this effect increased with the length of time that the programme ran.
- Women who weaned their infants early were less exposed to the activities that were developed or encouraged by the programme.

### Methodological considerations for the analysis

The breast-feeding campaign began in the mass media on 5 March 1981 and continued till December 1986 with short periods of greater intensity and changes in the messages involved. It was therefore decided to proceed as outlined below.

- The baseline data for the study were obtained from the initial evaluation that was conducted in January and February 1981, before the programme started (8).
- In the 1987 assessment, the mothers were asked how long they had breast-fed all children born to them (irrespective of whether they were currently alive or dead) since 1981. The quality of these retro-

spective data varied, in so far as the interval between the breast-feeding episodes tended to make the mothers round off the periods (e.g., to 3 or 6 months) over which they had breast-fed their older children. Furthermore, the answers given by mothers who had several children were probably less reliable (because of confusion) than those given by mothers with fewer children.

- An additional problem that arose in making comparisons between data from different years was that many of the youngest children (including the index children, who were aged 0–12 months) were still being breast-fed when their mothers were interviewed. Data on the duration that these children were breast-fed were therefore not included in the analysis. It was therefore decided to study the 497 index children separately, using the “current status method” (9) and to compare birth cohorts year-by-year for those born between March 1981 and May 1986 (334 children). In this way, all the children, living and deceased, were covered.

- As mentioned above, the intensity of the breast-feeding campaign varied, and the following “waves” could be identified, i.e., periods when greater coverage was given to it on radio and television:

- March 1981 to July 1982 (the campaign organized by the Ministry of Health);

- August 1982 to December 1983 (the campaign organized by UNICEF and the Ministry of Health);

- January 1984 to December 1984 (no systematic airing of any breast-feeding promotional material, but reinforcement of several other activities of the programme); and

- January 1985 to December 1986 (no nationwide coordination of the programme).

Four cohorts of children were therefore studied in accordance with their month of birth and its relation to the above-mentioned waves, as well as taking into consideration the stage during which the programme was being phased out.

- In so far as all mothers included in the sample had to have an index child aged 0–12 months, those with children in one or more of the cohorts were necessarily multiparous. The fourth cohort was made up of children born at much shorter interpartal intervals than the others. This should be borne in mind in evaluating the period during which these infants were breast-fed, since they may have been weaned because of a new pregnancy (10).

- The analysis based on the child’s year of birth focuses not on the mother but on the child. Thus, a mother’s accumulated experiences with breast-feeding were not taken into account, even though—as

shown by the results of the pre-campaign evaluation—success in breast-feeding the immediately preceding child determined the outcome of breast-feeding the next (8). The definition of exclusive breast-feeding used here includes all infants who received breast milk only, but such infants were not excluded if they also received tea, water, or juice.

## Results

### *Breast-feeding of the index children*

Information on the breast-feeding status at the time of the interview was obtained from 497 mothers of children aged 0–12 months (index children). Data for children aged more than 8 months were omitted to ensure that the same basis was used as in the 1981 assessment before the national programme began.

Of the 380 index children aged 0–8 months, 360 (94.7%) had started being breast-fed, compared with 91.3% in 1981. The difference was not statistically significant. Furthermore, 63% (227 out of 360) of the children were being breast-fed at the time of the interview in 1987, compared with 41.2% in 1981. This difference was significant ( $\chi^2$  test=29.77,  $P<0.005$ ).

In 1987, the prevalence of exclusively breast-fed children, i.e., the only milk they received was from the breast, was 48.9%, which was an increase, albeit not significant, from the 41.6% of such children identified in 1981 using an identical method.

The current status method was used to obtain unbiased estimates of the average duration of breast-feeding. Of the 227 mothers whose children were being breast-fed at the time of the interview in 1987, the average duration was 127.5 days (Table 1). In 1981, it was 89.4 days.

Between 1981 and 1987 the average period of feeding only breast milk also increased considerably, from 43.2 days to 66.6 days (Table 2).

### *Breast-feeding of previous children*

The replies to interviews with multiparous mothers were used to determine the duration of total breast-feeding for all living and deceased children born since 1981, when the programme started. This covered 334 children, subdivided according to the stages of the programme outlined above.

Table 3 shows the frequency of breast-feeding for greater than 3 or greater than 6 months for children born during the various stages of the programme, as well as the breast-feeding frequency of the penultimate children born to multiparous mothers before the start of the programme. It must be stressed that, since there is no way of determining the dates of birth of these penultimate children, the data

Table 1: Distribution of the duration of breast-feeding among the index children in Greater São Paulo before and after the Brazilian national breast-feeding programme<sup>a</sup>

Age (days)	Before 1981 <sup>c</sup>		After 1987 <sup>c</sup>	
	No of children observed	Proportion breast-fed	No. of children observed	Proportion breast-fed
1-14	3	1.00	11	1.00
15-21	5	1.00 (0.95) <sup>a</sup>	13	0.85 (0.91)
22-30	11	0.91	21	0.90
31-60	55	0.47	64	0.81
61-90	46	0.33	52	0.75
91-120	51	0.29	41	0.46
121-150	40	0.38	65	0.41
151-180	36	0.31	32	0.50
181-240	51	0.25	81	0.41
Total	298	2.98 <sup>b</sup>	380	4.25 <sup>e</sup>

<sup>a</sup> Figures in parentheses are the mean proportion of infants who were breast-fed for the first 30 days.

<sup>b</sup> Mean duration = 89.4 days

<sup>c</sup> Mean duration = 127.5 days

Table 2: Distribution of the duration of feeding only breast milk among the index children in Greater São Paulo before and after the Brazilian national breast-feeding programme

Age (days)	Before 1981		After 1987 <sup>c</sup>	
	No of children observed	Proportion exclusively breast-fed	No of children observed	Proportion exclusively breast-fed
1-14	3	1.00	11	0.54
15-21	5	1.00 (0.74) <sup>a</sup>	13	0.46 (0.53)
22-30	11	0.54	21	0.57
31-60	55	0.24	64	0.44
61-90	46	0.11	52	0.33
91-120	51	0.04	41	0.39
121-150	40	0.10	65	0.12
151-180	36	0.11	32	0.37
181-240	51	0.10	81	0.14
Total	298	1.44 <sup>b</sup>	380	2.22 <sup>e</sup>

<sup>a</sup> Figures in parentheses are the mean proportion of infants who were breast-fed for the first 30 days

<sup>b</sup> Mean duration = 43.2 days

<sup>c</sup> Mean duration = 66.6 days.

involved do not apply to the breast-feeding practices for a specific period in São Paulo. Table 3 shows that the proportion of infants who were being breast-fed had dropped in 1981-82, with those who were breast-fed for more than 6 months accounting for only 18.9% and those who were breast-fed for more than 3 months, 27.8%.

In the second half of 1982 the second stage of the campaign began; 52.1% the 96 children born during this phase were breast-fed for more than 3 months, and 34.4% for more than 6 months, i.e., the proportion was almost double that during the first stage. The proportion of infants who were breast-fed for greater than 3 or greater than 6 months dropped in

1985-86 to 46% and 27.6%, respectively. This corresponded to the period when the programme was being phased out as a nationwide campaign.

The data were also analysed in terms of whether or not the mothers had seen the breast-feeding publicity material in the mass media during the campaign. Table 4 contains the results for the two groups of mothers, i.e., those who saw the advertisements and those who did not. In 1981-82, only 17.0% of the children who were breast-fed for more than 6 months were born to mothers who saw the advertisements, compared with 22.6% for those children whose mothers did not see them.

The data for mothers who had seen the cam-

Table 3. Frequency of breast-feeding for >3 months or >6 months according to the infants' year of birth and the "waves" of the Brazilian national breast-feeding programme, Greater São Paulo

Year of birth	Frequency of breast-feeding (%)		Total number <sup>a</sup>
	>3 months	>6 months	
Before 1981	38.5	24.4	156 <sup>b</sup>
1981-82 (first wave)	27.8	18.9	90
1982-83 (second wave)	52.1	34.4	96
1984 (third wave)	60.6	37.7	61
1985-86 (fourth wave)	46.0	27.6	87
Total	-	-	334

<sup>a</sup> Mothers with more than one child who were interviewed.

<sup>b</sup> Mothers with more than one child who were interviewed before the programme began

Table 4. Proportion of infants who were breast-fed for more than 6 months, according to their year of birth and whether their mothers were exposed to the breast-feeding advertisements campaign, Greater São Paulo

Year of birth	Campaign advertisements.			
	Exposed <sup>a</sup>		Not exposed <sup>a</sup>	
	%	No.	%	No.
1981-82	17.0	59	22.6	31
1982-83	32.2	62	38.2	34
1984	40.0	35	36.0	25
1985-86	25.4	51	30.5	36
Total	-	207	-	126

<sup>a</sup> The statistical tests used are described in the text

paign were first broken down additively into three degrees of freedom using Cochran's method (11). The results below show the proportion of infants who were born to such mothers and were breast-fed for more than 6 months. The statistical analysis was carried out using the  $\chi^2$  test with one degree of freedom for each one of the following comparisons:

—1982-83 versus 1984: 32.2% versus 40.0% ( $\chi^2=0.587$ , not significant);

—1981-82 versus 1982-83 plus 1984: 17.0% versus 35.0% ( $\chi^2=5.940$ , significant); and

—1982-83 plus 1984 versus 1985-86: 35.0% versus 25.4% ( $\chi^2=0.319$ , not significant).

The campaign from 1982 to 1985 therefore increased significantly the proportion of infants who were breast-fed for more than 6 months.

A similar analysis of the data for those mothers who had not seen the campaign indicated that there were no statistically significant differences in the proportion of infants who were breast-fed for greater than 6 months. This indicates that the proportion of children who were breast-fed for more than 6 months was independent of birth cohort during the period 1981-86.

## Analysis and conclusions

The lack of impact of the national breast-feeding promotion programme on the start of breast-feeding arose because 91.3% of mothers had already begun breast-feeding when the programme was first implemented. Nevertheless, the programme prompted 3.4% more mothers to begin breast-feeding, bringing the proportion (94.7%) close to the biological limit, i.e. the level at which breast milk is not produced or where breast-feeding can only proceed with extreme difficulty.<sup>a</sup> These proportions are comparable with those found in all previous studies in Brazil, where the infant feeding practices are characteristic of those in less developed countries.

The impact of the programme is made clear by the fact that the average duration of total breast-feeding increased by 38 days (from about 3 months to 4.3 months), while the duration of feeding only breast milk rose from 43 days to 67 days. As far as the total duration of breast-feeding is concerned, the situation in of São Paulo is comparable with that in any metropolis in industrialized countries (12). An increase in the average duration of exclusive breast-feeding to 82.8 days in a district of São Paulo has recently been reported by other workers who used the same statistical approach that we employed.<sup>b</sup> Other projects carried out in São Paulo had already highlighted this probable impact of the national campaign (13).

It should be noted that of the 90 children born during the first phase of the campaign (March 1981 to July 1982), less than 19% were breast-fed for more than 6 months. These were precisely those infants whose mothers were exposed to the initial advertise-

<sup>a</sup> *Infant and young child nutrition I. Progress and evaluation report and status of implementation of the International Code of Marketing of Breast-milk Substitutes.* Report represented at the 39th World Health Assembly, May 1986. Document WHA 39/1986/REC/1

<sup>b</sup> *Monteiro, C.A. et al. [Mother and child studies in Ersa-Mandaqui. feeding practices, morbidity and use of health services].* Department of Nutrition (FSPUSP) Division of Maternal and Child Health, Instituto de Saúde (SES), São Paulo, Brazil. Unpublished report to Pan American Health Organization, May 1988 (in Portuguese).

ments in the mass media that promoted breast-feeding. The advertisements, which were broadcast on radio and television through a small number of short commercials for a period of 45 days, were designed to communicate the advantages of breast milk, including the protection it offers against disease and that "weak" milk does not exist; furthermore, they tried to dispel some commonly held taboos, about breast-feeding. The main slogan was "Breast-feed for at least the first 6 months".

The mothers of children born during and following the first campaign were not affected by the message, mainly because the 45-day broadcast period was not repeated. During this phase, manufacturers of breast-milk substitutes continued to advertise their products in the mass media. In addition, advertisements on the labels of artificial milk products in supermarkets claimed that the milk was "maternalized". Also, health services encouraged the use of powdered milk through food supplement programmes promoted by the São Paulo State Government, and health workers stimulated mothers to use artificial milk. The approval by the World Health Assembly of the International Code of Marketing of Breast-milk Substitutes in May 1981 had no effect in Brazil during this phase.<sup>6</sup> Only in 1982, under international pressure, did the largest manufacturer of infant foods in Brazil begin to obey the code.

In the second phase of the campaign (August 1982 to December 1983), the proportion of children who were breast-fed for more than 6 months increased to 34.4%, i.e., one in every three mothers had at last been reached by the message: "Breast-feeding: 6 months that are worth a life". The messages were delivered by national celebrities and the campaign continued for longer than in the first phase, albeit with some interruptions. The second phase also saw stricter controls on advertising by infant food manufacturers, although these were far from sufficient. The managers of the programme during this phase were aware of the need for surveillance against unethical advertising and attempted to restrain it by complaining to the mass media whenever such advertisements were shown. Also, the first draft of a Brazilian Code of Marketing of Breast-milk Substitutes, based on the International Code, was drawn up.

During the third phase (January to December 1984), when the actions undertaken as part of the programme began to have a nationwide scope, UNICEF supported a number of seminars to train

health personnel in São Paulo. Mother's groups were founded, "breast-feeding" was given better coverage in the curricula in medical schools, and rooming-in was implemented. Meanwhile, professional associations disseminated the benefits of breast-feeding in several ways, both to their members and to the general public, while the mass media campaign became non-systematic and spontaneous: for example, a group of doctors launched their own breast-feeding promotion campaign on television without any links with the coordinators of the national programme. In the course of this phase the proportion of children who were breast-fed for more than 6 months increased only slightly to about 38%, and then dropped back to 27.6% during the final phase. During this following phase (January 1985 to December 1986) the programme was characterized by lack of nationwide coordination and by a failure to encourage or invest in the promotion of breast-feeding—an activity that should be given as much priority as the other officially designated basic health actions (vaccination, growth monitoring, and control of diarrhoea). The state governments, including that of São Paulo, were still undertaking breast-feeding activities, but the intensity of these measures was far less than it had been during the previous phases.

There is no way of determining whether this downturn in activity reflected the winding down of the programme or a lack of enthusiasm about breast-feeding in the Ministry of Health and the responsible state government agencies. There may be other factors that caused the phenomenon. Did, for example, the 87 children born in 1985–86, who had an index child as a sibling, have the same chance of being breast-fed for a long time, or did gestation of the index child interrupt the breast-feeding process? Such a question is justified because the results for index children (those born between May 1986 and May 1987) showed that the duration of breast-feeding continued to rise in São Paulo. In any case, there is no doubt that the Brazilian national breast-feeding programme contributed to revert the harmful decline in breast-feeding practices that occurred in the country in the 1970s.

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<sup>6</sup> Resolution WHA34.22. *Handbook of Resolutions and Decisions of the World Health Assembly and the Executive Board, Volume II, 1973–1984*. Geneva, World Health Organization, 1985, pp. 91–92.

## Résumé

### Impact du programme national brésilien d'allaitement au sein sur les habitudes des mères de São Paulo en matière d'allaitement

En 1981, le Brésil a lancé un vaste programme national d'alimentation au sein qui avait été précédé par une évaluation des habitudes en matière d'alimentation du nouveau-né dans deux zones urbaines du pays. Ce programme était multi-sectoriel et comprenait: la planification et la mise en oeuvre de campagnes par les médias; la structuration des services de maternité, prenant l'alimentation au sein comme priorité; la formation des agents de soins de santé; la modification des programmes d'écoles de santé; la réglementation du marché des substituts du lait maternel; la surveillance de la législation du travail maternel. Nous décrivons ici les résultats initiaux d'une évaluation faite six ans après la mise en oeuvre du programme dans la région du Grand São Paulo.

La méthodologie utilisée était analogue à celle employée en 1981 avant le début du programme, et consistait en un interrogatoire, à la fois de médecins et d'un échantillon représentatif de mères qui consultaient des services de soins infantiles ouverts à tous les groupes sociaux, quels que soient leurs revenus. Au total, 300 mères ayant des enfants âgés de 0 à 8 mois ont été interrogées en 1981 et 497 mères ayant des enfants de 0 à 12 mois l'ont été en 1987. Les mères étaient également interrogées sur la durée de l'allaitement au sein de tous leurs enfants nés depuis 1981.

Les résultats montrent que le programme a eu comme résultat une augmentation du nombre de femmes qui ont commencé à allaiter de 91,3% à 94,7% et une augmentation de la prévalence de l'allaitement au sein de 41,2% à 63,0%; ces différences sont statistiquement significatives ( $P < 0,005$ ).

La proportion des enfants précédents qui avaient été nourris au sein pendant plus de six mois est passée de 18,9% pour ceux nés en 1981-1982 à 37,7% pour ceux nés en 1984 et a diminué à nouveau jusqu'à 27,6% en 1985-1986.

L'article conclut que le programme a un impact réel sur l'alimentation au sein des enfants actuels et que cet impact tendait à être maximal au moment où les activités du programme étaient les plus intenses.

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