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Absence of breastfeeding on discharge from preterm infants: prevalence and associated factors

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ABSTRACT

Introduction: Several strategies focused on providing healthcare to premature children have been implemented. Among them, one finds breastfeeding. **Objective:** Investigating the prevalence of, and factors associated with, lack of premature newborn breastfeeding at hospital discharge. **Methods:** Cross-sectional study conducted with puerperal women and their preterm newborns in the public health network of Maceió, Brazil. Maternal information was obtained socioeconomic, obstetric, prenatal, and anthropometric data, through questionnaire application, whereas information about newborns was collected in their medical records (gestational age at birth, sex, delivery method (vaginal birth or cesarean section), weight, and length at birth, and Apgar scores in the 1st and 5th minute of life), as well as information about the practice of breastfeeding at hospital discharge time. Poisson regression analysis in a hierarchical model was carried out to identify factors associated with the outcome of interest. Results were expressed in Prevalence Ratio (PR) and respective 95% Confidence Intervals (95%CI). **Results:** 381 dyads were evaluated, 167 (43.8%) of them were not breastfeeding at hospital discharge time. Clinical complications observed in newborns (PR=2.20 95%CI 1.73-2.80), late postpartum contact between mother and child (PR=1.76 95%CI 1.34-2.31), low Apgar in the 1st minute of life (PR=1.44 95%CI 1.15-1.82), and small premature newborn (gestational age at birth <34 weeks) (PR=1.48 95%CI 1.18-1.84) were the factors associated with lack of breastfeeding. **Conclusion:** Lack of premature newborn breastfeeding at hospital discharge time was often observed in the current study and associated with birth-relevant factors.

Keywords: infant, premature; breastfeeding; cross-sectional studies.

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INTRODUCTION

Prematurity is one of the leading causes of neonatal morbidity and mortality[1]. It is estimated that annually about one million child deaths occur as a result of complications of preterm birth[1] and those children who survive often face long-term limitations, with impaired growth and development, learning disabilities, and hearing and vision problems[2].

In Brazil, in 2019, 271,116 premature births were recorded[3]. Faced with this reality, strategies have been implemented focusing on health care for premature children[2,4], where the practice of breastfeeding through direct breastfeeding, milked breast milk, or breast

milk coming from a human milk bank is considered one of the most beneficial health promotion actions[4].

According to the World Health Organization (WHO), breastfeeding should be the only source of food for children during the first six months of life, with continuation in a complementary manner until two years of age or older[5]. Among its many benefits for premature newborns, breast milk offers a range of immunological protection factors, being able to reduce the occurrence of allergies and other atopic diseases, bronchopulmonary dysplasia, retinopathy of prematurity, and necrotizing enterocolitis, the latter being one of the main causes of death in this public[6].

Regarding the factors associated with successful breastfeeding in preterm infants, research conducted at the hospital located in Canada that aimed to evaluate the factors associated with successful direct breastfeeding of preterm infants at hospital discharge identified that successful breastfeeding occurred in 64% of those evaluated, and high maternal age and direct breastfeeding at first oral feeding were the factors associated with successful direct breastfeeding at hospital discharge[7].

Although the numerous advantages of breastfeeding are globally recognized and there are actions aimed at promoting its practice[5], breastfeeding is directly influenced by aspects related to the physiological immaturity of premature infants, which may include inadequate sucking reflexes, as well as the need for hospitalization in neonatal care units, in addition to maternal influences, since premature birth may cause damage to lactogenesis, hindering the synthesis and ejection of breast milk[8]. Thus, prematurity is presented as one of the factors that influence the initiation and maintenance of breastfeeding, considering that the prevalence of exclusive lactation in this group is lower than that recommended by the competent bodies[9]. A study conducted with premature infants assisted by the Kangaroo Method in a public maternity hospital in the Northeast of Brazil revealed that 43.8% of children were not exclusively breastfeeding at hospital discharge and that at six months of age, only 14.4% of them were exclusively breastfeeding[9].

Considering the benefits of breast milk for preterm infants, it is relevant to carry out studies on this topic to contribute to actions aimed at the promotion, protection, and support of breastfeeding, especially in non-severe preterm infants. Therefore, the present study aims at identifying the prevalence and factors associated with the absence of breastfeeding at hospital discharge of preterm infants.

METHODS

A cross-sectional study was conducted from August 2016 to July 2017 in the maternity ward of the University Hospital located in the municipality of Maceió, State of Alagoas, approved by the Research Ethics Committee of the Federal University of Alagoas, under opinion number 1,568,544.

The Maceió University Hospital is a hospital reference in tertiary care focused on high-risk pregnancies, providing service to the mother-child binomial, and has a neonatal intensive care unit.

The sample size calculation was generated using the Epi Info version 7.0 program, and by considering a prevalence of 5.5% of breastfeeding failure in the premature postpartum period10, a confidence level of 99% (α=0.01), a sampling error of 3%, and 384 dyads (puerperal and newborn) were required to be assessed.

Newborns of single fetuses, assisted in the referred maternity hospital, with gestational age less than 37 weeks at the time of delivery[11] and who were fit to be breastfed, whose mothers did not present neurological problems and/or any diseases that contraindicated the practice of breastfeeding and who were in a rooming-in unit, were included in the research. Puerperal or newborns in serious clinical condition (malformations, genetic syndromes, hemorrhages, serious infections, sepsis, among others), as well as puerperal with any condition that would make it difficult to obtain the answers at the time of the interview, were not included.

The selection of participants for the research was carried out randomly, based on the analysis in a record book located in the nursing sector of the maternity ward. Soon after the identification, properly trained researchers went to the obstetric wards where, after the invitation for voluntary participation in the research and signing of the consent form, questions were asked in the format of an interview directed to puerperal, by using a standardized form, as well as collecting complementary medical data in the patient's medical records. Thus, information and respective stratifications were obtained on age (≤19 years/20-34 years/≥35 years, as cutoff points for teenage pregnancy, young adult and old age, respectively); self-reported color or race (stratified into black or non-black); income (<1 minimum wage/month or ≥1 minimum wage/month; per base minimum wage of R$880.00, in the year 2016); education (≤4 years of study or >4 years of study, considering the stratification for functional illiteracy); marital status (stable union or not) and occupation (working outside the home or at home); the obstetric information on abortion history, number of pregnancies (nulliparous, if delivery corresponds to the first child or multiparous, if more than one child) and maternal complications (hemorrhage, urinary tract infection, presence of chronic or gestational period-specific diseases, among others); lifestyle data (smoking and/or drinking habits); prenatal care (<6 consultations or ≥6 consultations); and, regarding the period of prenatal initiation (early, if in 1st trimester or late, if ≥2nd trimester)[12] and anthropometric data, the data described in the pregnant woman's card were obtained (pregestational weight, height, and last gestational weight data).

The maternal anthropometric evaluation was performed by calculating the gestational body mass index (BMI), considering the cutoff points determined by Atalah et al.[13], and was categorized as underweight, eutrophic, overweight, and obese according to gestational age. The evaluation of weight gain during pregnancy followed the recommendations of the Institute of Medicine (IOM) of

the United States of America[14], classified as insufficient, adequate, or excessive weight gain.

Then, newborn data were collected from hospital records [gestational age at delivery, gender of the child, delivery route (vaginal or cesarean), birth weight and length at birth, Apgar scores on the 1st and 5th minutes of life, presence of intercurrences during delivery or birth, and time between birth and the child's contact with its mother after birth].

As for prematurity, newborns were categorized[15] into late preterm, those born between 34 weeks and 0 days and 36 weeks and 6 days; moderately preterm, those born between 32 weeks and 0 days and 33 weeks and 6 days; very preterm, those born between 28 weeks and 0 days and 31 weeks and 6 days; and extreme preterm, those born less than 28 weeks and 0 days. Additionally, stratification was performed according to gestational age at birth into late preterm (≥34 gestational weeks) or non- late preterm, encompassing those moderately preterm, very preterm, and extreme preterm (<34 gestational weeks)[15].

To evaluate birth weight according to gestational age, the Intergrowth-21st[16,17] curves were used, considering cut-off points in percentiles, with newborns with weight below the 10th percentile classified as small for gestational age (SGA); those between the 10th and 90th percentiles, classified as adequate for gestational age (AGA), and those with weight above the 90th percentile, as large for gestational age (LGA). The same reference standard[16,17] with its cutoff points were also used for birth length classification, as low, adequate, or high. The newborns were also evaluated according to the Apgar scores at the 1st and 5th minutes of life, where values <7 characterized low vitality at birth[18].

Neonatal complications were considered to be those described in the child's medical record, such as those related to the hematological, respiratory, central nervous, cardiovascular, and gastrointestinal tract systems, among others. In addition, late postpartum contact between mother and child was considered to be the time interval greater than 1 hour after delivery[19].

Puerperal were also asked about the establishment of breastfeeding, which is defined as the offer of breast milk, regardless of the offer of any other type of liquid food or water to the newborn[12].

The data were analyzed using the Stata software version 13.0, using Poisson regression with robust variance estimation in a hierarchical model, aiming at identifying factors associated with the absence of breastfeeding at hospital discharge (outcome variable) in preterm infants. First, univariate analyses were performed where the independent variables (maternal and newborn data) that pointed to a statistical association with $p<0.20$ were chosen to constitute the multivariate regression model. The analysis was carried out from the creation of a conceptual model on factors related to the absence of breastfeeding at hospital discharge of preterm infants (outcome variable) adapted from Boccolini et al.[20], considering three hierarchical levels according to Figure 1. The variables of the first hierarchical level were evaluated together, where those with significance greater than or equal to 20% were progressively excluded. Then, the variables of the second hierarchical level were inserted into the model and operated in the same way, with the successive exclusion of the variables of this level with a value of $p\geq0.20$. Therefore, all hierarchical levels were analyzed. To control for possible confounding factors, variables with p-values <0.20 were kept in the models at each hierarchical level.

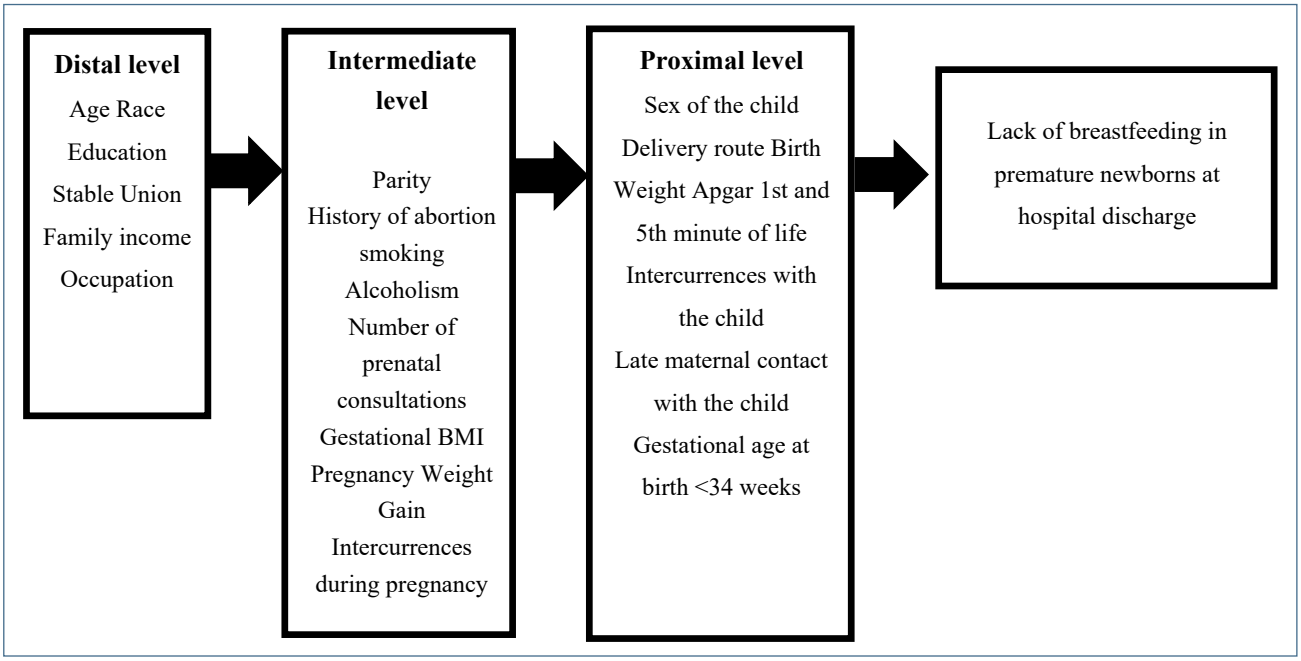

Figure 1: Hierarchical conceptual model targeting factors associated with the absence of breastfeeding at hospital discharge of premature newborns. Adapted from Bocollini et al. 2015[20].

The magnitude of the associations between the outcome variable and the independent variables were expressed as prevalence ratio (PR) and their respective 95% confidence intervals (95%CI), considering a p-value <0.05 as significant. Additionally, a Student t-test was performed to compare the mean days of hospitalization between breastfed versus non-breastfed children.

RESULTS

A total of 381 dyads were included in this research. As shown in Table 1, regarding maternal data, 29.9% of postpartum women were adolescents and 12.1% were aged ≥ 35 years, with the majority aged between 20 and 34 years; 10.0% declared themselves black; 6.8% had low education; 22.6% denied stable

Table 1: Socioeconomic characterization, lifestyle, gestational and perinatal data of puerperal and their newborns assisted in a public maternity hospital in Maceió, Brazil, 2016/2017.

Variables	Total (N=381)	Total (%)	Variavles	Total (N=381)	Total (%)
Maternal Age Group (years)			Maternal gestational weight gain		
<19	114	29.9	Insufficient	158	44.4
19-34	221	58.0	Suitable	111	31.2
≥35	46	12.1	Excessive	87	24.4
Maternal Black			No information	25	
Yes	38	10	Maternal gestational BMI		
No	341	90	Low weight	103	28.6
No information	2		Eutrophy	101	28.1
Maternal education (in years)			Overweight	79	21.9
<4	26	6.8	Obesity	77	21.4
≥4	354	93.2	No information	21	
No information	1		Sex of the child		
Stable Union			Female	174	45.7
Sim	295	77.4	Male	207	54.3
Não	86	22.6	Delivery route		
Monthly family income (R$)			Cesarean section	229	60.1
<1 minimum wage	102	27.2	Vaginal	152	39.9
≥1 minimum wage	273	72.8	Child's weight at birth		
No information	6		SGA	37	10.0
Maternal occupation			AGA	262	70.4
Outside the home	64	16.8	LGA	73	19.6
From Home	317	83.2	No information	9	
Parity			Apgar scored at 1st minute of life		
Nulliparous	179	47.0	≥7	299	82.8
Multiparous	202	53.0	<7	62	17.2
Abortion history			No information	20	
Yes	79	20.7	Apgar scored at the 5th minute of life		
No	302	79.3	≥7	335	93.6
Maternal smoking			<7	23	6.4
Yes	34	8.9	No information	23	
No	347	91.1	Intercurrences with the child		
Maternal Alcoholism			Yes	154	40.4
Yes	51	13.4	No	227	59.6
No	330	86.6	Late maternal contact with the child		
Late initiation of prenatal Care			Yes	204	53.5
Yes	122	32.6	No	177	46.5
No	252	67.4			
No information	7				
Number of prenatal visits					
<6 queries	194	51.0			
≥6 appointments	186	49.0			
No information	1				

union; 27.2% had monthly family income below 1 minimum wage, and 83.2% did not work outside the home. There was a higher occurrence of multiparous women (53.0%); no history of abortion (79.3%); insufficient number of prenatal visits (51.0%), and beginning of prenatal care in the first trimester of pregnancy (67.4%). Most mothers denied smoking (91.1%) or drinking (86,6%) (86.6%) during pregnancy. Regarding nutritional status, 44.4% had insufficient weight gain during pregnancy and 24.4% had excessive weight gain, with a high frequency of gestational overweight (21.9% overweight and 21.4% obese).

The mean gestational age at birth was 33.58±2.30 weeks (minimum 23 weeks and maximum 36 weeks), and the newborns, according to the prematurity categorization, were classified as late preterm (245; 64.3%); moderate preterm (74; 19.4%); very preterm (53; 13.9%) or extreme preterm (9; 2.4%).

There was a higher frequency of male children (54.3%); born by cesarean delivery (60.1%); lower frequency of infants born with SGA (10.0%) compared to LGA (19.6%); 17.2% and 6.4% had low Apgar scores on the 1st and 5th minutes of life, respectively; 40.4% of the newborns had at least one neonatal complication, and 53.5% had late contact with their mothers after birth. The mean lengths of hospital stay between breastfed and non-breastfed infants were 3.34±3.12 days and 4.05±4.23 days (p=0.122), respectively.

It was identified that 43.8% (167/381) of puerperal were not breastfeeding at hospital discharge, and the factors associated with the absence of this practice, after adjusted analysis, were intercurrences with the newborn (PR=2.20 95%CI 1.73-2.80, p<0,001]; late maternal contact with the newborn in the postpartum period (PR=1.76 95%CI 1.34-2.31, p<0,001), low Apgar score at the first minute of life (PR=1.44 95%CI 1.15-1.82, p=0.001) and having gestational age at birth below 34 weeks (PR=1.48 95%CI 1.18-1.84, p=0,001) (Table 2).

Table 2: Association between the absence of breastfeeding at hospital discharge of preterm infants and independent variables in a public maternity hospital in Maceió, Brazil 2016/2017.

Variables	Breastfeeding		Gross RP (CI95%)	p*	Adjusted RP (CI95%)	p**
	Yes n=214 (56.2%)	No n=167 (43.8%)				
Distal level						
Maternal Age						
≤19	69 (32.2)	45 (26.9)	0.86 (0.66-1.12)	0.275		
20-34	124 (57.94)	97 (58.1)	1.00			
≥ 35	21 (9.8)	24 (14.4)	1.25 (0.92-1.69)	0.141		
No information		1				
Black Race						
Yes	23 (10.7)	15 (8.9)	0.89 (0.59-1.34)	0.584		
No	190 (88.8)	151 (90.4)	1.00			
No information	1	1				
Maternal education						
≤4 years of study	16 (7.5)	10 (6.0)	0.87 (0.52-1.44)	0.594		
>4 years of study	198 (92.5)	156 (93.4)	1.00			
No information		1				
Stable Union						
No	51 (23.8)	35 (21.0)	0.90 (0.68-1.20)	0.515		
Yes	163 (76.2)	132 (79.0)	1.00			
Family Income						
≤1 minimum wage	54 (25.2)	48 (28.7)	1.11 (0.87- 1.43)	0.383		
>1 minimum wage	158 (73.8)	115 (68.9)	1.00			
No information	2	4				
Maternal occupation						
Outside the home	36 (16.8)	28 (16.8)	0.99 (0.73-1.35)	0.988		
From Home	178 (83.2)	139 (83.2)	1.00			

Continue...

Table 2: Continuation

Variables	Breastfeeding		Gross RP (CI95%)	p*	Adjusted RP (CI95%)	p**
	Yes n=214 (56.2%)	No n=167 (43.8%)				
Intermediate level						
Parity						
Nulliparous	103 (48.1)	76 (45.5)	0.94 (0.74-1.18)	0.612		
Multiparous	111 (51.9)	91 (54.5)	1.00			
Abortion history						
Yes	38 (17.8)	41 (24.6)	1.24 (0.96- 1.59)	0.088	1.24 (0.98-1.58)	0.070
No	176 (82.2)	126 (75.4)	1.00			
Smoking						
Yes	17 (8.0)	17 (10.2)	1.15 (0.80- 1.65)	0.425		
No	197 (92.0)	150 (89.8)	1.00			
Alcoholism						
Yes	24 (11.2)	27 (16.2)	1.24 (0.93-1.66)	0.132	0.91 (0.67-1.22)	0.544
No	190 (88.8)	140 (83.8)	1.00			
Number of prenatal consultations						
<6	104 (48.6)	90 (53.9)	1.13 (0.90-1.42)	0.279		
≥6	110 (51.4)	76 (45.5)	1.00			
No information		1				
Late initiation of prenatal care						
Yes	139 (64.9)	113 (67.7)	0.95 (0.74-1.21)	0.688		
No	70 (32.7)	52 (31.1)	1.00			
No information	5	2				
Gestational BMI						
Low weight	54 (25.2)	47 (28.1)	0.92 (0.70-1.21)	0.586		
Suitable	61 (28.5)	42 (25.1)	1.00			
Obesity	41 (19.2)	36 (21.5)	1.11 (0.84-1.46)	0.450		
Overweight	49 (22.9)	30 (18.0)	0.85 (0.62-1.16)	0.319		
No information	9	12				
Pregnancy Weight Gain						
Insufficient	84 (39.2)	74 (44.3)	1.14 (0.90-1.44)			
Suitable	64 (29.9)	46 (27.5)	1.00			
Excessive	53 (24.8)	35 (20.9)	0.88 (0.66-1.18)			
No information	13	12				
Intercurrences during Pregnancy						
Yes	109 (50.9)	101 (60.5)	1.24 (0.98-1.57)	0.067	0.94 (0.74-1.19)	
No	105 (49.1)	66 (39.5)	1.00			
Proximal level						
Sex of the child						
Male	96 (44.9)	78 (46.7)	0.95 (0.76-1.20)	0.720		
Female	118 (55.1)	89 (53.3)	1.00			
Delivery route						
Cesarean section	126 (58.9)	103 (61.7)	1.06 (0.84-1.35)	0.583		
Vaginal	88 (41.1)	64 (38.3)	1.00			
Birth Weight						
SGA	152 (71.0)	110 (65.9)	1.45 (1.09-1.94)	0.010	1.32 (0.98-1.76)	0.061
AGA	44 (20.6)	29 (17.4)	1.00			
LGA	15 (7.0)	22 (13.2)	0.89 (0.65-1.22)	0.505		
No information	3	6				

Continue...

Table 2: Continuation

Variables	Breastfeeding		Gross RP (CI95%)	p*	Adjusted RP (CI95%)	p**
	Yes n=214 (56.2%)	No n=167 (43.8%)				
Apgar scored at the 1st minute of life						
<7	18 (8.4)	44 (26.3)	1.96 (1.57-2.44)	<0.001	1.44 (1.15-1.82)	0.001
≥7	191 (89.3)	108 (64.7)	1.00			
No information	5	15				
Apgar scored at the 5th minute of life						
<7	2 (0.9)	21 (12.6)	2.40 (1.99-2.90)	<0.001	1.24 (0.93-1.66)	0.127
≥7	208 (97.2)	127 (76.0)	1.00			
No information	4	19				
Intercurrences with the child						
Yes	51 (23.8)	103 (61.7)	2.37 (1.87-3.00)	<0.001	2.20 (1.73-2.80)	<0.001
No	163 (76.2)	64 (38.3)				
Late maternal contact with the child in the postpartum period						
Yes	83 (38.8)	121 (72.5)	2.28 (1.73-3.00)	<0.001	1.76 (1.34-2.31)	<0.001
No	131 (61.2)	46 (27.5)	1.00			
Premature not late						
Yes	83	52	1.80 (1.45-2.25)	<0.001	1.48 (1.18-1.84)	<0.001
No	83	161	1.00			

*Bivariate Poisson regression. **Multivariate Poisson regression test, considering p<0.05 as significant. Adjusted at the intermediate level for abortion history, maternal alcoholism, and pregnancy intercurrence and the proximal level for late infant contact, infant intercurrence, 1st and 5th minute Apgar scores, and small preterm infant. PR: Prevalence ratio; CI95%: 95% Confidence Interval; SGA: small for gestational age; AGA: adequate for gestational age; LGA: large for gestational age.

DISCUSSION

Despite the knowledge about the benefits of breast milk for preterm infants[8], as well as the increase in preterm births in recent years[21], there is still a scarcity of studies in the literature on this topic, especially those focused on non-severe preterm infants hospitalized in maternity hospitals. Because of this reality, the present study found that almost half (43.8%) of children born prematurely were not receiving breast milk at hospital discharge, and this absence was associated with birth-related factors, such as clinical complications with the child at birth, low vitality at the 1st minute of life, late contact, after 1 hour, between the puerperal mother and the newborn after birth, and being small premature (with gestational age < 34 weeks).

Similar to the findings of this study, a study conducted in Taiwan[22] found that at hospital discharge 47.2% of preterm infants were not being fed human milk. Another study conducted in neonatal intensive care units in Milan, Italy, found that 44.0% of children born preterm were not breastfeeding at hospital discharge[23]. In Brazil, a survey conducted with newborns with gestational age less than 33 weeks found that at hospital discharge 28.6% of children were not being breastfed[24].

Furthermore, a study conducted in neonatal intensive care units found that only 6% of hospitalized children were discharged with exclusive breastfeeding[25]. A study similar to this research, however, conducted with preterm infants discharged from neonatal units showed that in 2013, only 49% of preterm infants were exclusively breastfeeding[26].

In Brazil, the initiative *Hospital Amigo da Criança*[27], the *Estratégia Amamenta and Alimenta Brasil*[28] and, specifically for low birth weight and premature newborns, the Kangaroo Method are favorable measures adopted to favor the implementation and elevation of breastfeeding rates (facing the early interruption of breastfeeding). The Kangaroo Method was developed to strengthen breastfeeding during hospitalization and after hospital discharge, aiming at reducing infant mortality, the risk of sepsis, hypothermia, hypoglycemia, and readmission to hospital, as well as a higher probability of exclusive breastfeeding until the 4th month of life of the child[27]. Still in this context, the Brazilian Network of Human Milk Banks[29], as the largest worldwide, deserves to be highlighted, despite the constant facing of difficulties related to the low frequency of donations. It is necessary to mention that the hospital where the study was conducted has the Kangaroo Method and Human Milk Bank strategies.

Lactation-oriented strategies are known to have a positive impact on the initiation and duration of breastfeeding since they contribute to individual and social determinants (return to the labor market, taboos, and beliefs, difficulties and marketing of breast milk substitutes) and are articulated with the different levels of health care[4].

According to the Tracking progress for breastfeeding policies and programs: global breastfeeding scorecard 2017, global breastfeeding rates can be increased by up to 50% of actions are implemented that include funding, paid family leaves, lactation at work, and increased linkage between health care facilities and the community[30]. Thus, considering the early interruption of breastfeeding as a public health problem, it becomes necessary to identify the risk factors that generate its interruption and, consequently, encourage policies aimed at its promotion, since the literature points to the positive impact of these actions on the promotion, support, and reduction of early interruption of breastfeeding[27-30].

In this scenario, despite the increase in recent years of public policies to encourage breastfeeding, it is verified in a historical overview the difficulties related to the rise of national rates related to breastfeeding[31]. Between 2006 and 2013, a reduction in the prevalence of breastfeeding from 56.3% to 51.4% was verified, and despite the lack of data related to prematurity, it is estimated that breastfeeding rates are even lower in those born prematurely when compared to term birth[8]. Furthermore, preliminary data from the National Study of Infant Food and Nutrition (ENANI-2020) describes that 60% of children under 4 months in Brazil are exclusively breastfed, where the northeast region of the country has the lowest prevalence (55.8%) and the southeast region the highest (63.5%)[32].

Physiological conditions involving lower muscle strength, with insufficient coordination of sucking, breathing, and swallowing are limitations usually presented by the premature[8], especially the premature born with lower gestational age, known as "little premature", as seen in this study. In addition, according to the results observed in the present study, the occurrence of clinical complications at birth, low vitality at the 1st minute of life, and late mother-child contact in the postpartum period - these variables were included in the proximal level of analysis - were factors that were associated with the absence of breastfeeding at hospital discharge. These variables possibly interrelate as cause and effect, favoring a higher risk of morbidity and mortality in premature infants[33] and also a greater difficulty in implementing breastfeeding in the first hour of life. Similar to the findings of this study, prospective research conducted in Denmark found that late initiation of milking (48 hours postpartum) was associated with failure of exclusive breastfeeding at hospital discharge[34], with the method of the newborn's first oral feeding and early skin-to-skin contact is directly related to breastfeeding success in preterm infants[7].

In this sense, neonatal care, in an attempt to strengthen the mother-child bond and adequately establish lactation before hospital discharge, may be actions that make a difference in the success of breastfeeding in children born full-term and premature[35]. Furthermore, intensive supportive interventions aimed at skin-to-skin contact and initiation of breastfeeding in the first hour of life have proven effective[36], while the late initiation of lactation not only prevents the child from receiving the characteristics of colostrum but also anticipates the early introduction of other foods[37]. This statement applies mainly to premature infants born at less than 34 weeks of gestation, where the inadequate intake of breast milk contributes to inadequate weight gain, leading to a likely supplementation with formulas and early weaning from breastfeeding[16].

Additionally, despite the lack of association with the outcome studied in this research, other variables are already well documented in the literature as to their influences on the practice of breastfeeding, such as those of a socioeconomic, clinical, nutritional, and prenatal nature, among others[21].

Thus, the fact that more than half (51%, and 53.9% of those who were not breastfeeding) of the assessed mothers reported a reduced number of prenatal consultations should be highlighted in this study. It is known that excellent prenatal care is an instrument for preventing risks associated with pregnancy and the neonatal period, since through this care, risk situations are identified for both mothers and their children, which favors the reduction in the occurrence of morbidity and mortality, besides being an opportune moment for knowledge and awareness of puerperal women about the importance of breastfeeding[38].

Additionally, the cesarean delivery route, with a prevalence of 60.1% in this study, generates greater maternal discomfort, which can lead to difficulties in maintaining close contact with the child in the first hours of life and subsequent days[39]. In addition, after this type of delivery, there is a delay in the hormonal release of oxytocin for the physiological preparation for the beginning of breastfeeding, impairing the synthesis and ejection of milk, a factor that can also be influenced by the maternal overweight[40], that was present in 43.3% of the mothers in this study, despite the absence of association of this variable with the practice of breastfeeding.

Furthermore, the results of this study can serve as subsidies for the promotion of public health policies directed at this public and in the management of health services and direct assistance to the mother-child binomial, beginning in the prenatal period and extending until hospital discharge.

Since this was a cross-sectional study, only the conditions that interfere in the practice of breastfeeding at hospital discharge were observed, with no follow-up after this period. Furthermore, it is important to mention as limitations the non-identification and exploration of some other variables that could interfere with the practice of breastfeeding, such as length of hospital stay, time to initiation of breastfeeding and/or breastfeeding, the previous maternal experience of breastfeeding, and presence of difficulties for breastfeeding in the hospital.

In this study, we concluded that the prevalence of absence of breastfeeding at hospital discharge of premature newborns was high, being associated with late mother-child contact in the

postpartum period, child complications at birth, low vitality of the child in the first minute of life, and gestational age at birth below 34 weeks. Further studies are important to better understand the factors that may interfere with this practice, as well as greater encouragement and care for mothers of preterm infants may be paths to greater effectiveness in the practice of breastfeeding in this group.

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