

Repercussions of home interventions on the continuation of breastfeeding

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Abstract

The research aimed to evaluate the effects of home interventions in the continuation of breastfeeding. It is a randomized experimental study with data collection and intervention carried out between January and July 2013. Participants were 20 women (11 in the intervention group and 9 in the control group) who had their children in a public hospital in the city of Santa Maria-RS, Brazil, followed in their homes after hospital discharge. Four home visits were made (7th, 14th, 30th and 45th day after delivery) to collect data and conduct interventions in order to promote and support breastfeeding. The results showed that most mothers in both groups were primiparous, had formal jobs and had not received guidance on breastfeeding during prenatal care. It was also found a high frequency of other types of milk in the diet of infants, in addition to breast milk at the end of the 45 days of life and frequent use of pacifiers and / or bottle. The study found that in-home interventions were important; however, more research with more time to assess the effectiveness of interventions is necessary.

Key words: Breastfeeding. Mother and Child Health. Human Milk. Home Visit.

Introduction

Exclusive breastfeeding in the first six months of life, and then complemented with other foods until age of two years or over, is vital because breastmilk provides protection for both the baby and mother.¹ The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend and encourage this practice, because full breastfeeding duration has decreased significantly, leading to a serious public health problem in all classes and social groups.²

For successful breastfeeding (BF), mothers should understand and accept the importance of this practice. Reduction of child mortality; protection against diarrhea, respiratory infections, high blood pressure, allergies, diabetes, hypercholesterolemia and obesity; child's improved development and growth; better quality of life; cost-effective; and, especially, strengthened bonds between the mother and her baby, all these are important reasons for a woman adhere to breastfeeding and should be divulged to the population.³

Considering these aspects, the Ministry of Health has encouraged breastfeeding in primary care through strategies that motivate women to adopt to this practice, aiming to improve the children's health and prevent future diseases.⁴ Among these strategies, the major ones are the *Iniciativa Hospital Amigo da Criança* (Baby-Friendly Hospital Initiative), *Rede Cegonha* (Stork Network), *Rede Amamenta Brasil* (Breastfeed Brazil Network) and the *Estratégia Amamenta e Alimenta Brasil* (Breastfeed and Feed Brazil Strategy), which undertake breastfeeding-promoting actions soon after delivery in outpatient settings through healthcare professionals.

However, according to Martins & Martins,⁵ monitoring nursing mothers at home is seen more positively by the mothers who breastfeed because the actions performed by health professionals in this environment, besides security and confidence, bring greater satisfaction to mothers. Such care is especially important for first-time mothers, because they often have difficulties in the first months, usually related to breastfeeding.^{6,7}

Based on the above, this work aimed to assess the effects of in-home interventions in the continuation of breastfeeding. Considering the importance of maintaining exclusive breastfeeding until the sixth month of life, this study is important in order to identify the main difficulties that mothers usually encounter, breast care during lactation and the effect of in-home interventions on ensuring the continuation of breastfeeding during the first months of a baby's life.

Methodology

This is a non-randomized experimental study. Data were collected from a public hospital in the city of Santa Maria-RS, and the counseling interventions were performed at the participants' home. The study was conducted from January to July 2013.

Twenty BF mothers were enrolled in the study. Sample was selected by convenience, during the hospital stay, based on the following inclusion criteria: mothers who had given birth recently (24 to 48 hours after delivery), who resided in the urban area of Santa Maria-RS and agreed to participate in the study. Criteria for exclusion were as follows: mothers and infants with any contraindication for the practice of breastfeeding (HIV/AIDS), mothers who did not want to breastfeed and chemically dependent mothers.

A number was assigned to each of the mothers as a way to ensure confidentiality and anonymity and for the draw of the groups (intervention and control). Women with even numbers were assigned to the intervention group, and the ones with uneven numbers to the control group. For the purpose of analysis, only the participants that were monitored in all research stages were considered (Figure 1). Thus, there were 11 participants in the intervention group and nine in the control group (two participants of this group were not reached after the first contact in the hospital). All participants of the study were followed up by the researcher at their homes immediately after hospital discharge.

For the purposes of description of the research stages, data collection was divided into three phases – Phase 1 – performed during the stay at the hospital, considered the pre-intervention period; Phase 2 – performed at the mothers' home, the intervention period; and Phase 3 – period of data assessment (Figure 1).

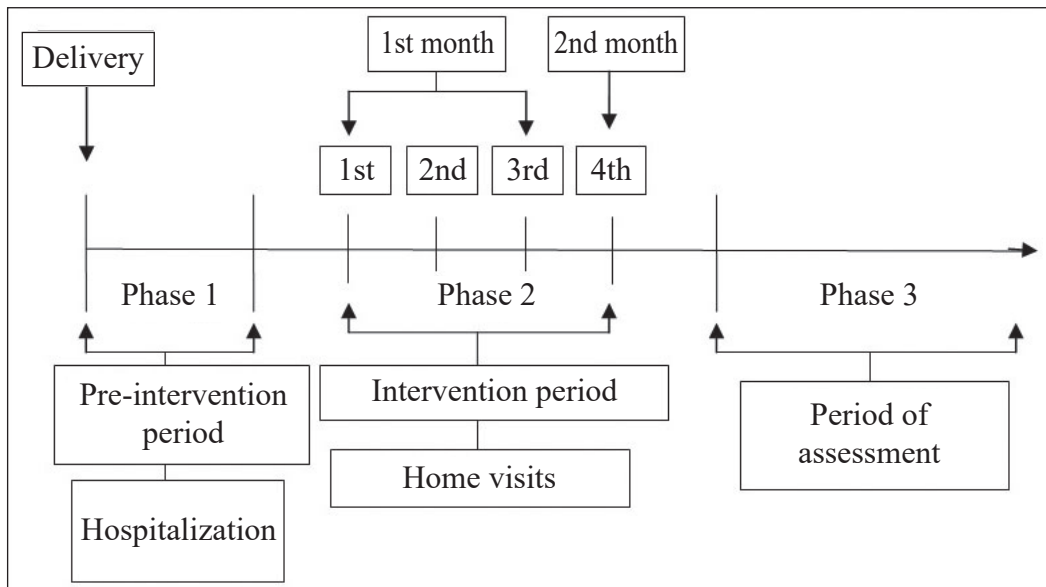


Figure 1. Schematic methodology of the study

Regarding the intervention group, pre-intervention took place at the hospital, where the researcher observed the mother-baby contact, breastfeeds and the instructions given by the hospital team. The perceptions were recorded on a specific form. Afterwards, there was the period of intervention at the mothers' homes, starting at the seventh day after delivery.

Four home visits were made, three of them in the first month (7th day, 14th day, 30th day) and one in the second month (15th day), as shown in Figure 1. Each visit lasted 30 minutes on average, and the first ones took more time. During all visits, a semi-structured questionnaire developed by the researchers was administered to the mothers, consisting of open and closed questions on breastfeeding, their difficulties, doubts and needs in this phase.

In addition, in the first and last visit, the researcher observed a full breastfeed using a form adapted from the protocol of observation and assessment of breastfeeding proposed by UNICEF,⁸ having the following aspects assessed: breastfeeding position of the mother/baby; response of both; sucks adequacy; anatomy of the breasts and development of affection ties. All these criteria were scored as good, fair and poor. After data collection, the researchers conducted the

interventions, based on a previously designed plan, addressing the following themes: importance of breastfeeding; positioning and adequate latch-on; lactation problems; use of pacifiers and/or bottles; breastfeeding-related myths and taboos; expressing/pumping breast milk; job *versus* breastfeeding and introduction of complementary foods. To help address these subjects, the mothers received leaflets with information, illustrations and guidelines on breastfeeding.

Regarding the control group, during the hospital stay the mother-baby contact, breastfeeding and the instructions provided by the hospital staff were also observed, and the perceptions were recorded on a proper form. In addition, in phase 2 four home visits were made, three of them on the first month (7th day, 14th day and 30th day) and one visit on the second month (15th day).

The same semi-structured questionnaire developed by the researchers and used in the intervention group was administered to the control group. Likewise, on the first and last visit, the researchers observed full breastfeeds, using the form adapted from the protocol of observation and assessment of breastfeeds described by UNICEF,⁸ but with no interventions at all.

Afterwards, data were entered into an Excel database and subsequently analyzed by the Statistical Package for the Social Sciences (SPSS) software, version 18.0, by means of simple descriptive statistics (relative frequency, means and standard deviation). The association between the variables was achieved using the Fisher's exact test, considering significant when $p < 0.005$.

To meet the ethics criteria, the study followed the recommendations of the Resolution CNS no. 466/12, which prescribes ethics on researches involving humans.⁹ The study was approved by the Ethics Research Committee of the *Centro Universitário Franciscano* with number 185.769. The data were collected only after the participants agreed with and signed the Free Informed Consent Form.

Results

The research included 20 mothers, 11 in the intervention group and nine in the control group, mean age of 24.7 ± 4.39 years (23.36 ± 4.52 years and 26.33 ± 3.84 years, respectively). Table 1 describes the characteristics of the study population of each group, where it can be seen that, despite the differences between the groups, they were not statistically significant ($p < 0.05$). The majority of the mothers both in the intervention group and control group were first-time mothers, 73% ($n=8$) and 67% ($n=6$), respectively, as shown on Table 1.

Table 1. Characteristics of the study sample (control group and intervention group). Santa Maria-RS, 2013.

Variables	Groups			p**
	Total* (n=20)	Intervention* (n=11)	Control* (n=9)	
Marital status				
Mother lives with her partner	16 (80)	10 (91)	6 (67)	0.178
Mother does not live with her partner	4 (20)	1 (9)	3 (33)	
Education				
≥ 8 years of school	20 (100)	11(100)	9 (100)	NC
< 8 years of school	0 (0)	0 (0)	0 (0)	
Income				
Up to 1 minimum wage	2 (10)	2 (18.18)	0 (0)	0.228
1 to 2 minimum wages	11 (55)	4 (36.36)	7 (78)	
2 to 3 minimum wages	6 (30)	4 (36.36)	2 (22)	
> 3 minimum wages	1 (5)	1 (9.1)	0 (0)	
Employed				
Yes	13 (65)	7 (64)	6 (67)	0.888
No	7 (35)	4 (36)	3 (33)	
Smoker				
Yes	1 (5)	1 (9)	0 (0)	0.353
No	19 (95)	10 (91)	9 (100)	
Type of delivery				
Natural	14 (70)	7 (64)	7 (78)	0.492
Cesarean	6 (30)	4 (36)	2 (22)	
Pre-natal care				
Yes	20 (100)	11 (100)	9 (100)	NC
No	0 (0)	0 (0)	0 (0)	

Variables	Groups			p**
	Total* (n=20)	Intervention* (n=11)	Control* (n=9)	
Pre-natal guidance on BF				
Yes	6 (30)	3 (27)	3 (33)	0.769
No	14 (70)	8 (73)	6 (67)	
Number of children				
First child	14 (70)	8 (73)	6 (67)	0.522
More than two children	6 (30)	3 (27)	3 (33)	

*Values shown in n (%). **Fisher's exact test (p<0.05).

BF: Breastfeeding. NC: not considered.

With regard to the type of delivery, the control group had the largest proportion of natural delivery (78%; n=7), when compared to the intervention group. The majority of women, in both groups, lived with their partners, being 91% (n=10) in the intervention group and 67% (n=6) in the control group. Regarding schooling, 100% (n=20) of the mothers had more than eight years of study (Table 1).

Regarding employment, most of the women had formal jobs, 64% (n=7) in the intervention group and 67% (n=6) in the control group. Family income was also investigated and revealed that the majority of women earn one to two minimum wages, both in the intervention group (36.36%; n=4) and control group (78%; n=7). Regarding prenatal care, 100% (n=20) of the mothers had regular check-ups, but 73% (n=8) of the intervention group and 67% (n=6) of the control group had not received any counseling or instruction on breastfeeding. The other variables are described on Table 1.

With respect to the factors that led to early weaning (Table 2), the responses that were most representative for the objectives of the study were considered. In this regard, it was found that the use of pacifiers or bottles was higher in the intervention group than in the control group, 73% (n=8) and 56% (n=5), respectively. However, none of the factors listed on Table 2 was statistically significant.

Table 2. Frequency of factors that can lead to early weaning according to the studied groups. Santa Maria-RS, 2013.

Factors that interfere with weaning *	Groups			P***
	Total** (n=20)	Intervention** (n=11)	Control** (n=9)	
Knowledge about exclusive BF				
Yes	18 (90)	10 (91)	8 (89)	0.881
No	2 (10)	1 (9)	1 (11)	
Use of pacifier or bottle				
Yes	13 (65)	8 (73)	5 (56)	0.423
No	7 (35)	3 (27)	4 (44)	
Use of nipple shield				
Yes	8 (40)	4 (36)	4 (44)	0.714
No	12 (60)	7 (64)	5 (56)	
Guidance on BM expressing/pumping				
Yes	2 (10)	2 (18)	0 (0)	0.178
No	18 (90)	9 (82)	9 (100)	
Lactation problems				
Yes	17 (85)	10 (91)	7 (78)	0.413
No	3 (15)	1 (9)	2 (22)	
Breast milk satiates				
Yes	11 (55)	5 (45)	6 (67)	0.343
No	9 (45)	6 (55)	3 (33)	
Women who breastfeed can work				
Yes	13 (65)	9 (82)	4 (44)	0.081
No	7 (35)	2 (18)	5 (56)	

Factors that interfere with weaning *	Groups			p***
	Total** (n=20)	Intervention** (n=11)	Control** (n=9)	
Use of cream, ointment or soap				
Yes	9 (45)	4 (36)	5 (56)	0.391
No	11 (55)	7 (64)	4 (44)	
Knowledge on introduction of CF				
Yes	14 (70)	9 (82)	5 (56)	0.202
No	6 (30)	2 (18)	4 (44)	

*Data obtained in Phase 2 before interventions. **Values shown in n(%). *** Fisher's exact test (p<0.05).

BF: Breastfeeding. BM: Breast milk. CF: Complementary Foods.

Regarding the item “guidance on expressing/pumping breast milk”, 100% (n=9) of the mothers of the control group had not received any guidance, compared to 82% (n=9) of the intervention group. In addition, the mothers were asked whether they had any lactation problems, and it was found that 91% (n=10) and 78% (n=7) of the intervention group and control group, respectively, had some kind of difficulty. Another item investigated was whether the mothers knew how long they should feed the baby exclusively with breast milk and when they should introduce complementary foods. It was found that nearly all of the mothers of both groups reported having knowledge about this subject, and therefore this was not a potential risk indicator for breastfeeding weaning. Other factors are listed on Table 2.

Regarding the protocol of observation of breastfeeding, this was not analyzed in all visits, only in the first one (7th day post-partum) and the last one (45th day post-partum). Of 20 interviewed mothers, it was not possible to observe the breastfeed in one individual, so this protocol was performed with 19 mothers (11 of the intervention group and 8 of the control group). In the first day of observation, the mothers of both groups showed adequate breastfeeding position, better in the intervention group (100%; n=11) than in the control group (87.5%; n=7). In the last observation, there was an improvement in the control group regarding the breastfeeding position, and this behavior reached 100% (n=19) of the mothers of both groups.

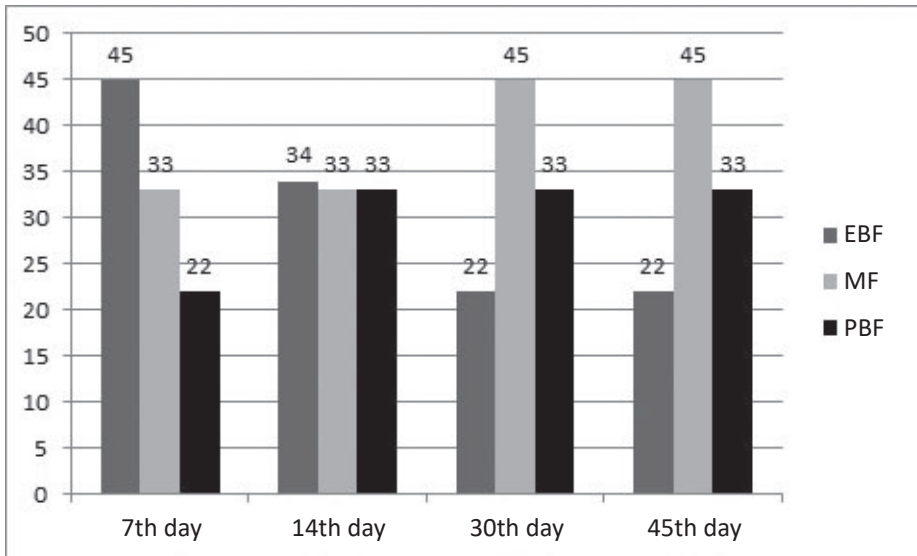
In the first visit, response of the baby during breastfeeding in both groups was scored as “good”, and this score was higher in the control group (62.5%; n=5) when compared to the intervention group (55%; n=6). In the last observation, it could be seen that 100% (n=11) of the infants of the intervention group and 87.5% (n=7) of the control group had an improved response. Regarding this criterion, behaviors suggesting difficulties or inadequacies were not observed, and only a few mothers were scored as fair.

The baby’s sucks were considered good in both visits, but in the last one, in the intervention group, it was found that sucking was poorer, i.e., 45% (n=5) of the babies had a good sucking score in the first visit, compared to 27% (n=3) of the babies in the last visit. The babies of the control group showed to be sucking properly, with the same rate of adequacy in both observations (75%; n=6).

With respect to the breasts anatomy, the score “good” prevailed in both groups and visits. In the first visit, 75% (n=6) of the mothers of the control group had good breast anatomy, compared to 45% (n=5) of the mothers of the intervention group. The result was similar for both groups in the last visit. In the control group, the number of mothers with good breast anatomy remained the same, and there was an improvement in the intervention group (73%; n=8). Regarding the scores “fair” and “poor”, they remained the same in both visits (25%), and in the intervention group they were down from 55% in first visit to 27% in the last one.

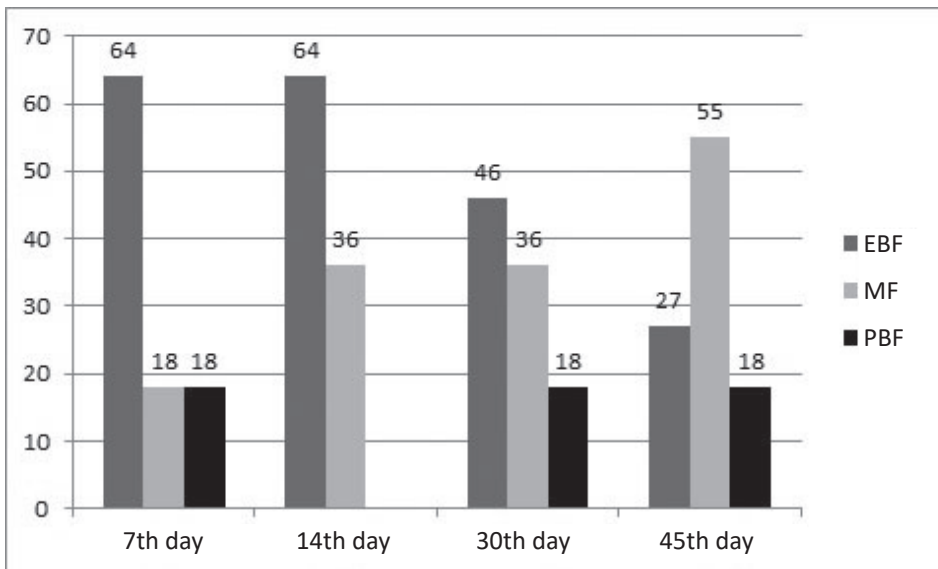
Affection during breastfeeding was similar in the first observation in both groups, i.e., 100% (n=8) of the mothers of the control group showed affection towards the baby, rated as “good” or “fair”, and in the intervention group, 82% (n=9) of the mothers showed a favorable behavior. In the last visit, it was found that the affective behavior in the intervention group rose to 91% (n=10).

The prevalence and continuation of breastfeeding during the four visits to both groups of the study are shown in Figures 2 and 3. It can be seen that at the 7th day of life occurred the highest prevalence of exclusive breastfeeding (EBF) in both groups, when 45% (n=4) of the mothers of the control group and 64% (n=7) of the mothers in the intervention group fed their babies exclusively with breast milk. At the 14th day of life, there was a decrease in the control group, where 34% (n=3) of the mothers continued to breastfeed exclusively.



EBF: Exclusive Breastfeeding; MF: Mixed Feeding; PBF: Predominant Breastfeeding.

Figure 2. Prevalence (%) of the types of breastfeeding as observed in four visits made to the control group. Santa Maria-RS, 2013.



EBF: Exclusive Breastfeeding; MF: Mixed Feeding; PBF: Predominant Breastfeeding

Figure 3. Prevalence (%) of the types of breastfeeding according to four visits made to the intervention group. Santa Maria-RS, 2013.

In the last two visits, at the 30th and 45th day of the baby's life, it was observed the introduction of other milks in addition to breast milk, i.e., mixed feeding (MF) in both groups, showing a decrease in the prevalence of EBF. In the last visit, EBF was observed in 22% (n=2) of the control group and 27% (n=3) in the intervention group.

With respect to predominant breastfeeding (PBF), in the first visit 22% (n=2) of the mothers of the control group had introduced water, tea and/or juice, and such complementation was higher in the other three visits (33%; n=3). In the intervention group, prevalence of PBF on the 7th day was 18% (n=2), varying as shown in Figure 3, and on the 45th day it maintained the same rate. Thus, it can be seen that the highest prevalence of PBF was on the seven first days of the baby's life in both groups, with a higher rate of addition of other milks in the babies' diets after the first 45 days of life.

Discussion

The variety of existing strategies, the efficacy of professional interventions and their continuity contribute to successful breastfeeding. In-home intervention on breastfeeding practices is a strategy that involves all health providers, from pre-natal to post-partum care. Based on the home visits to the mothers, it was found that mixed feeding at the 45th day of life is frequent, with consequent reduction of the prevalence of exclusive breastfeeding in both groups, this practice being similar to the one found by Audi et al.¹⁰

The introduction of other artificial milks to the baby's diet, as a complement to breast milk, occurs very early, because mothers are insecure about offering breast milk only. For most of the participants, the introduction of complementary fluids took place at the end of the 45th day of the baby's life (Figures 2 and 3). However, the Ministry of Health and the World Health Organization recommend that exclusive breastfeeding should be maintained for at least six months.¹¹

Concerning the PBF in the first week of the baby's life, it was observed that 22% (n=1) and 18% (n=1) of the control group and the intervention group, respectively, offered water, tea and/or juice to the infants. Coutinho et al.¹² point out that the use of tea to "cleanse the guts" and "prevent baby colic", and water to "quench thirst" are still cultural practices largely adopted by mothers and grandmothers in the newborn's first days of life.

With respect to the factors associated with weaning, in the present study most of the children used pacifier and/or bottle before two months of age (Table 2). Warkentin et al.,¹³ in a study with 636 children, found that 79.8% used pacifier before age of three months, a similar result to the present research. In addition, numerous studies indicate an expressive association between the

use of pacifier and/or bottle and weaning, because they can diminish the sucking reflex, due to an effect called “nipple confusion”. This reflex makes the baby reject the mother’s breast and, consequently, breastfeeds less, thus occurring early weaning.¹⁴

The use of pacifier and/or bottle is also associated with improper sucking, a fact that drew attention during the observation of breastfeeds in this study, because there was a significant sucking reduction in the intervention group between the first and last visit. However, it should be noted that even with the interventions performed, the mothers have also been influenced by external factors, mainly socioeconomic and cultural ones, such as the mother’s and family’s educational background, living with grandparents, household income, lack of guidance by health professionals, among others. Therefore, it is vital that the population and health professionals be well informed of these effects in order to provide effective guidance to mothers, especially during pre-natal care, post-partum care and home discharge.¹⁴

In addition to sucking, the position of the mother/baby was also observed, and it was found, at the end of observations, that 100% of the mothers of both groups had good breastfeeding position. This disagrees with the study by Carvalhaes & Corrêa¹⁵, conducted with 50 pairs of mothers/infants observed between 18-30 hours of life in joint lodging, where the authors found that 68% (n=34) of the mothers presented a good score. Thus, it is worth noting that the breastfeeding position was not a reason that could lead to early weaning, possibly because, as time passes, the mother feels more secure and confident to breastfeed her child.

Regarding the baby’s response during breastfeeding, no behavior that could suggest difficulties was observed, which disagrees with the study by Carvalhaes & Corrêa,¹⁵ according to which 12% (n=6) of the babies had poor scores. As to the “good” response of the babies in the present study, there was an improvement in the intervention group between the first and last visit, a fact associated with the interventions performed during this period and because with time the baby learns to suck and feels more relaxed in this practice.

To finalize, the “good” score was the most frequent in both groups and visits, whether in the observation of the aspects of breasts anatomy whether in the affection between the mother and child. This corroborates the results found by Carvalhaes & Corrêa,¹⁵ where 82% (n=41) of the mother-child pairs showed good affective ties, and 78% (n=39) of the women had good breasts anatomy.

Therefore, providing support outside the hospital setting to the mothers that breastfeed is of key importance in order to increase and improve breastfeeding, with the support of all health professionals. The present study had some limitations, among them the sample size, failure of conducting a pilot study, lack of a validated questionnaire on risk factors for weaning, and the short time for carrying out the in-home interventions.

To encourage breastfeeding, preferably on an exclusive basis until the sixth month of life, it would be necessary to perform in-home monitoring for at least four months after delivery. Regarding the type of intervention performed, we believe that this is a very effective strategy, because, according to the mothers' reports and findings of this and other studies, it is at home that the mothers feel more insecure about breastfeeding. Given this, further researches on the subject are necessary, taking into account such limitations.

Conclusions

The results of this study showed that breastfeeding continued in both groups at the end of the 45th day of the babies' life. However, it was observed that even with in-home interventions, the percentage of mothers who exclusively breastfed their children until the end of the visits, was very low when compared to the first home visit. The addition of other milks, as a complement to breast milk, had a high frequency in all visiting days in both groups investigated. Furthermore, reduction of EBF may be associated with the high frequency of use of pacifier and/or bottle, water, tea and juice, as well as improper sucking during breastfeeding.

However, this study showed that the interventions were important because the mothers, especially non-experienced mothers, were quite insecure about breastfeeding, and this strategy contributed to solve the difficulties they encountered. In addition, the interventions had a great impact regarding the aspects observed during breastfeeding, with increasing improvement in the last observation. The interventions, besides promoting and supporting breastfeeding continuation contributed to reduce the factors that lead to weaning.

Thus, it is noteworthy the importance of professional counseling to the mothers not only at their homes but also from the start of pre-natal care until hospitalization. This type of strategy may be useful to improve the quality of life and health of mothers and babies, strengthen the mother/baby bonding and ensure the continuation of breastfeeding because of the many advantages that it confers to the mother/baby dyad.

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