0021-7557/07/83-02/127
Jornal de Pediatria

Assessment of the impact of implementing the Baby-Friendly Hospital Initiative

Antônio P. Caldeira,[1] Eduardo Gonçalves[2]

Abstract

Objective: To evaluate the impact of the Baby-Friendly Hospital Initiative on the breastfeeding practices of mothers from the urban area of Montes Claros, MG, Brazil.

Methods: A comparative analysis was performed of two cross-sectional breastfeeding indicator studies with randomized samples of children under 2 years of age. One study was carried out before and the other after the Baby-Friendly Hospital Initiative had been implemented throughout all public pregnancy and childbirth care services in the city. Kaplan-Meyer survival curves were constructed for different breastfeeding patterns. Log rank testing was used to calculate the level of significance of differences between curves for before and after the Initiative.

Results: The survival curves demonstrate that breastfeeding rates increased during the study period. The log rank test detected significance for increases in all patterns of breastfeeding ($p < 0.000$). Median overall breastfeeding duration increased from 8.9 to 11.6 months and median duration of exclusive breastfeeding rose from 27 days to 3.5 months.

Conclusions: Implementation of the Baby-Friendly Hospital Initiative in all public maternity units in Montes Claros significantly increased breastfeeding rates in the city. Since the ideal state of affairs has not yet been reached, further strategies must be implemented to promote and support breastfeeding practices.

J Pediatr (Rio J). 2007;83(2):127-132: Breastfeeding, healthcare project and program evaluation, human milk, breastmilk, health promotion.

Introduction

Breastmilk is, without doubt, the best food for infants during their first months of life. Many different studies have demonstrated the relevance of the role of breastfeeding in reducing infant morbidity and mortality.[1-4] Nevertheless, breastfeeding is not a universal practice, and satisfactory rates are dependent of continual support and encouragement.[5]

The Baby-Friendly Hospital Initiative (BFHI) was implemented internationally at the start of the nineties with the objective of supporting, encouraging and protecting breastfeeding.[6] The strategy gives priority to changing the attitudes of health professionals working in hospitals and maternity units, aiming to avoid practices that favor premature weaning. At Baby-Friendly Hospitals mothers must be informed of the advantages of breastfeeding and of the risks associated with the use of artificial milk products. They should also be given basic information on lactation, stimuli for breastmilk production, possible problems and solutions to the most common problems that occur with breastfeeding.[7]

Brazil was one of the first countries to implement the BFHI, stimulating adoption of the "Ten Steps To Successful Breastfeeding" by hospitals. The benefits associated with implementation of the strategy have been indicated by a number of studies evaluating its impact. However, these

1. Doutor. Professor adjunto, Departamento de Saúde da Mulher e da Criança, Universidade Estadual de Montes Claros (UNIMONTES), Montes Claros, MG, Brasil.
2. Especialista. Professor assistente, Departamento de Saúde da Mulher e da Criança, UNIMONTES, Montes Claros, MG, Brasil.

Manuscript received Aug 03 2006, accepted for publication Nov 01 2006.

Suggested citation: Caldeira AP, Gonçalves E. Assessment of the impact of implementing the Baby-Friendly Hospital Initiative. J Pediatr (Rio J). 2007;83(2):127-132.

doi 10.2223/JPED.1596

assessments are almost exclusively restricted to accredited institutions or a small population sample.[8-11]

There are three accredited Baby-Friendly Hospitals in the city where this study was carried out. The hospitals were certified in 1998, 2000 and 2001. These three institutions are responsible for all pregnancy and childbirth care provided on the public system in the city. A very small percentage of births take place at other institutions (private/insurance affiliated): less than 3%. Since a study investigating breastfeeding was performed before the implementation of the BFHI with a representative sample of the city's infants,[12] this city presents an ideal setting for assessing the BFHI at a populational level. This study, therefore, was carried out with the objective of assessing the impact of BFHI on the entire urban area of the municipality, by means of a reevaluation of breastfeeding indicators.

Methods

This study was conducted in Montes Claros, in the North of the state of Minas Gerais, Brazil. Although, geographically, the municipality is part of the Southeast region of Brazil, it is in an area that has indicators much more similar to the country's Northeast region. The city currently has around 340,000 inhabitants and is the principal regional center. The population is predominantly urban (just 5.8% of the population live in rural areas). Against this background, a comparative analysis was performed of two cross-sectional studies investigating breastfeeding indicators: before and after the implementation of the BFHI in three local hospitals. The 1996 survey was based on information obtained during home visits to a representative sample of infants under 2 years old.[12] The 2004 survey was based on data collected during interviews at all basic health units in the urban area of the municipality during the national vaccination campaign. The methodological details of the first study are available in the relevant publication.[12] Sample size was calculated based on an error of just 3%, increasing the initial sample size to 1,514 children. The sampling model used was simple random sampling and the number of children selected from each basic healthcare unit (stratum) was proportional to the number of children vaccinated at that unit the previous year. The intention was to ensure that all geographical areas and all sections of the population would be included, controlling for possible effects of certain characteristics on the distribution of the children across the units. Children were excluded if they were born or resided in other municipalities as were adopted children or those whose parents or guardians were unable to provide reliable information on nutritional history.

In both studies data collection was undertaken by medical students from Universidade Estadual de Montes Claros (UNIMONTES), after training and a pilot study. The data collection instrument was a form for semi-structured interviews, requiring short, quick answers. In both cases, the data on breastmilk was based on consumption during the previous 48 hours.

Children were defined as breastfed if they consumed breastmilk, irrespective of whether or not they were consuming other foods concomitantly. Children were defined as exclusively breastfed if they were only fed with breastmilk, with no teas, water or any other foods being accepted within this classification. Infants were designated as on predominant breastfeeding if they were being fed breastmilk in association with teas, water and/or juices. When other types of milk or food are also being given, this definition changes to partial breastfeeding. Children were classed as weaned if they had completely ceased to consume breastmilk.

The data were coded and analyzed using Epi-Info. Kaplan-Meyer survival curves were constructed for the different degrees of breastfeeding before (1996) and after (2004) implementation of the BFHI. These same curved were also constructed in specific electronic spreadsheets to improve visualization of breastfeeding indicators. Log rank testing was employed to determine the level of significance of differences between curves. Both studies were approved in advance by the Ethics Committee of UNIMONTES.

Results

The samples studied contained 602 children in the first study and 1,526 in the second. Rates of refusal and exclusion were negligible in both studies (2.8 and 2.3%, respectively). The principal characteristics of the study groups are given in Table 1. In this table, the variables analyzed refer exclusively to the subset of the population with ages greater than or equal to 4 months, in both studies (494 and 1240 children or 82 and 81%, respectively). This is in response to the fact that the criterion for premature introduction of supplementary foods used in the first study was before 4 months of age. The only characteristic that differentiates the two study samples is level of maternal education, which improved significantly in terms of the number of mothers who had completed the first phase of elementary education.

Figures 1 to 3 illustrate the survival curves for the different breastfeeding patterns. Figure 1 presents the survival curves for exclusive breastfeeding and demonstrates an important increase in the number of mothers who breastfeed exclusively during the first 6 months of their children's lives. The log rank test demonstrated that the difference between the two curves is statistically significant ($p < 0.000$). Median exclusive breastfeeding duration increased from 27 days in 1996 to 3.5 months in 2004.

Figure 2 contains the curves for the sum of exclusive and predominant breastfeeding, full breastfeeding, for 1996 and

Table 1 - Characteristics of the samples studied by two breastfeeding surveys of children aged 4 to 24 months, in 1996 and 2004, Montes Claros, MG, Brazil

Characteristic	1996, n = 494	2004, n = 1,240	p
Maternal age (years)			
< 20	113 (22.9%)	251 (20.2%)	
≥ 20	381 (77.1%)	989 (79.8%)	0.250
Maternal education (years)			
≤ 4	155 (31.4%)	164 (13.2%)	
> 4	339 (68.6%)	1076 (86.8%)	0.000
Maternal marital status			
Single	113 (22.9%)	282 (22.7%)	
Married or in stable relationship	381 (77.1%)	958 (77.3%)	0.997
Parity			
Primaparous	225 (45.6%)	526 (42.4%)	
Non-primaparous	269 (54.4%)	714 (57.6%)	0.257
Sex of child			
Female	239 (48.4%)	560 (45.2%)	
Male	255 (51.6%)	680 (54.8%)	0.246
Type of birth			
Caesarian	138 (27.9%)	360 (29.0%)	
Normal	356 (72.1%)	880 (71.0%)	0.691
Birth weight (g)			
< 2,500	35 (7.1%)	114 (9.2%)	
≥ 2,500	456 (92.3%)	1,126 (90.8%)	0.198
Prenatal care			
< 5 consultations	75 (15.2%)	153 (12.3%)	
≥ 5 consultations	419 (84.8%)	1,087 (87.7%)	0.133

2004. Although the curves are apparently similar, the log rank test also detected a significant difference for the first 6 months of life ($p < 0.000$). Median full breastfeeding duration increased from 120 to 151 days.

Figure 3 illustrates the curves for overall breastfeeding duration (including partial breastfeeding). Median duration went from 8.9 to 11.6 months during the study period. The log rank test once more detected a significant difference between the two curves ($p < 0.000$).

When these three breastfeeding patterns were stratified by maternal education no significant differences were detected. This breakdown was necessary in view of the difference in maternal educational level of the two samples.

Discussion

Assessments of the impact of the BFHI are regularly published in the international literature.[8-11] Notwithstanding, few studies have evaluated the impact on a populational level as is the case here. Indeed, this study was only possible thanks to a local peculiarity; all of the public hospitals in the municipality have been capacitated for the BFHI and a populational survey into breastfeeding had already been

carried out prior to their accreditation. This characteristic has made it possible to collect evidence of a significant improvement in breastfeeding indicators throughout the city and, in particular, in rates of exclusive breastfeeding, after the initiative had been implemented.

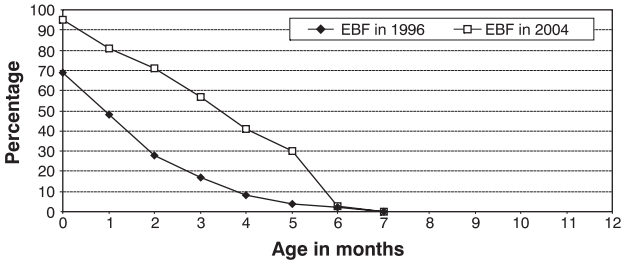

Figure 1 - Exclusive breastfeeding in Montes Claros, MG, Brazil, in 1996 and 2004

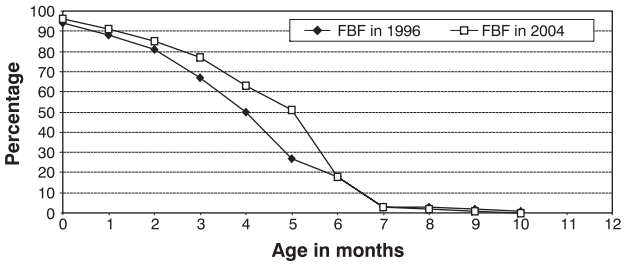

Figure 2 - Full breastfeeding in Montes Claros, MG, Brazil, in 1996 and 2004

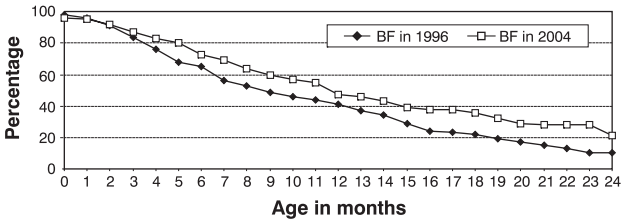

Figure 3 - Breastfeeding in Montes Claros, MG, Brazil, in 1996 and 2004

It cannot be stated that the improvements in these rates are exclusively the result of implementation of the BFHI, but it is highly probable that it was the major tool for promoting breastfeeding. By ensuring 100% coverage of births in institutions that follow the ten steps for a less-privileged population (whose care is provided by the public health system), increased support and encouragement is also guaranteed for mothers, with greater uniformity of actions and information provided by health professionals. Of note is the fact that it is exactly this less privileged section of the population that benefits most from improved breastfeeding indicators.[4]

Naturally, these studies suffer limitations that must be taken into account. Whilst both studies were carried out with satisfactory sampling methodology, the first survey was carried out during home visits, while the second was based on interviews conducted during the national vaccination campaign. It is known that those mothers who attend the health centers tend to be more careful and more actively assume health promotion attitudes, including breastfeeding. This being so, a bias would exist in the more recent survey since the entire sample was selected from spontaneous demand during the vaccination period. Nevertheless, it should also be pointed out that the vaccination campaigns are already very well established throughout Brazil and that vaccination coverage for the relevant period and region was close to 100% for the vaccines given during the first 2 years of life.

Our results are compatible with other studies assessing the initiative's impact, all of which have recorded positive effects.[8-11] In this study, however, the increases were greater than those reported in other studies, which limit themselves to analyzing specific clienteles. In contrast with other studies,[8,11] our results demonstrate that the impact of the BFHI can persist beyond 1 or 2 months. Braun et al., discussed the results of a BFHI impact assessment in the South do Brazil,[11] pointing out the need for strategies to supplement the BFHI, aimed at prolonging its effectiveness. The authors suggest that actions promoting the formation of support groups (step 10) would be most effective. In this study, our results clearly reflect the activities of support groups that work outside of the hospital environment. The inference is justified by the fact that very often the same professionals work at the hospitals and the basic health units.

Given the major impact on mother and baby health indicators that exclusive breastfeeding offers,[1-4] the increase observed in this study (median duration from 27 days to 3.5 months) is highly significant. Equally relevant are the increases observed in predominant breastfeeding and overall breastfeeding duration.

The combination of educational initiatives and changes in practices promoted by the BFHI tends to favor breastfeeding in a very much more effective manner if there is a larger group of social stakeholders involved. This is because they empower those steps that demand greater extra-hospital support. According to the World Health Organization, the most clearly established steps of the BFHI are those that relate to guidance and support of nursing mothers. These are: step three, which specifies education starting during the prenatal period; step five, which recommends that mothers be shown how to offer the breast; and step ten, which specifies continual support after hospital discharge. These are also the steps that are recognizedly the most difficult to

implement.[13] This is perhaps because they involve greater support outside the institution.

It is certain that the involvement of greater numbers of social stakeholders becomes more likely when there are several hospitals with Baby-Friendly accreditation. In the case in question here, the local scenario in which all public pregnancy and childbirth care services are BFHI accredited provided suitable conditions for the implementation of those steps that demand greater involvement outside the hospital, since a there are a larger number of health professionals who recognize the importance of breastfeeding and promote it. Very often these guidance and encouragement activities continue beyond the boundaries of the hospital/maternity unit and these professionals become a reference resource for families, the community where they live and even at other places of work (a common occurrence among healthcare workers).

Over the years other actions have been taken that favor breastfeeding, such as the adoption of the Brazilian Baby Food, Teat, Pacifier and Baby Bottle Marketing Standard[14] and more active participation by governmental and nongovernmental agencies in the promotion, protection and support of breastfeeding. The obvious contribution of these actions is the increase in breastfeeding indicators throughout Brazil.[15-17] Nevertheless, local indicators are superior to state and national averages.[17]

It should also be pointed out that during the study period the Family Health Program (FHP) was extended in Brazil. One of the primary actions of this strategy is the promotion of breastfeeding. It could therefore be inferred that the results reported here suffered an effect from the breastfeeding promotion actions undertaken by the FHP. However, in the city studied here, the FHP has expanded very slowly over recent years, reaching the modest level of 30% coverage of the urban population in 2004. in other words, by the time of the second survey, the improvement in the city's indicators was probably not significantly due to the activities of the FHP.

Concluding, breastfeeding indicators exhibited significant improvement after implementation of the BFHI in three local hospitals. If it is not possible to attribute the increases observed exclusively to the initiative, it is also impossible to deny that the level of coverage achieved by the initiative in this city necessarily implies a greater number of capacitated professionals, promoting and supporting breastfeeding. It must not be forgotten that, although rates are rising, the ideal situation is still a long way off, and fresh efforts are required to reach that objective. Accredited institutions require constant vigilance to ensure that the spirit of breastfeeding is maintained throughout the team. In the search for continued improvement in breastfeeding indicators, new initiatives must be tested, especially those that strengthen support groups and educational activities during prenatal and during follow-up of the mother-baby pair after hospital discharge, such as, for example, the Breastfeeding Friendly Basic Health Unit Initiative.

References

1. Victora CG, Smith PG, Vaughan JP, Nobre LC, Lombardi C, Teixeira AM, et al. Evidence for protection by breast-feeding against infant deaths from infectious diseases in Brazil. Lancet. 1987;2:319-22.
2. Victora CG, Fuchs SC, Flores JA, Fonseca W, Kirkwood B. Risk factors for pneumonia among children in a Brazilian metropolitan area. Pediatrics. 1994;93:977-85.
3. Heinig MJ, Dewey KG. Health advantages of breast feeding for infants: a critical review. Nutr Res Rev. 1996;9:89-110.
4. Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality. Lancet. 2000;355:451-5.
5. de Oliveira MI, Camacho LA, Tedstone AE. Extending breastfeeding duration through primary care: a systematic review of prenatal and postnatal interventions. J Hum Lact. 2001;17:326-43.
6. World Health Organization/United Nations Children's Fund (WHO/UNICEF). Innocenti Declaration on the protection, promotion and support of breastfeeding. Meeting "Breastfeeding in the 1990s: A global initiative". Co-sponsored by the United States Agency for International Development (AID) and the Swedish International Development Authority (SIDA), held at the Spedale degli Innocenti, Florence, Italy, on 30 July - 1 August, 1990.
7. Lamounier JA. Promoção e incentivo ao aleitamento materno: Iniciativa Hospital Amigo da Criança. J Pediatr (Rio J). 1996;72:363-8.
8. Valdez V, Perez A, Labbok M, Pugin E, Zambrano I, Catalan S. The impact of a hospital and clinic-based breastfeeding promotion programme in a middle class urban environment. J Trop Pediatr. 1993;39:142-51.
9. Philipp BL, Malone KL, Cimo S, Merewood A. Sustained breastfeeding rates at a US baby-friendly hospital. Pediatrics. 2003;112:e234-6.
10. Martens PJ. Does breastfeeding education affect nursing staff beliefs, exclusive breastfeeding rates, and Baby-Friendly Hospital Initiative compliance? The experience of a small, rural Canadian hospital. J Hum Lact. 2000;16:309-18.
11. Braun ML, Giugliani ER, Soares ME, Giugliani C, de Oliveira AP, Danelon CM. Evaluation of the impact of the baby-friendly hospital initiative on rates of breastfeeding. Am J Publ Health. 2003;93:1277-9.
12. Caldeira AP, Goulart EMA. A situação do aleitamento materno em Montes Claros, Minas Gerais: estudo de uma amostra representativa. J Pediatr (Rio J). 2000;76:65-72.
13. World Health Organization. Evidence for the ten steps to successful breastfeeding. Geneva: WHO; 1999.

14. Brasil, Ministério da Saúde, Portaria nº 2051, de 8 de novembro de 2001. Norma brasileira de comercialização de alimentos para lactentes e crianças de primeira infância, bicos, chupetas e mamadeiras. Brasília: Diário Oficial da união – Seção 1; nº 215 de 09/11/2001.

15. Rea MF. The Brazilian National Breastfeeding Program: a success story. Int J Gynaecol Obstet. 1990;31 Suppl 1:79-82.

16. Lamounier JA. Tendências do aleitamento materno no Brasil. Rev Med Minas Gerais. 1999;9:59-65.

17. Brasil. Ministério da Saúde. Pesquisa de prevalência de aleitamento materno nas capitais brasileiras e no Distrito Federal. Brasília: DF; 2001.

Correspondence:
Antônio Prates Caldeira
Rua Monte Pascoal, 225, Bairro Ibituruna
CEP 39401-347 – Montes Claros, MG – Brazil
Tel.: +55 (38) 3222.3879
E-mail: antonio.caldeira@unimontes.br