

## Factors associated with breastfeeding one month after discharge in very low weight premature infants hospitalized at birth

### Factores asociados a la lactancia al mes de alta en prematuros de muy bajo peso hospitalizados al nacer

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#### What do we know about the subject matter of this study?

Factors such as type of delivery, gestational age, birth weight, maternal educational level, and neonatal disease influence breastfeeding. These are not very modifiable, but the confidence to breastfeed and the support and training of the healthcare team during neonatal hospitalization are not.

#### What does this study contribute to what is already known?

In a cohort of very low birth weight newborns in a high-complexity hospital, the only independent factor associated with breastfeeding abandonment was the mother's educational level. This shows the relevance of considering education and support strategies and methodologies relevant to the characteristics of the breastfeeding mother.

#### Abstract

There is evidence of the benefits that breastfeeding (BF) provides to full-term and premature newborns who are hospitalized. In the latter, maintaining BF during and after hospitalization is difficult. **Objective:** To determine the factors associated with BF cessation in preterm infants one month after discharge from a neonatology unit. **Patients and Method:** Historical cohort of 218 newborns from the Very Low Birth Weight Newborn Follow-up Program of the *Hospital Base Valdivia*, hospitalized between January 2016 and June 2022 and who maintained BF at discharge. Bi-demographic and clinical data were collected from available records and their relationship with BF cessation was evaluated one month after discharge. **Results:** One month after discharge, 35.8% of the infants abandoned BF (N = 78). The bivariate analysis highlighted a significantly lower median gestational age and lower mean birth weight in those who abandoned BF. Neonates born to married mothers, with a shorter median hospital stay and without requiring invasive mechanical ventilation had a lower proportion of BF abandonment. In the adjusted analysis, the educational level of maternal higher education was

#### Keywords:

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significantly associated with a lower probability of abandoning BF (adjusted OR: 0.3; 95% CI 0.11 - 0.85). **Conclusions:** One month after discharge, over a third of the children stopped BF which was significantly associated with the mother's educational level. Support and educational interventions during hospitalization must consider the mother's educational background.

## Introduction

Very low birth weight newborns (less than 32 weeks and/or less than 1,500 g), have the highest mortality and sequelae rate within the preterm group, being 180 times more likely to die in the first year of life than a full-term newborn (NB) or one weighing more than 2,500 g<sup>1</sup>. Breastfeeding (BF) is the best food for all infants and particularly for those at higher risk, providing innumerable benefits such as a decrease in the incidence of serious problems such as late sepsis, necrotizing enterocolitis, retinopathy of prematurity, bronchopulmonary dysplasia (BPD), and neurological disorders<sup>2-7</sup>.

However, promoting BF within the neonatology units and achieving adherence to this practice is a challenge for the healthcare team, and maintaining BF after discharge is even more challenging<sup>6,8-12</sup>. In this context, it is required that the most at-risk groups receive focused attention to detect susceptibility conditions during the hospital stay and later at home. A reduction in the proportion of preterm infants who maintained exclusive BF at discharge has been reported between 15% two weeks after hospital discharge<sup>13</sup> and 54.3% one month after discharge<sup>14</sup>. Specifically in Chile, the report of the National Breastfeeding Survey shows that only 24.5% of very low birth weight newborns maintain BF at home, with a significant difference with the group of full-term infants<sup>15</sup>. Factors that have been related to this fact include clinical variables such as prematurity, intrauterine growth restriction, severe neonatal morbidities, and congenital anomalies<sup>16,17</sup>. Likewise, the type of delivery has been associated with both the initiation and continuation of BF, demonstrating that in cases of vaginal delivery, there is a greater probability of initiating and continuing BF. This is because, after cesarean section, the establishment of the mother-newborn bond is affected by altered lactogenesis as a result of a decrease in oxytocin secretion or maternal stress, which causes a decrease in milk production<sup>18</sup>.

Sociodemographic, economic, and educational aspects are mentioned as key factors in the continuity of BF in both term and preterm infants, highlighting maternal age, parity, and maternal educational level as determinants of BF<sup>18-20</sup>. In the case of habits such as smoking during pregnancy and the BF period is negatively associated with BF, and it is reported that smoking among BF women is related to both shorter

duration and lower milk production<sup>16,18</sup>. On the other hand, pregnancy problems such as gestational diabetes are also associated with a lower probability of effectively establishing BF, substantially decreasing its duration<sup>19,20</sup>.

For those positive factors, older maternal age and married marital status are factors that are attributed to a greater probability of initiating and maintaining BF, which could be related to the emotional stability provided and the ability to delegate activities that increase the maternal psychological and physical burden<sup>15,18,21</sup>. Therefore, counseling by health professionals or BF consultants for mothers in these types of contexts and patients decreases early BF abandonment, as well as implementing support policies in neonatal intensive care units (NICUs) and including members of the healthcare team designated to support mothers in this task<sup>17,18</sup>. In this sense, acquiring knowledge about the BF process is four times more likely to initiate BF and 41% more likely to continue with this practice at home, versus those mothers who do not receive the same educational opportunities<sup>16,17</sup>. Despite the above, local information is scarce in this group of infants, and it is necessary to explore the scenario in which they are regarding BF, in order to implement specific interventions for these children.

The objective of this study was to determine the factors associated with BF abandonment in very low birth weight preterm infants one month after discharge from a neonatology unit.

## Patients and Method

### Study design

Quantitative observational analytical study of a historical cohort of infants belonging to the Very Low Birth Weight Program (< 1,500 g at birth and/or < 32 weeks of gestation) of the *Hospital Base Valdivia* between January 1, 2016, and June 30, 2022. The study was approved by the Scientific Ethical Committee of the Valdivia Health Service (Ord. 268, June 21, 2022), which granted a waiver for the use of informed consent since the data had already been collected and was handled anonymously. In addition, it was authorized by the health facility through the Legal Department (Res. Ex. 012934, August 17, 2022).

## Population

All infants participating in the Very Low Birth Weight Program who were discharged from the *Hospital Base Valdivia* and who, at the time of discharge, had exclusive or mixed BF were included. In addition, as an inclusion criterion, they required at least one post-discharge check-up at the Newborn Polyclinic of the same facility. Under these conditions, 226 participants were initially included; however, eight were excluded because they spent part of their hospitalization in another center due to referral. Consequently, 218 participants were included in the study.

## Data and variable handling

An anonymous database generated with information from clinical records was used to analyze socio-demographic variables (such as maternal age, marital status, educational level, occupation, etc.) and clinical variables of the mother-child dyad (such as parity, sex, gestational age, birth weight, adequacy, mechanical ventilation, etc.). It also focused on interventions during hospitalization such as i) Psychological intervention: Psychological techniques applied to mothers of infants hospitalized in the Neonatology Unit in order to support and help them understand emotions and provide tools to improve the mother-child bond and the environment. It was operationalized as “no follow-up”, “follow-up” (tracking the mother through sessions with a psychologist to evaluate the evolution of the diagnosed condition and with a periodicity depending on the mother’s condition), “containment” (measures that focus on the emotions regulation and on stimulating the confidence of mothers who are going through an emotional crisis), “referral” (intervention in which the psychologist in charge of the *Chile Crece Contigo* program request a referral to the hospital’s pediatric psychiatrist, who evaluates the mother from the perspective of the dyad, focusing on the newborn’s hospitalization process) and “treatment”; ii) BF counseling: Counseling carried out by the nursing professional to mothers of hospitalized infants focused on BF, where they are trained on BF technique, signs of hunger, and milk conservation, and then apply an evaluation guideline on correct technique during the BF process; iii) Educational program oriented to BF: Educational program related to the characteristics and necessary care for very low birth weight newborns, carried out by the nursing professional, which includes two trainings on BF addressing topics such as benefits, extraction, conservation, and correct technique. It is worth mentioning that both trainings are carried out at different times during hospitalization, reinforcing knowledge in the last stage of hospitalization, in preparation for the newborn’s discharge.

## Statistical analysis

Data analysis was performed in three stages. It began with an exploratory analysis to detect missing and inconsistent data, as well as the analysis of the adjustment to normality of the quantitative variables (Shapiro-Wilk test). Subsequently, a descriptive analysis of the variables was performed to characterize the study population. For qualitative variables, absolute and relative frequencies were calculated; for quantitative variables, measures of central tendency (mean or median) and dispersion (standard deviation [SD] or interquartile range [IQR]) were calculated according to the adjustment to normality. Finally, bivariate and multivariate association analysis was performed between BF at one month after discharge (maintenance/abandonment) and the rest of the variables.

For the bivariate analysis, the  $\chi^2$  or Fisher tests and the Student’s t-test or Mann-Whitney U test were applied as appropriate. A significance level ( $p$ ) < 0.05 was established. Finally, a multivariate model was developed using multiple logistic regression to weigh the effect of different variables on BF status at 1-month after discharge. Variables that were bivariately associated with the outcome with a  $p$ -value  $\leq 0.1$  and by theoretical plausibility criteria were incorporated into the model with a conservative criterion. To avoid collinearity between variables, correlation matrices were constructed to detect them considering high correlation with values  $\geq 0.6$ . When highly correlated variables were detected, those determined by the experience of the research team, theoretical plausibility, and bibliographic support were included in the model. Adjusted Odds Ratios (OR) were estimated with their respective 95% confidence intervals (95%CI), setting a  $p$ -value < 0.05 as the level of statistical significance. Stata 13.0 (StataCorp, College Station, Texas, 2013) was used for the analysis.

## Results

### Maternal and neonatal characteristics

Overall, the mothers who constituted the study population were characterized by a mean ( $\pm$  SD) age of 29.3 ( $\pm$  6.2), ranging from 13 to 43 years; only 13 mothers (6.0%) were adolescents ( $\leq 19$  years). The predominant marital status was domestic partner (48.1%). The educational level was mainly up to high school (51.4%) and without differences in occupation (paid and unpaid). The origin was centered in the urban area (65.1%) and Valdivia city (42.6%). Prenatal check-ups were attended by 95.8% of the patients, and hypertension was detected in 32.1% of the pregnancies. The median parity was 1 [IQR = 0 - 2] and 64.7% were multiparous. Cesarean section was the most common type of delivery (78.4%).

The infants were characterized by a mean gestational age ( $\pm$  SD) of 29.5 ( $\pm$  2.0), ranging from 24 to 36 weeks of gestation; mean birth weight was 1343 g ( $\pm$ 351.6), ranging from 450 g to 2,390 g. On admission, 88.1% were admitted to the NICU (N = 192). 75 infants (34.4%) received mechanical ventilation with a mean duration of 6.9 days ( $\pm$  11.9), while 130 (59.6%) received oxygen through a nasal cannula with a mean duration of 23.1 days ( $\pm$  26.8), being maintained only in 8.3% (N = 18) after discharge. 5% required surgery and 47.7% required transfusion at some time during hospitalization.

Psychological follow-up was attended by 182 mothers (83.5%) during hospitalization, and during the interview, the following conditions were identified: 26.6% (N = 58) were emotionally stable, 10.1% showed emotional lability, and 7.8% showed signs of distress. Of the activities carried out in the first appointment, more than 50% required some type of psychological intervention, such as emotional support (38.9%), follow-up during hospitalization (32.1%), and referral to psychiatry (8.7%).

### Breastfeeding

At discharge, only 12.8% maintained exclusive BF; one month after discharge, 35.8% of the infants

(N = 78) had already abandoned BF; and among those who continued BF, only 7.9% were doing so exclusively (N = 11).

When maternal sociodemographic variables were evaluated with the BF abandonment at one month after discharge (table 1), marital status was the only variable significantly associated ( $p = 0.033$ ), with the number of married women who abandoned BF being significantly lower than those who continued BF (11.8% vs. 27.1%). Of the neonatal characteristics, lower mean birth weight ( $\pm$  SD) (1,387 g  $\pm$  360.4 vs 1264 g  $\pm$  322;  $p = 0.0134$ ) and lower median gestational age [IQR] (30 weeks [29 - 31] vs 29 weeks [27 - 31];  $p = 0.0148$ ) were significantly associated with BF abandonment (table 2).

When analyzing the characteristics and evolution in hospitalization (table 3), it was observed that in the group of infants who abandoned BF, there was a significantly longer median length of hospital stay [IQR] (54 days [44.5-67.5] vs. 66 days [46-92];  $p = 0.0016$ ), higher proportion of BPD (37.2% vs. 22.1%;  $p = 0.017$ ), higher proportion of surgery (10.3% vs. 2.1%;  $p = 0.009$ ), and higher proportion of oxygen requirement at discharge (14.1% vs. 5.0%;  $p = 0.019$ ). Finally, in infants who abandoned BF, a higher proportion of them required invasive mechanical ventilation ( $p = 0.006$ ).

**Table 1. Maternal socio-demographic characteristics, according to maintenance/abandonment of breastfeeding at one month of discharge. Hospital Base Valdivia, 2016 - 2022**

Maternal socio-demographic characteristics	Breastfeeding maintenance N = 140	Breastfeeding abandonment N = 78	p
Maternal age (years), mean (SD)	29.8 (6.1)	28.5 (6.5)	0.1427*
Marital status, n (%)			
Single	40 (28.6)	25 (32.9)	0.033 <sup>†</sup>
Domestic partner	62 (44.3)	42 (55.3)	
Married	38 (27.1)	9 (11.8)	
Maternal education level, n (%)			
Primary	10 (7.2)	12 (15.8)	0.060 <sup>†</sup>
High School	69 (50)	41 (53.9)	
Higher	59 (42.8)	23 (30.3)	
Occupation, n (%)			
Paid work	64 (50.8)	26 (36.6)	0.143 <sup>†</sup>
Housewife (unpaid work)	53 (42.1)	37 (52.1)	
Student	9 (7.1)	8 (11.3)	
Nationality, n (%)			
Chilean	135 (96.4)	75 (96.1)	0.593 <sup>‡</sup>
Foreigner	5 (3.6)	3 (3.9)	
Origin, n (%)			
Urban	92 (65.7)	50 (64.1)	0.811 <sup>†</sup>
Rural	48 (34.3)	28 (35.9)	
City, n (%)			
Valdivia	59 (42.1)	34 (43.6)	0.836 <sup>†</sup>
Other	81 (57.9)	44 (56.4)	

n: number; SD: standard deviation; \*Student's t-test; <sup>†</sup> $\chi^2$ ; <sup>‡</sup>Fisher exact test.

**Table 2. Characteristics of the newborn and delivery, according to abandonment/maintenance of breastfeeding at one month of discharge. Hospital Base Valdivia, 2016 - 2022**

Characteristics of the newborn and delivery	Breastfeeding maintenance N = 140	Breastfeeding abandonment N = 78	p
Sex, n (%)			
Female	72 (51.4)	36 (46.1)	0.455*
Male	68 (48.6)	42 (53.9)	
Birth weight (g), mean (SD)	1387 (360.4)	1264 (322)	0.0134 <sup>†</sup>
Gestational age (weeks) median [IQR]	30 [29-31]	29 [27-31]	0.0148 <sup>†</sup>
Adequacy (birth weight for gestational age), n (%)			
AGA	81 (57.9)	45 (57.7)	0.998*
SGA	45 (32.1)	25 (32.1)	
LGA	14 (10.0)	8 (10.2)	
Mode of delivery, n (%)			
Vaginal	30 (21.4)	17 (21.8)	0.950*
Cesarean section	110 (78.6)	61 (78.2)	
Parity, n (%)			
Primiparous	47 (35.6)	30 (38.5)	0.469*
Multiparous	93 (66.4)	48 (61.5)	
Apgar median [IQR]			
1 minute	7 [5-8]	6 [3-8]	0.0854 <sup>†</sup>
5 minutes	8 [7-9]	8 [6-9]	0.1251 <sup>†</sup>
IUGR, n (%)			
No	95 (68.8)	54 (71.1)	0.736*
Yes	43 (31.2)	22 (28.9)	

n: number; SD: standard deviation; IQR: Interquartile range; AGA: Adequate for gestational age; SGA: Small for gestational age; LGA: Large for gestational age.; IUGR: Intrauterine growth restriction; \* $\chi^2$ ; <sup>†</sup>Student's t-test; <sup>†</sup>Mann-Whitney U test.

**Table 3. Characteristics of hospitalization and evolution according to abandonment/maintenance of breastfeeding at one month of discharge. Hospital Base Valdivia, 2016 - 2022**

Characteristics of hospitalization	Breastfeeding maintenance N = 140	Breastfeeding abandonment N = 78	p
Admission hospitalization unit, n (%)			
ICU	17 (12.1)	9 (11.5)	0.895*
NICU	123 (87.9)	69 (88.5)	
Invasive Mechanical Ventilation (h)			
No	99 (70.7)	44 (56.4)	0.006*
up to 72 h	33 (23.6)	19 (24.4)	
more than 72	8 (7.7)	15 (19.2)	
Length of stay (days) median [IQR]	54 [44.5-67.5]	66 [46-92]	0.0016 <sup>†</sup>
Dysplasia Bronchopulmonary, n (%)			
No	109 (77.9)	49 (62.8)	0.017*
Yes	31 (22.1)	29 (37.2)	
Hyaline membrane disease, n (%)			
No	64 (45.7)	35 (44.9)	0.905*
Yes	76 (54.3)	43 (55.1)	
Surgery, n (%)			
No	137 (97.9)	70 (89.7)	0.009*
Yes	3 (2.1)	8 (10.3)	
Blood transfusion, n (%)			
No	80 (57.1)	34 (43.6)	0.055*
Yes	60 (42.9)	44 (56.4)	
Oxygen at discharge, n (%)			
No	133 (95.0)	67 (85.9)	0.019*
Yes	7 (5.0)	11 (14.1)	

n: number; ICU: Intermediate care unit; NICU: Neonatal intensive care unit; SD: standard deviation; IQR: Interquartile range; \* $\chi^2$ ; <sup>†</sup>Mann-Whitney U test.

Regarding professional interventions for the mother during hospitalization, it was observed that none of the interventions provided by the psychologist (globally or by type), BF counseling, or the education provided by the nursing professional were significantly associated with BF maintenance (table 4).

Finally, in the multivariate analysis, the only variable significantly associated with BF abandonment was maternal educational level (table 5). A statistically significant reduction in the probability of abandoning BF was estimated in mothers with higher education, with an adjusted OR = 0.30 (95%CI 0.11 - 0.85; p = 0.023).

**Table 4. Professional interventions during hospitalization according to abandonment/maintenance of breastfeeding at one month of discharge. Hospital Base Valdivia, 2016 - 2022**

Variable	Breastfeeding maintenance N = 140	Breastfeeding abandonment N = 78	p
Psychological intervention, n (%)			
No	23 (16.4)	13 (16.7)	0.964*
Yes	117 (83.6)	65 (83.3)	
Psychological intervention (mode), n (%)			
No follow-up	23 (16.4)	13 (16.7)	0.143*
Follow-up	39 (27.9)	31 (39.7)	
Referral	11 (7.9)	8 (10.3)	
Containment	63 (45.0)	22 (28.2)	
Treatment	4 (2.8)	4 (5.1)	
BF counseling, n (%)			
No	118 (84.3)	67 (85.9)	0.750*
Yes	22 (15.7)	11 (14.1)	
Educational program oriented to BF, n (%)			
No	77 (55.0)	48 (61.5)	0.479*
Yes	37 (26.4)	15 (19.2)	
At discharge (partial)	26 (18.6)	15 (19.2)	

n: number; BF: Breastfeeding; \* $\chi^2$ .

**Table 5. Multivariate analysis for breastfeeding abandonment at one month of discharge. Hospital Base Valdivia, 2016 - 2022**

Variable	OR adjusted	Confidence interval 95% (CI <sub>95%</sub> )	p
Marital status			
Single	Ref.		
Domestic partner	1.15	0.58 - 2.26	0.694
Married	0.44	0.17 - 1.13	0.089
Maternal education level			
Primary	Ref.		
High School	0.41	0.15 - 1.07	0.069
Higher	0.30	0.11 - 0.85	0.023
Gestational age (weeks)	0.87	0.73 - 1.03	0.095
Apgar 1 minute	1.01	0.88 - 1.15	0.942
Invasive Mechanical Ventilation (h)			
No	Ref.		
up to 72 h	1.08	0.51 - 2.28	0.847
more than 72 h	2.75	0.94 - 8.15	0.065

OR: Odds ratio.

## Discussion

This study explored the relationship between maternal-neonatal clinical and sociodemographic factors and BF status one month after hospital discharge. Of the sociodemographic factors, only lower educational level was independently associated with BF abandonment one month after discharge, but not age, marital status, or occupation. This result is consistent with that reported by the meta-analysis of 27 studies that analyzed maternal educational level, which estimated a relative risk summary of 1.68 (95%CI 1.35 - 2.08) of continuing BF at the highest levels of maternal education<sup>18</sup>. Thus, a lower maternal educational level is the second highest independent risk predictor of BF abandonment during the first 12 months of postnatal age (HR 1.42; 95%CI 1.13 - 1.79;  $p = 0.003$ )<sup>22</sup>.

Regarding maternal age, in contrast to our work, other studies mention that the higher the maternal age, the higher the proportion of BF at discharge<sup>19-21</sup>. In particular, it has been calculated that each additional year of the mother increases the probability (adjusted OR) of BF at discharge by 1.24 (95%CI 1.02 - 1.51)<sup>19</sup>. On the other hand, this study detected a bivariate association with marital status, highlighting the higher proportion of married women in the group that maintained BF at one month after discharge, a relationship that was later lost in the adjusted analysis. Being married is a condition that has been previously reported to be related to the BF process, either for a greater probability of initiating BF<sup>21,23</sup> or for its maintenance<sup>23</sup>. This is probably associated with more formal and permanent support than another couple condition such as being in a domestic partnership or not having a partner at all.

In terms of clinical factors, the type of delivery was not significantly associated with BF abandonment, despite the physiological impact of cesarean section on the initiation of BF<sup>24,25</sup>, which has been reported as a factor for late initiation<sup>26</sup>.

Besides, similar to the bivariate findings in our study, the longer duration of hospital stay has been highlighted as a factor that increases the risk of BF abandonment<sup>22</sup>, showing that infants who continue BF at discharge have 16 fewer days of hospitalization<sup>19</sup>. It has been calculated that a shorter stay reduces the risk of interrupting BF during the first 12 months of postnatal age (HR = 0.96; 95%CI 0.92 - 0.99;  $p = 0.021$ )<sup>22</sup>. Additionally, consistent with our bivariate analyses, lower birth weight<sup>20,27</sup> and longer duration of mechanical ventilation<sup>13,27</sup>, are significantly associated with BF abandonment.

According to this study, 88.1% of the infants included in the follow-up program for very low birth weight newborns were admitted to the NICU. The

complexity of the newborn's health situation, as well as the maternal conditions after birth and during hospitalization, are common determinants of the initiation and maintenance of BF. This is probably the reason why the proportion of exclusive BF at discharge is low. Although our study did not prove that maternal support actions, as well as actions focused on BF, influenced reducing BF abandonment one month after hospital discharge, it is necessary to emphasize the need for support during this process. Therefore, the support of professionals is crucial, not only emotionally, but also as facilitators in the interaction of the dyad in this unknown space that does not favor BF, since in other experiences it has been shown that the lack of supervision and support from health professionals interferes with the success of BF<sup>12,24,28</sup>.

Although our experience did not show that mothers who received education about BF achieved better outcomes in maintaining it one month after hospital discharge, the content and approach of this activity may not be enough to make an impact. A differentiated implementation of training according to maternal characteristics is likely required. In addition, it requires that the topic be approached in greater depth and not in an incidental manner. There is evidence that specific actions to support BF in this at-risk population reduce abandonment during hospitalization and at home; however, this requires sufficient tools and knowledge on this topic and knowledge of the particularities of each NB and family, considering the psychosocial and biological factors that may interfere with the BF process<sup>29</sup>. In contrast, the lack of BF support is one of the key reasons for early weaning according to mothers<sup>30</sup>, presenting poor BF technique and low milk production as the main challenges in the BF process, a problem that should be addressed by the health professional, not only in the hospital environment, making a post-discharge follow-up and support program necessary<sup>31</sup>. Therefore, it is described that the actions that promote BF and that have been successful are based on prolonged post-natal support with an educational program based on evidence<sup>31</sup>, bearing in mind that the support given to the dyad is considered a complex intervention, which implies the exchange of knowledge and guidance, providing qualified help, calm, and an increase in the mother's self-efficacy<sup>32</sup>.

The findings presented in this study should be evaluated and weighed with caution, as there are limitations and possible biases to be considered. In the first place, although this is a study in which a follow-up is constructed from admission to the hospital unit until one month after discharge, the data were obtained retrospectively from existing records. Therefore, there are factors not considered in the registry and lack of

control of measurements in variables that may be associated with BF abandonment after discharge, such as early initiation of milk expression, the use of skin-to-skin care, and the evaluation of self-efficacy<sup>33,34</sup>. These variables should be considered in future studies.

In addition, we worked with all available infants from the period 2016 to 2022 including the time of the SARS-CoV-2 pandemic which determined exceptional operating conditions that certainly affected the dynamics of work in the neonatal unit and some unavoidable access restrictions. Finally, external validity may be affected given that this is a study that collects information from a particular population that reflects the reality of a specific neonatology service and that does not necessarily broadly describe the rest of the facilities in the healthcare network given local operating conditions and characteristics of the reference population.

## Conclusions

This study has provided relevant information on the BF situation in a population of at-risk infants, even with the limitations mentioned above, proving that there are factors that make it possible to classify mother-child pairs in which formal support could be reinforced during hospitalization and at discharge to prolong BF after hospital discharge.

## Ethical Responsibilities

**Human Beings and animals protection:** Disclosure the authors state that the procedures were followed according to the Declaration of Helsinki and the World Medical Association regarding human experimentation developed for the medical community.

**Data confidentiality:** The authors state that they have followed the protocols of their Center and Local regulations on the publication of patient data.

**Rights to privacy and informed consent:** This study was approved by the respective Research Ethics Committee, which, according to the study's characteristics, has accepted the non-use of Informed Consent.

## Conflicts of Interest

Authors declare no conflict of interest regarding the present study.

## Financial Disclosure

Authors state that no economic support has been associated with the present study.

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