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Exclusive breastfeeding of premature infants and reasons for discontinuation in the first month after hospital discharge

Aleitamento materno exclusivo de prematuros e motivos para sua interrupção no primeiro mês pós-alta hospitalar

La lactancia materna exclusiva de prematuros y motivos para su interrupción en el primer mes después del alta hospitalario

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ABSTRACT

Objective: To estimate the prevalence of exclusive breastfeeding premature infants at hospital discharge, and after 15 and 30 days, and to identify the mothers' claims for discontinuation.

Methods: Cross-sectional study with 108 premature infants born in two Baby-Friendly Hospitals between April and July 2014. A survey was conducted on medical records and through telephone interviews. A descriptive analysis, Pearson's chi-square test, and Fisher's exact test were used, with a 95% confidence interval.

Results: The prevalence of exclusive breastfeeding at discharge was 85.2%, 75% after 15 days, and 46.3% after 30 days. The main claim for the introduction of other foods and/or liquids was insufficient milk.

Conclusions: There was a significant reduction in the rates of exclusive breastfeeding after discharge, pointing out the importance of continuity of patient care to reduce early weaning, especially with educational actions that help prevent real and perceived deficits in milk supply.

Keywords: Breastfeeding. Infant, premature. Patient discharge. Continuity of patient care. Weaning.

RESUMO

Objetivo: Estimar a prevalência de aleitamento materno exclusivo de prematuros na alta hospitalar, aos 15 e 30 dias pós-alta, e identificar as alegações maternas para sua interrupção. Métodos: Estudo transversal com 108 prematuros nascidos em dois Hospitais Amigos da Criança, entre abril-julho de 2014. Realizou-se pesquisa em prontuário e entrevistas por telefone. Usaram-se análise descritiva, qui-quadrado de Pearson e teste exato de Fisher, com intervalo de confiança de 95%.

Resultados: A prevalência do aleitamento materno exclusivo na alta foi de 85,2%, de 75% aos 15 dias e 46,3% aos 30 dias. A principal alegação para introdução de outros alimentos e/ou líquidos foi o leite insuficiente.

Conclusões: Houve redução significativa nas taxas de aleitamento materno exclusivo após a alta, apontando a importância do acompanhamento pós-alta para reduzir o desmame precoce, sobretudo com ações educativas que previnam as insuficiências reais e percebidas na oferta de leite.

Palavras-chave: Aleitamento materno. Recém-nascido prematuro. Alta do paciente. Continuidade da assistência ao paciente. Desmame

RESUMEN

Objetivo: Estimar la prevalencia de lactancia materna exclusiva de prematuros en el alta hospitalario, a los 15 y 30 días luego del alta, e identificar las alegaciones maternas para su interrupción.

Métodos: Estudio longitudinal con 108 prematuros nacidos en dos Hospitales Amigos del Niño, entre abril y julio de 2014. Se realizó una investigación en historiales y entrevistas por teléfono. Se utilizaron el análisis descriptivo, el chi-cuadrado de Pearson y el examen exacto de Fisher, con intervalo de confianza de 95%.

Resultados: La prevalencia de la lactancia materna exclusiva luego del alta fue de 85,2%, de 75% a los 15 días y de 46,3% a los 30 días. La principal alegación para la introducción de otros alimentos y/o líquidos fue la insuficiente leche.

Conclusiones: Hubo una reducción significativa en las tasas de lactancia materna exclusiva después del alta, lo que señala la importancia del seguimiento post-alta para reducir el destete precoz, sobre todo con acciones educativas que ayuden a prevenir las insuficiencias reales y percibidas en la oferta de leche.

Palabras clave: Lactancia materna. Recién nacido prematuro. Alta del paciente. Continuidad de la atención al paciente. Destete.

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INTRODUCTION

Exclusive Breastfeeding (EBF) until the sixth month of life, recommended by the World Health Organization (WHO), is the ideal food for promoting healthy growth and development. In addition, it favors the sustainability and reduction of social inequalities, with the potential to contribute to several Sustainable Development Goals, to be achieved by all Member States of the United Nations by 2030[1-2].

For Premature Newborn (PN), breast milk offers additional benefits, such as lower incidence and severity of necrotizing enterocolitis, sepsis, and retinopathy of prematurity, increased neuropsychological performance, strengthening of the mother-child bond, shorter length of hospital stay, and shorter incidence of readmissions[3].

However, these PN present late onset and shorter duration of breastfeeding (BF) when compared to full-term babies[4-5]. Although researches have showed improve in BF among premature babies, EBF rates in this group are lower than those recommended by the WHO, which considers a "good" or "very good" situation when 50 to 89% and 90% to 100%, respectively, of children under six months of age are in EBF, regardless of gestational age[6].

Even when EBF can be established in hospitalized preterm infants, many of them are weaned in inopportune time, within the first few weeks after discharge, with decreasing rates of EBF ranging from 25% to 7.5% in the first post-discharge month. These rates reveal the lack of interventions to support the mothers and for breastfeeding maintenance, despite the incontestable benefits of human milk for these children[7-8].

Planning and establishing effective interventions that enable maintenance of BF to preterm infants for a sufficient time should be based on the epidemiological context, evidenced by data on the practice of BF in the hospital environment, as well as its reality in the post-discharge period and the reasons why mothers introduce other foods. In this sense, the aim of this study was to estimate the prevalence of EBF premature babies at hospital discharge, and after 15 days and 30 days, and to identify the mothers' claims for discontinuation.

METHODS

Research from the thesis "Breastfeeding hospitalized preterm infants and in the first month post-discharge"[9]. It is a cross-sectional study carried out in two Baby-Friendly Hospitals in the city of Recife, state of Pernambuco, between April and July 2014. Both are public and teaching hospitals with regional reference regarding high-risk gestation, with a Neonatal Intensive Care Unit (NICU) and a human milk bank.

The reference population consisted of premature infants born in these hospitals, and their respective mothers. The sample was calculated using EpiTable in software Epi Info™ 7, considering the population of 1363 preterm infants born in 2012 at both hospitals, the prevalence of EBF at hospital discharge of 92% (estimated by the first twenty cases of each institution participating in the study), power of 80%, sampling error of 5 %, and significance level of 95%, totalizing 105 preterm infants. 20% was added to this total for possible losses.

The sample included PN with less than 37 weeks of gestational age, hospitalized in the neonatal during the first 48 hours of life, with a minimum of 48 hours in the unit. The NICU, the intermediate care unit, and the kangaroo unit were considered as neonatal units. Exclusion criteria included the transfer of the newborn to another institution, neonatal death, adoption/abandonment, presence of congenital or chromosomal abnormalities precluding the development of normal oral motor abilities, as well as the presence of galactosemia.

It was considered as inclusion criteria for mothers: to have a child hospitalized in the neonatal unit, according to inclusion criteria for premature. Exclusion criteria included transfer or death of the mother, use of medicines incompatible with breastfeeding, such as antineoplastic drugs and radiopharmaceuticals, and the presence of temporary or definitive contraindications for breastfeeding, such as maternal infection with the Human Immunodeficiency Virus (HIV) and the Human T-Lymphotropic Virus (HTLV)[2]. Only when both mother and child met these criteria were they considered eligible for the survey.

Of the 202 preterm infants and their respective mothers who were discharged during the study period, 150 preterm infants and 136 mothers met the inclusion criteria; and 22 were excluded. As there were 14 twins, the population of mothers was smaller than that of premature infants (Figure 1).

A sequential sampling was chosen, which involves recruiting all individuals from an accessible population that meet the eligibility criteria over a specific time frame[10]. There was a loss of 20 pairs of mothers and babies, all due to the impossibility of telephone contact after at least 15 attempts, which phone calls were identified as outside the coverage area or disconnected telephone, or non-existent number, the final sample being composed of 108 preterm infants and 94 women (Figure 1).

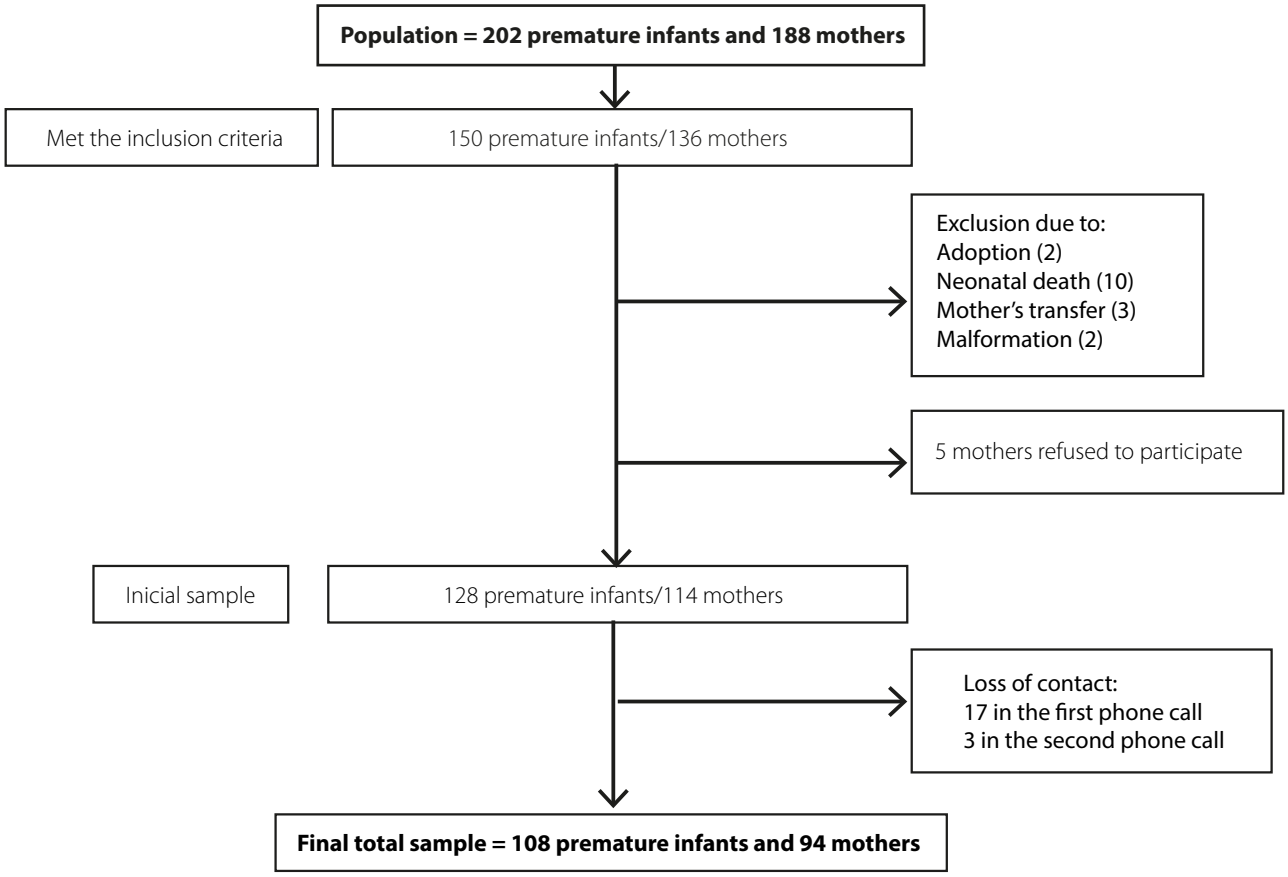

Figure 1 – Flowchart of the process of obtaining the study sample. Recife, PE, Brazil, 2014
Source: Authors.

The principal investigator and a research assistant visited the neonatal units at least three times a week to invite the mothers to participate in the study and sign the Free and Informed Consent, as well as to enable access to medical records as soon as they were discharged from hospital. For easier control, an instrument was developed to follow-up the participants, from the admission of the premature to the 30th day after discharge.

To improve the accuracy of the study, the research assistant was trained to collect data in the medical record and there were weekly phone calls to discuss the collection procedures and resolve any difficulties. The telephone interviews were conducted exclusively by the principal researcher.

A semi-structured form was used for data collection, constructed and validated by the research group of the multicenter project related to this research. The pilot test was performed in the five regions of the country for the adequacy of data collection instruments and procedures. In this study, the variables related to birth, hospitalization, and feeding of preterm infants were analyzed.

At the time of hospital discharge, data on the birth and hospitalization of the preterm were collected from the medical record, including gestational age, birth weight, length of hospital stay, and type of breastfeeding at discharge. After the hospital discharge, the mothers were interviewed by telephone at 15 and 30 days after discharge and provided information about the BF situation. In cases in which the NB was not being EBF, the mother was asked about the main reason for the introduction of another food (including water and tea) in preterm's diet, which was considered as a maternal claim for non-EBF. Such causes were categorized into cultural/educational, social, and biological causes. This questioning was not carried out for mothers who had stopped the EBF in the previous evaluation. Mothers whose children were not in

EBF on discharge or after 15 days continued to be monitored in order to evaluate the type of breastfeeding.

For the purposes of categorization and analysis, the definitions proposed by the WHO[11] were considered. Exclusive Breastfeeding (EB): when breast milk is the only food, straight from the breast or pumped, or human milk from another source, during the last 24 hours; Predominant Breastfeeding (PBF): the breast milk is the predominant source of child nutrition, but they also are received water, juice, tea, solution of oral hydration salts; Breastfeeding (BF): the baby is fed with breast milk and non-human milk during the last 24 hours; Milk Substitutes (MS), when the child does not receive human milk, being fed only with breast milk substitutes.

From the manually filled instruments, data was double-entered to check for possible inconsistencies and typing errors. Data were processed and analyzed using the Statistical Package for the Social Sciences (SPSS, version 21.0). For evaluation of categorical variables, the percentage frequencies were calculated and the respective frequency distributions were created; for the continuous variables, the measures of central tendency (mean and standard deviation) were calculated. The rates of BF types were estimated for each time of collection: hospital discharge, fifteen and thirty days after discharge. The test for difference of proportions (Fisher's Exact Test or Pearson's Chi-Square Test) was used to compare the prevalence of EBF, as well as the causes for discontinuation, with a 95% confidence interval (95% CI).

In compliance with Resolution 466/2012 of the National Health Council, the research was approved by the Research Ethics Committee of the Integrated Health Center Amaury de Medeiros of the University of Pernambuco (Opinion Nº. 631,464, of 4/24/2014). All participants signed the Free and Informed Consent. The study integrates the multicenter project "Breastfeeding of preterm infants: impact of the neo-BFHI on neonatal units".

RESULTS

Of the 108 preterm infants participating in the study, 63 (58.3%) were female, 14 (13.0%) were twins, and 91 (84.3%) were moderate to late preterm infants, with a mean gestational age of 33.7 (± 2.2) weeks. The majority had birth weight between 1500 and 2499 grams (65.1%), with a mean weight of 1964 (± 533) grams. The mean length of hospital stay was 21 days (3-94 days) (Table 1).

Table 1 – Characteristics of preterm infants according to birth and hospitalization variables. Recife, PE, Brazil, 2014

Variables	N	%
Gender		
Female	63	58.3
Male	45	41.7
Twins		
Yes	14	13.0
No	94	87.0
Gestational age (weeks)		
Under 28 weeks	4	3.7
From 28 to 31 weeks	13	12.0
From 32 to 36 weeks	91	84.3
Minimum – Maximum	27.0 - 36.9	
Mean (±Standard deviation)	33.7 (±2.2)	
Birth weight (grams)[1]		
Less than 1500 g	21	19.8
1500 g to 2499 g	69	65.1
2500 g or more	16	15.1
Minimum – Maximum	620 – 3515	
Mean (±Standard deviation)	1964 (±533)	
Length of stay (days)		
Minimum – Maximum	3 – 94	
Mean (±Standard deviation)	21 (±19)	

Source: Research data, 2014

[1]The total does not add up to the value of N, due to inconsistency in the medical record.

The type of breastfeeding that predominated at the time of discharge, after 15 days, and 30 days of hospital discharge was the EBF, but the rate decreased between these periods. The rate of EBF at discharge was 85.2%, decreasing to 75% and 46.3% at 15 and 30 days after discharge, respectively. There was a decline of 54.3% in the proportion of premature infants who were in EBF from discharge to the end of the first month after discharge, and the homogeneity test was highly significant (p-value < 0.001), indicating that this reduction was relevant between the three evaluated periods (Table 2).

Table 2 – Type of breastfeeding in the three evaluated periods. Recife, PE, Brazil, 2014

Variables	Evaluation period			*p*-value
	High	15 days	30 days	
EBF				
Yes	92 (85.2%)	81 (75.0%)	50 (46.3%)	<0.001[5]
No	16 (14.8%)	27 (25.0%)	58 (53.7%)	
Type of BF				
EBF[1]	92 (85.2%)	81 (75.0%)	50 (46.3%)	
PBF[2]	0 (0.0%)	8 (7.4%)	10 (9.3%)	<0.001[6]
BF[3]	14 (13.0%)	17 (15.7%)	39 (36.1%)	
MS[4]	2 (1.8%)	2 (1.9%)	9 (8.3%)	

Source: Research data, 2014
[1]EBF: Exclusive breastfeeding. [2]AMP: Predominant Breastfeeding. [3]BF: Breastfeeding. [4]AS: Milk Substitutes. [5]*p*-value of Pearson's Chi-square test. [6]*p*-value of Fisher's exact test.

Maternal claims for introduction of foods other than breast milk at 15 and 30 days after discharge are described in Table 3. It was verified that, at 15 days, the reasons most frequently reported by the mothers were: insufficient/dried-up milk (31.3%), belief in the benefit of tea (25.0%), and need for water (18.8%). At 30 days, the most reported reasons for discontinuation of EBF were: insufficient/dried-up milk (77.5%) and need for water (9.7%). The homogeneity test was not significant when comparing the claims at the two evaluated periods (*p*-value = 0.312), indicating that the reasons for not EBF at both moments were similar.

Table 3 – Mothers' claims for supply of other liquids/foods at 15 days and 30 days after the discharge. Recife, PE, Brazil, 2014

Evaluated reasons	15 days		30 days		*p*-value
	N	%	N	%	
Cultural/educational causes					
Belief in the benefit of tea	4	25.0	1	3.2	
Need for water	3	18.8	3	9.7	
Insufficient/dried-up milk	5	31.3	24	77.5	
Social causes					
Professional health guidance	1	6.2	1	3.2	0.312[1]
Convenience of the mother	0	0.0	1	3.2	
Influence of third parties	0	0.0	1	3.2	
Biological causes					
Baby does not suck/sleepy baby	2	12.5	0	0.0	
Baby does not sleep/cries a lot	1	6.2	0	0.0	
Total	16	100	31	100	

Source: Research data, 2014
[1]*p*-value of Pearson's Chi-square test

DISCUSSION

The prevalence of EBF found in this study presented significant values when compared to the rates observed in other regions of the country and the world. The prevalence of exclusively breastfed preterm infants at hospital discharge was higher than that of a cross-sectional study carried out at a Child-Friendly Hospital in southeastern Brazil, in which only 47.6% of premature infants were in EBF at discharge[12]. In a cohort performed in the same region with premature infants younger than 33 weeks, this rate was only 5.5% at discharge[7]. However, evidence indicates that children younger than 32 weeks are at increased risk of early weaning[5].

A population-based, longitudinal, multicenter study carried out in eight cities in different countries, including Brazil, also found a lower rate. The growth patterns of premature infants younger than 37 weeks of gestational age and their feeding from birth to 6 months of life were evaluated, showing that 72.0% of premature infants were discharged from the hospital when being exclusively breastfed[13]. The same occurred in a prospective study with 1488 preterm infants <37 weeks of gestational age, which identified a rate of 68.0% of EBF in the same period. This study was conducted in Denmark, a developed country, where women have at least 10 months of paid maternity leave[14].

These results showed that it is possible to establish EBF in the majority of hospitalized preterm infants, despite their peculiarities, which challenge the onset and establishment of breastfeeding. The support of trained health professionals and a practice focused on the needs of the child and the family are essential for promoting BF.

Having been born in Baby-Friendly Hospitals may have contributed to this result, considering that one of the objectives of this Initiative is to improve BF, especially EBF, through the implementation of the Ten Steps, even this strategy focusing on the full-term RN.

According to the II National Survey of Prevalence of Breastfeeding in Brazilian Capitals and the Federal District, the average duration of EBF among children born in Baby-Friendly Hospitals was 60.2 days, compared to 48.1 days among children who were not born in Baby-Friendly Hospitals. Babies born in Baby-Friendly Hospitals also increased the chance for breastfeeding on the first day at home after discharge from the maternity hospital by 6%; by 13% for EBF children under two months, 8% for EBF children under three months, and 6% for EBF children under six months[6].

However, observing the evolution of the prevalence of EBF these preterm infants in the period after hospital discharge, there was a sharped drop in the first month after discharge. Similar data were obtained in a survey conducted in the south of the country, which identified a prevalence of EBF preterm infants at 15 and 45 days after discharge of 71.5% and 45.2%, respectively[15]. On the other hand, a prospective cohort with preterm with gestational age of 33 to 36 weeks performed at a Baby-Friendly Hospital, also in southern Brazil, showed lower rates of EBF of 36.2% on the 14th day after discharge and 25% on the 28th day[8].

The first thirty days after hospital discharge are considered critical for the adaptation of the mother-premature-family, being essential not only a committed and qualified neonatal health team in the hospital, but also qualified professionals in the basic care to assist premature infants and their families in their needs, including promotion of BF, enabling continuity of care, through articulation of actions between the different levels of health care, major axis of health care networks.

In both hospitals participating in the study, there was a Human Milk Bank, free access to parents in the NICU was provided, and there were orientations regarding the importance of breast milk, especially for premature babies, support to maintain lactation with frequent bumps, supply of raw or pasteurized maternal milk, and preparation of premature infants and their family for discharge. Although these practices are recommended in the literature[5], they seem be insufficient to maintain the EBF rates at discharge. The significant decrease in EBF in the first weeks after discharge reveals the difficulties of the baby and the mother during their adaptation to the household routine.

Maternal claims for the supply of other liquids or foods were mainly cultural/educational causes, such as insufficient or dried-up milk, or belief in the benefit of tea and the need for water supply. These claims were similar on the 15th or the 30th day after discharge.

These findings are consistent with other studies in the literature. In a cohort study with full-term or preterm infants, the decrease in the milk volume and weak milk were identified as the main causes for weaning in the first 15 days of life[16]. The insufficient quantity of milk was also evidenced as the main cause alleged for discontinuation of BF of preterm infants in a study that compared two contemporary cohorts in Western Australia[17]. On the other hand, an Italian study found that the mother's complaint of difficulty in providing an adequate amount of milk to the child was significantly associated with a higher risk of weaning[18].

It is worth mentioning that the mother's perception of low milk is also one of the most common reasons reported by mothers of full-term babies[19]. In this study, biological

justifications, when the baby did not suck or was sleepy, a characteristic of the premature infant recognized as a complicating factor in the BF, was only mentioned by a small number of mothers, a fact that can be justified by the maturity of the infant at discharge, since the mean corrected age in this period was 37 weeks.

Therefore, the influence of the cultural factor should always be taken into account in orientation and promotion of the BF, in order to empower women in their capacity to breastfeed their child, even premature infants.

The report of low milk is a complex problem that transposes cultural, geographical, and socio-economic lines. It is well known that the perception of insufficient milk production occurs much more often than the actual problem. Actual or perceived insufficient milk is described as the mother's feeling that her milk production is insufficient both to satisfy her child and to provide adequate weight gain. However, few women have genuine problems with their milk production, with secondary causes being much more common[20].

It should be noted that the results obtained refer to a period of relative vulnerability, where the mother and family are in the phase of adaptation with the arrival of the premature at the house, and the mother has frequent moments of stress, anxiety, and fatigue. It is known that maternal anxiety and prematurity adversely affect lactogenesis, leading to a potential reduction in breast milk supply[18]. When there is no effective and adequate support of the support network, milk production can be impaired.

Partial or total weaning was also justified by mothers due to social causes, especially due to the lack of adequate orientation by healthcare practitioners, as mentioned in the literature[16]. Professional support must be consistent in order to positively influence women in their efforts to breastfeed a premature baby.

The maintenance of EBF after hospital discharge should be a common goal for professionals who assist mothers and babies and the family. The environment of the neonatal unit often provides the necessary support to mothers, but it is at home that they are faced with doubts and difficulties, often associated with insufficient professional and social support, making it difficult to continue the EBF.

CONCLUSIONS

The results show that it is possible to reach good EBF rates at hospital discharge for preterm infants. However, a significant reduction in EBF during the first month at home demonstrates that follow-up at this stage is essential to avoid early weaning.

There is a need to plan a hospital discharge involving the mother, the family and a multidisciplinary team, and an efficient health care network, with articulated actions between the referral hospital unit and the primary care service to enable integral care through services at different levels of complexity.

Considering that the main reasons reported by mothers for total or partial weaning were of an educational/cultural nature, it is necessary, above all, to follow and guide the process of breastfeeding and milk production, helping to prevent real and perceived insufficiencies in the supply of milk.

These results can help in the planning of strategies aimed at teaching, research, and assistance in favor of BF in this segment composed of a high-risk population, encompassing care for women, children, and families in the several health service settings.

New studies are required, with other designs, to have a better understanding of the phenomenon, to transcend quantitative aspects, and that new educational interventions to promote, protect, and support breastfeeding, especially in basic health care, involving the singularities of preterm infants, can be tested and implemented in order to increase the duration of EBF and, consequently, contribute to the improvement of the health of these children.

As a limitation of the study, it is mentioned the method adopted for data collection, by telephone, subject to contact losses, which was minimized by obtaining, whenever possible, more than one telephone number, in addition to making several attempts to contact the mothers at different times.

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