

# BREASTFEEDING PREMATURE BABIES: CHARACTERIZATION OF THE MOTHER-CHILD BINOMIAL AND MATERNAL SELF-EFFICACY

*Amamentação em prematuros: caracterização do binômio mãe-filho e autoeficácia materna*

*Amamantamiento de prematuros: caracterización del binomio madre-hijo y la autoeficacia materna*

Original Article

## ABSTRACT

**Objective:** To analyse breastfeeding in premature babies, relating the characteristics of the mother-child binomial and maternal self-efficacy. **Methods:** Cross-sectional, descriptive, and exploratory study, with quantitative approach, in a public maternity hospital in the state of Piauí, Brazil, with 21 mothers and their children admitted to a Neonatal Intermediate Care Unit. A questionnaire on the maternal characterization, a checklist for assessment of the breastfeeding technique, and the *Breastfeeding Self-Efficacy Scale - Short Form* were applied. **Results:** Of the mothers, 10 (47.6%) were teenagers, 11 (52.4%) single, 10 (47.6%) with low education level, 10 (47.6%) with low income, 12 (57%) had no employment bond, 15 (71.4%) resided in the countryside of the state, 13 (61.9%) had a caesarean section, 11 (52.4%) had a previous pregnancy, 12 (57.1%) were multiparous, 11 (52.4%) had experience in breastfeeding, 12 (57.1%) planned the pregnancy, 16 (72.5%) had prenatal care with less than six visits, without any diagnosis of diseases, and 13 (81.3%) did not receive guidance about breastfeeding. Regarding the newborns, 18 (85.7%) weighed less than 1,500 kg at birth, 10 (47.6%) were fed with mixed/partial maternal breastfeeding, 16 (76.2%) had already used the orogastric feeding tube, 8 (66.7%) had latch difficulties, 7 (58.3%) poor suction, 8 (66.7%) disorganized swallowing, 10 (83.3%) reduced alertness, 9 (75.5%) had short length of feeding, 8 (66.6%) with improper positioning, and 13 (61.9%) had high efficacy in breastfeeding. **Conclusion:** The mothers showed high efficacy in breastfeeding their premature children. Considering the breastfeeding technique, however, this one was ineffective.

**Descriptors:** Breastfeeding; Premature; Mothers; Self Efficacy; Nursing.

## RESUMO

**Objetivo:** Analisar a amamentação em prematuros relacionando as características do binômio mãe-filho e a autoeficácia materna. **Métodos:** Estudo do tipo transversal, descritivo, exploratório, com abordagem quantitativa, em uma maternidade pública do estado do Piauí, com 21 mães e seus filhos internados na Unidade de Cuidados Intermediários Neonatal. Aplicou-se um questionário sobre a caracterização materna, um check-list para avaliar a técnica da amamentação e a escala *Breastfeeding Self-Efficacy Scale - Short Form*. **Resultados:** 10 (47,6%) eram adolescentes, 11 (52,4%) solteiras, 10 (47,6%) com baixo nível de escolaridade, 10 (47,6%) com renda baixa, 12 (57%) não possuíam vínculo empregatício, 15 (71,4%) residiam no interior do estado, 13 (61,9%) apresentaram partos cesarianos, 11 (52,4%) eram multigestas, 12 eram (57,1%) multiparas, 11 (52,4%) tiveram experiência em amamentar, 12 (57,1%) planejaram a gravidez, 16 (72,5%) realizaram o pré-natal com menos de seis consultas e não foram diagnosticadas doenças durante o pré-natal e 13 (81,3%) não receberam orientações sobre o aleitamento materno. Quanto os recém-nascidos, 18 (85,7%) nasceram com peso inferior a 1500 kg, 10 (47,6%) alimentavam-se com aleitamento materno misto/parcial, 16 (76,2%) já haviam feito uso de sonda orogástrica

Antonia Mauryane Lopes<sup>(1)</sup>  
Grazielle Roberta Freitas da  
Silva<sup>(1)</sup>  
Silvana Santiago da Rocha<sup>(1)</sup>  
Fernanda Valéria Silva Dantas  
Avelino<sup>(1)</sup>  
Lorena Sousa Soares<sup>(2)</sup>

1) Federal University of Piauí  
(Universidade Federal do Piauí - UFPI) -  
Teresina (PI) - Brazil

2) Federal University of Piauí  
(Universidade Federal do Piauí) - UFPI -  
Florianópolis (PI) - Brazil

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para oferta do leite, 8 (66,7%) tinham dificuldade da pega, 7 (58,3%) sucção débil, 8 (66,7%) deglutição desorganizada, 10 (83,3%) vigília prejudicada, 9 (75,5%) tinham pouca duração da mamada, 8 (66,6%) com posicionamento desorganizado e 13 (61,9%) das mães possuíam alta eficácia em amamentar. **Conclusão:** As mães do estudo mostraram-se com alta eficácia em amamentar seus filhos prematuros. Entretanto, na observação da técnica da mamada, esta se apresentou ineficaz.

**Descritores:** Amamentação; Prematuro; Mães; Autoeficácia; Enfermagem.

## RESUMEN

**Objetivo:** Analizar el amamantamiento de prematuros relacionando las características del binomio madre-hijo y la autoeficacia materna. **Métodos:** Estudio del tipo transversal, descriptivo, exploratorio de abordaje cuantitativo en una maternidad pública del estado de Piauí con 21 madres y sus hijos ingresados en la Unidad de Cuidados Intermediarios Neonatal. Se aplicó un cuestionario sobre la caracterización materna, un check-list para evaluar la técnica de amamantamiento y la escala Breastfeeding Self-Efficacy - Short Form. **Resultados:** 10 (47,6%) eran adolescentes, 11 (52,4%) solteras, 10 (47,6%) con bajo nivel de escolaridad, 10 (47,6%) con baja renta, 12 (57%) no tenían vínculo laboral, 15 (71,4%) vivían en los pueblos del estado, 13 (61,9%) tuvieron cesáreas, 11 (52,4%) eran multigestas, 12 eran (57,1%) multiparas, 11 (52,4%) tuvieron la experiencia de amamentar, 12 (57,1%) habían planeado el embarazo, 16 (72,5%) realizaron el prenatal con menos de seis consultas sin diagnóstico de enfermedades y 13 (81,3%) no recibieron las orientaciones del amamantamiento materno. Respecto a los recién-nacidos, 18 (85,7%) nacieron con el peso abajo de 1500 kg, 10 (47,6%) se alimentaban de la leche materna mixta/parcial, 16 (76,2%) ya habían usado la sonda orogastrica para la oferta de la leche, 8 (66,7%) tenían dificultad de pega al seno, 7 (58,3%) tenían succión débil, 8 (66,7%) deglución desorganizada, 10 (83,3%) vigilia perjudicada, 9 (75,5%) presentaron corta duración de la mamada, 8 (66,6%) tenían posición desorganizada y 13 (61,9%) madres tenían elevada eficacia de amamantamiento. **Conclusión:** Las madres del estudio presentaron elevada eficacia de amamentar sus hijos prematuros. Sin embargo, en la observación de la técnica de la mamada, la misma no se presentó eficaz.

**Descriptor:** Lactancia Materna; Prematuro; Madres; Autoeficacia; Enfermería.

## INTRODUCTION

Breastfeeding as a social practice has gone through several changes over time due to the benefits in the medium and long term. It appears as a strategic public policy action that has influence on the family and physical, biological, psychological, cultural and social aspects, in addition to having a strong impact on child growth and development.

Exclusive breastfeeding (EB) is a form of breastfeeding in which the child receives only breastmilk or expressed breastmilk and no other liquids, with the exception of medicines, syrups and vitamins. It is of utmost significance as it meets all the nutritional and immunological needs of the newborn<sup>(1)</sup>.

In view of these considerations, exclusive breastfeeding is recommended up to six months of age, with continued breastfeeding along with complementary foods up to two years age. Although there is consensus that EB provides several benefits, being praised and encouraged by promotion programs, the prevalence is still unsatisfactory. This could be seen in major Brazilian cities<sup>(2)</sup> and the Federal District in 2011, when the prevalence of exclusive breastfeeding was 52.5% in children younger than three months of age and 25.4% among children aged three to six months. Another study showed that the lower prevalence is found in male babies and 20-year-old mothers with no education and working outside the home<sup>(1)</sup>.

A retrospective and analytical study that assessed the prevalence of exclusive breastfeeding among very low birth weight preterm infants showed that breastfeeding was prevalent in 90% of children, 50% of which were exclusively breastfed at discharge; however, 51% were weaned before they reached sixth months of age<sup>(3)</sup>. It should be taken into account that breastfeeding preterm infants is a challenging task that should be encouraged and performed together with the support from the mother-child binomial. In the state of Piauí, a study to assess breastfeeding (BF) in 1,963 children under the age of one year in 45 municipalities revealed that 80.23% of the children were being breastfed on the day of the survey. Additionally, 16% of the sample was likely to be exclusively breastfed and 58% was likely to be breastfed at 361 days<sup>(4)</sup>.

These values - although they may seem exciting when compared to the older data on EB - are still far below the levels recommended by the World Health Organization, given that cases of failure and early cessation of breastfeeding are still frequent. Breastfeeding, the sooner it is initiated and maintained, acts as a protective factor against morbidity and mortality<sup>(5)</sup>.

Breastfeeding is characterized as a natural and inexpensive food rich in nutrients. Yet, evidence has shown that breastmilk, given the peculiarities in its nutritional composition, is undoubtedly the food that ensures proper growth and development of newborns, particularly preterm infants<sup>(1)</sup>.

In this sense, breastfeeding in preterm infants is still a challenge due to factors that are linked to prematurity, such as immature nervous system, impaired sucking/swallowing reflex, and difficulty to stay alert for long. The

presence of the aforementioned mechanisms may hinder the early initiation of breastfeeding and thus cause a low rate of success in breastfeeding preterm infants, particularly in neonatal intensive care units<sup>(6)</sup>.

Breastfeeding preterm infants and maternal breastfeeding self-efficacy are factors that are associated and therefore become essential for the detection of the problem and support for possible formulation of strategies that can assist the promotion and maintenance of breastfeeding, particularly in preterm infants. In this context, it is understood that this study is relevant and of great importance, aiming to analyze breastfeeding in preterm infants, relating the characteristics of the mother-child binomial and maternal self-efficacy.

## METHODS

Quantitative, cross-sectional, descriptive, exploratory study conducted at a public maternity hospital in the state of Piauí in the period from July to August 2013.

It is a public maternity hospital that is part of Brazil's National Health System, also known as the Unified Health System (*Sistema Único de Saúde - SUS*), located in the Ilhotas neighborhood, in the south of the city of Teresina, capital of Piauí. The institution is a reference in the care of local users, neighboring municipalities and the state, certified by the Ministry of Health in 2014 as a national reference in the care of preterm babies through the Kangaroo Method. It is considered the largest maternity hospital in the state, responsible for 63% of deliveries, presenting an average of 1,200 admissions per month<sup>(7)</sup>. Its structure has 278 beds, 20 of which are intended for neonatal intensive care unit, 20 for a maternal and child care neonatal semi-intensive unit/medium-risk unit, and two Kangaroo Care units with 17 beds each<sup>(7)</sup>. The mission of the institution is to provide comprehensive and quality care to women of childbearing age from pre-conception to high-risk pregnancy, either in routine or urgent/emergency care.

The neonatal semi-intensive care unit (*UCINCO*) of the institution is a place that provides intermediate care to an average of 52 newborns per month, 71% of whom are premature. In the unit, there is a high admission of preterm infants, but with a low turnover. The unit operates 24 hours a day with a team of doctors, nurses, nursing technicians, speech therapist, physical therapist, and nutritionist.

The research topic and setting were chosen by understanding the complexity of the benefits of breastfeeding for preterm infants through the contact with mothers, babies and professionals observed during the traineeship; moreover, it is an important field for promoting significant changes based on the results to be found in the research.

The study population was composed of mothers with children hospitalized in the UCINCO, with a sample of 21 mothers selected by nonprobability convenience sampling technique using the following inclusion criteria: mothers who were breastfeeding and whose children were moderately preterm (between 31 and 34 weeks). Exclusion criteria were: mothers with mental disorders that made it difficult to understand the instruments for data collection and mothers of preterm infants with congenital malformation that prevented breastfeeding, such as cleft lip/cleft palate.

Data were collected by trained researchers who applied the following instruments: 1) questionnaire for the characterization of mothers according to socioeconomic, obstetric and preterm infant aspects (marital status, occupation, education, number of household members, approximate income and origin, number of previous pregnancies, type of current delivery and occurrence of abortion, as well as the characterization of preterm infants regarding age, sex, anthropometric measures, Apgar at birth, current nutrition, and treatment used); 2) systematic observation checklist to assess the breastfeeding technique<sup>(8)</sup>, and the Breastfeeding Self-Efficacy Scale - Short Form (BSES-F) to evaluate maternal self-efficacy according to the scores found.

This scale has a random organizational form and consists of 14 items divided into two domains Technical (8 items – 1, 3, 4, 6, 11, 12, 13, 14) and Intrapersonal thoughts (6 items – 2, 5, 7, 8, 9, 10). The first part deals with aspects of breastfeeding such as the correct position of the baby, comfort, and others. The second part evaluates desire, motivation and satisfaction with breastfeeding experiences. Maternal efficacy was distributed according to the scores obtained in the scale: low efficacy (14-32 scores), average efficacy (33-51 points) and high efficacy (52-70 points)<sup>(9)</sup>.

Data collection started with a review of medical records to check for mothers who were able to participate in the study; these mothers were individually invited to participate in the research at the time they were at the bedside of their children. After that, the instrument related to maternal and preterm infants' characteristics was applied. Some data, such as Apgar score at birth, type of treatment used and length of stay, were removed from their records; anthropometric data were also removed, except data on the current weight, which measured manually.

Next, the BSES-SF scale was applied, followed by a non-participant systematic observation of mothers who were breastfeeding at the time of data collection, using an instrument to assess the breastfeeding technique.

Data analysis included the simple descriptive statistics of variables, with relative and mean frequency. Individuals who accepted to participate in the research signed a free

informed consent form in accordance with the guidelines of Resolution No. 466/2012 of the National Health Council. The project was approved by the Research Ethics Committee of the Federal University of Piauí (*Universidade Federal do Piauí - UFPI*) under Opinion No. 335.996.

## RESULTS

Regarding the sociodemographic characteristics of the 21 participants, 10 (47.6%) were aged 15-20 years, 11 (52.4%) were single, and 10 (47.6%) had education levels between 10 and 12 years. Most mothers lived in the countryside of the state of Piauí, (15; 71.4%), and 14

Table I - Distribution of the sociodemographic profile of mothers of preterm infants hospitalized in the UCINCO (n=21). Teresina, PI, 2013.

Variables	n	%
<b>Age (years)</b>		
15 - 20	10	47.6
21 - 26	8	38.1
27 - 32	3	14.3
<b>Occupation</b>		
Student	5	23.9
Unemployed without registration	2	9.5
Unemployed	12	57.1
Housewife	2	9.5
<b>Marital Status</b>		
Married/Common-law marriage	9	42.9
Single	11	52.4
Divorced	1	4.7
<b>Education (complete years)</b>		
1-5	5	23.9
6-9	4	19.0
10-12	10	47.6
>13	2	9.5
<b>Origin</b>		
Teresina	4	19.1
Countryside of Piauí	15	71.4
Another state	2	9.5
<b>Number of household members</b>		
1-5 people	14	66.7
6-11 people	7	33.3
<b>Family income*</b>		
None	1	4.8
Only <i>Bolsa Família</i>	1	4.8
One minimum wage	10	47.6
Less than one minimum wage	3	14.3
More than one minimum wage	6	28.5
<b>Source of information available at home</b>		
Television	15	71.4
Internet	2	9.5
Radio	4	19.1

\*Minimum wage: R\$ 678,00

(66.7%) lived with about 1-5 people in the same household. As to family income, 10 (47.6%) mothers reported living with one minimum wage and 12 (57.1%) were unemployed. A total of 15 (71.4%) mothers reported the television as the main source of information; 14 (66.7%) did not use tobacco and 14 (66.7%) did not consume alcohol (Table I).

Regarding the gynecologic and obstetric characteristics, 11 (52.4%) mothers were multiparous and have had vaginal delivery. In addition, 12 (57.1%) have had from one to two births. It is worth to highlight that 11 (52.4%) of the multiparous women had breastfed from 3 to 4 months. There was a prevalence of cesarean sections in the pregnancy of

the current child (13; 61.9%), and 12 (57.1%) mothers had planned the conception of the child (Table II).

It was verified that 16 (72.6%) mothers had satisfactorily attended prenatal consultations; however, 7 (43.7%) women reported attending less than 6 consultations. As to gestational diseases, 16 (72.6%) women did not have any diagnoses. The study also showed that 13 (81.3%) mothers did not receive instructions about breastfeeding during prenatal consultations (Table II).

With regard to preterm infants, the gestational age at birth ranged from 31 to 34 weeks; 18 (85.7%) infants weighted less than 1,500 kg; 7 (33.3%) had a head

Table II - Gynecologic and obstetric characterization and current pregnancy of mothers of preterm infants hospitalized in the (n=21). Teresina, PI, 2013.

Variables	n	%
<b>GYNECOLOGIC AND OBSTETRIC HISTORY</b>		
Primigravida	10	47.6
Multigravida	11	52.4
Parity		
1-2 births	12	57.1
3-4 births	8	38.1
>4 births	1	4.8
Cesarean sections	11	52.4
Vaginal deliveries	10	47.6
Number of preterm children	1	4.7
Abortions	1	4.7
<b>Has breastfed other children</b>		
Yes	11	52.4
No	10	47.6
<b>How long has breastfed (months)</b>		
1-2	4	19.1
3-4	10	47.6
5-6	7	33.3
<b>CURRENT PREGNANCY</b>		
<b>Type of delivery</b>		
Normal	8	38.1
Cesarean	13	61.9
<b>Planned pregnancy</b>		
Yes	12	57.1
No	9	42.9
<b>Prenatal consultations</b>		
Yes	16	76.2
No	5	23.8
<b>Number of prenatal consultations</b>		
< 6	7	43.7
6	3	18.7
>6	6	37.6
<b>Disease diagnosis during prenatal care</b>		
Yes	5	23.8
No	16	76.2
<b>Received information about breastfeeding during prenatal care</b>		
Yes	3	18.7
No	13	81.3

Table III - Distribution of characteristics at birth of preterm infants hospitalized in the UCINCO (n=21). Teresina, PI, 2013

Variables	n	%
<b>Birth weight (kg)</b>		
>1500	3	14.3
<1500	18	85.7
<b>Sex</b>		
Male	13	61.9
Female	8	38.1
<b>Current weight</b>		
>2,500	4	19.1
<2,500	17	80.9
<b>Height</b>		
Boys < 50 cm	13	61.9
Girls > 49 cm	8	38.1
<b>Head circumference (cm)</b>		
=30	5	23.8
< 30	6	28.6
>30	7	33.3
N/A	3	14.3
<b>Apgar at 1<sup>st</sup> minute of life</b>		
=7	2	9.5
<7	6	28.6
>7	10	47.6
N/A	3	14.3
<b>Apgar at 5<sup>th</sup> minute of life</b>		
= > 7	18	85.7
N/A	3	14.3
<b>Current nutrition of baby</b>		
EB*	8	38.1
Mixed/partial breastfeeding	10	47.6
PN*	2	9.5
Only formula	1	4.8
<b>Has used:</b>		
Orogastric tube	16	76.2
Phototherapy	2	9.5
Antibiotic therapy	3	14.3
<b>Length of hospital stay (days)</b>		
<15	14	66.7
>15	7	33.3

\*EB = Exclusive breastfeeding.\* PN = Parenteral nutrition

circumference >30 cm and small for gestational age (SGA). Infants were predominantly male (13; 61.9%) and all of them were moderately preterm. Regarding Apgar at 1 minute, 10 (47.6%) infants scored >7, and 18 (85.7%) remained  $\geq 7$  at 5 minutes of life. Regarding the current nutrition, 10 (47.6%) infants were fed with mixed/partial breastfeeding, and 16 (76.2%) had already been given milk via nasogastric tube (Table III).

About the technique used to breastfeed preterm infants, only 12 (57.1%) women were breastfeeding their children

during data collection period. Thus, we took advantage of the moment to conduct a non-participant systematic observation (Table IV).

Regarding the verification of the grip on the nipple, it was observed that eight (66.7%) infants did not perform it properly, and 6 (50%) showed frequent dyspnea during breastfeeding. With regard to skin color, 12 (100%) infants maintained normal skin color throughout the whole feed, and 10 (83.3%) showed no oral-nasal regurgitation. As to wakefulness, 10 (83.3%) infants had signs indicative of

problems such as sleepiness at the beginning and during breastfeeding, and 7 (58.3%) had a weak suction pattern. With regard to the rooting reflex, 10 (83.3%) infants were classified as incomplete. As to the duration of breastfeeding, 9 (75.5%) infants did not have enough and favorable time for BF, while 8 (66.7%) showed the swallowing with choking and coughing.

As to the positioning while breastfeeding, 8 (66.6%) babies were positioned incorrectly and 7 (58.3%) mothers were positioned correctly.

The results of the maternal self-efficacy assessment showed that 13 (61.9%) mothers presented scores ranging from 55 to 61, indicating high efficacy in breastfeeding preterm infants. In addition, the analysis of the items of BSES-SF found that the participants answered “agree” or “strongly agree” to all items in the technical and intrapersonal thoughts domains, as shown in Table V, reinforcing the high efficacy in breastfeeding preterm infants.

Table IV - Distribution of parameters of the evaluation of breastfeeding technique in preterm infants hospitalized in the UCINCO (n=12). Teresina, PI, 2013.

Variables	n	%
<b>Grip on the nipple</b>		
Correct	8	66.7
Incorrect	4	33.3
<b>Respiratory Rate</b>		
Eupnea	4	33.4
Tachypnea	1	8.3
Bradypnea	2	8.3
Dyspnea throughout the whole feed	6	50
<b>Skin</b>		
Normal color	12	100
<b>Nasal-oral regurgitation</b>		
Yes	2	16.7
No	10	83.3
<b>Wakefulness</b>		
Alert	2	16.7
Sleepy in the beginning of breastfeeding	10	83.3
<b>Suction</b>		
Strong	1	8.3
Weak	7	58.3
With very long pauses	4	33.3
<b>Rooting reflex</b>		
Yes	2	16.7
Incomplete	10	83.3
<b>Breastfeeding duration (minutes)</b>		
20 to 30	1	8.3
<20	9	75
>20	2	16.7
<b>Swallowing</b>		
Hear the swallow	4	33.3
Choking, coughing and other alterations	8	66.7
<b>Baby's positioning</b>		
Correct	4	33.3
Incorrect	8	66.7
<b>Mother's positioning while breastfeeding</b>		
Correct	7	58.3
Incorrect	5	41.7

Table V - Distribution of technical and intrapersonal thoughts domains of the Breastfeeding Self-Efficacy Scale-Short Form (BSES - SF) found in mothers of preterm infants hospitalized in the UCINCO (n=21). Teresina, PI, 2013.

Technical Domain (n= 21)	Strongly disagree		Disagree		Agree sometimes		Agree		Strongly agree	
	n	%	n	%	n	%	n	%	n	%
1. I can always determine that my baby is getting enough milk	4	19.0	4	19.1	3	14.3	6	28.6	4	19.0
3. I can always breastfeed my baby without using formula as a supplement	3	14.3	4	19.0	4	19.1	4	19.0	6	28.6
4. I can always ensure that my baby is properly latched for the whole feeding	1	4.8	2	9.5	6	28.6	8	38.0	4	19.1
6. I can always manage to breastfeed even if my baby is crying	--	--	8	38.1	2	9.5	8	38.0	3	14.4
11. I can always finish feeding my baby on one breast before switching to the other breast	--	--	4	19.0	6	28.6	6	28.6	5	23.8
12. I can always continue to breastfeed my baby for every feeding	3	14.2	3	14.2	5	23.8	5	23.8	4	19.0
13. I can always manage to keep up with my baby's breastfeeding demands.			5	23.8	4	19.0	5	23.8	7	33.3
14. I can always tell when my baby is finished breastfeeding	1	4.8	8	38.0	1	4.8	5	23.8	6	28.6
Intrapersonal Domain (n=21)	Strongly disagree		Disagree		Agree sometimes		Agree		Strongly agree	
	n	%	n	%	n	%	n	%	n	%
2. I can always successfully cope with breastfeeding like I have with other challenging tasks	1	4.8	4	19.1	2	9.5	12	57.1	2	9.5
5. I can always manage the breastfeeding situation to my satisfaction.	2	9.5	--	--	6	28.6	6	28.6	7	33.3
7. I can always keep wanting to breastfeed	--	--	1	4.8	2	9.5	7	33.3	11	52.4
8. I can always comfortably breastfeed with my family members present	1	4.8	3	14.2	4	19.0	4	19.1	9	42.9
9. I can always be satisfied with my breastfeeding experience	--	--	2	9.5	7	33.3	3	14.3	9	42.9
10. I can always deal with the fact that breastfeeding is time consuming	2	9.5	2	9.5	4	19.1	9	42.8	4	19.1

## DISCUSSION

Mothers in the present study are mostly teenagers, single, with low education and low income, a profile that

indicates an age group associated with shorter duration of breastfeeding and an education level and a marital status that favor the late decision on infant feeding; therefore, these

factors strongly contribute to early weaning<sup>(6,10,11)</sup>. However, the participants present a high breastfeeding efficacy.

It is known that low-income mothers are particularly vulnerable to an unsatisfactory outcome in breastfeeding and have low efficacy<sup>(12)</sup>. However, the higher the family income, the better the level of breastfeeding self-efficacy, suggesting that the lower the family income, the earlier may be the interruption of EB<sup>(13)</sup>. However, in this study, the self-efficacy level was high despite the low family income of the participants, which may suggest an appropriate guidance during the preterm baby's hospital stay. However, as this was not a longitudinal study, it was not possible to determine the continuity of exclusive breastfeeding.

Given that, it is believed that a successful breastfeeding depends on favorable measures that influence, in a satisfactory manner, those involved, taking into consideration the factors that are directly related to mothers and their living conditions.

Regarding the consumption of alcohol, smoking and drug use, approximately more than half of the mothers did not use any legal or illegal drugs. Infants born to a mother who drinks alcohol, despite sucking more vigorously, drink less milk per suction time, a fact that is not perceived by the mother, making breastfeeding difficult<sup>(14)</sup>.

It is worth noting that the presence of multigravidas and multiparous women, ranging from one to two births, the low rate of abortion, and the experience in breastfeeding previous children from 3 to 4 months found in approximately more than half of mothers in the present study are seen as factors that favor the mother's breastfeeding self-efficacy in addition to greatly improving breastfeeding rates<sup>(15)</sup>.

Interestingly, some attitudes, especially breastfeeding experience, may interfere with the promotion of breastfeeding, particularly if previous experiences are negative<sup>(9)</sup>. In this study, previous experiences of breastfeeding have not been investigated, but knowing this aspect is important for the direction of the health professional counseling. In this sense, investigating whether breastfeeding was successful or if complications occurred can guide the professional's right approach to mothers, with a systematic, directive and comprehensive counseling.

Regarding the number of caesarean sections, it was prevalent in current pregnancies, since the majority of the sample have had this type of delivery. A survey conducted in Brazilian state capitals shows that cesarean section rates have increased from 38% of all births in 2000 to 54% in 2011. There are several reasons that lead to this increase, but some are still unknown<sup>(5,16)</sup>.

It is believed that this percentage is related to the risk profile of pregnant women and the magnitude of prematurity. Prenatal care was highly successful, although

the number of consultations is below what is recommended by the Ministry of Health. Mothers who attended less than six consultations showed a shorter median duration of breastfeeding compared to those who attended six or more consultations<sup>(17)</sup>. Accordingly, studies report the low breastfeeding efficacy in mothers who did not attend all prenatal consultations<sup>(8,9)</sup>.

A worrying finding was the fact that more than half of the mothers reported not having received information about breastfeeding during prenatal care. This factor substantially impairs adherence to its practice, since prenatal care is one assistance to maternal and neonatal health in addition to being a propitious moment for the couple to receive the necessary guidance and feel motivated and receptive to information and a protective measure for a longer duration of breastfeeding<sup>(17)</sup>.

Given this information, it should be noted that this reality can be linked to the fragility of care, the inconsistency of the health team, and the little interaction or lack of adequate prior knowledge of the exact form of counseling; it may also be a warning for the restructuring of the quality of prenatal consultations.

A positive data revealed by this study was the pregnancy planning. Approximately half of the sample planned the conception of the child, and it is known that mothers who plan their pregnancy cope better with breastfeeding<sup>(18,19)</sup>. This aspect becomes very significant and encouraging because it translates commitment and organization actions and improves the high rates of early weaning. However, these results were surprising, given that they are distinct from many previous studies conducted with the same population. It is believed that shyness at the time of the responses may have inhibited mothers, a fact that led to the mystification of certain information.

Gestational age, which ranged from 31 to 34 weeks, birth weight less than 1,500g and SGA are worrying results for the efficacy of breastfeeding. Low birth weight preterm infants present unique characteristics that require a complex adaptation to the extrauterine environment, biological and social aspects<sup>(20)</sup>. However, preterm birth disorders and size at birth did not have an effect on the duration of breastfeeding<sup>(21)</sup>.

In this study, preterm babies showed up vigorous in the first and fifth minutes of life. This advantage characterized them *a priori* as healthy, with good vitality and willingness to encouraging breastfeeding. The number of preterm infants who were being fed with human breast milk through mixed/partial breastfeeding considerably exceeded the number of infants receiving EB, with 47% of mothers reporting that their children received formula supplementation from the hospital milk bank. These results are also found in Neonatal Intensive Care Units

in Brazil<sup>(21)</sup>. The human milk bank of the hospital where the present study took place always has a storage of pasteurized human milk far below what is needed to offer support to the care of more than 80 preterm newborns admitted to its facilities<sup>(22)</sup>. Unfortunately, although the institution encourages, supports and has professionals working in the active search for milk donors inside and outside the hospital, there is still ignorance or lack of awareness on the part of mothers for the effective availability of milk to preterm infants.

The low incidence of EB in neonatal units may be related to low birth weight and gestational age. These factors determine a longer hospital stay and consequently undermine breastfeeding<sup>(23)</sup>. In this study, most of the preterm infants used orogastric tube while hospitalized. This fact was expected for this population<sup>(24)</sup>, given that most are preterm infants who are unable to coordinate breathing/swallowing, which initially makes suction difficult, requiring, therefore, the use of orogastric feeding tube.

Preterm infants were with less than 15 days of hospitalization during the collection period; however, it is known that the length of stay in these units is related to neonatal clinical diagnosis and recovery. However, when the period becomes longer, it becomes a barrier to the establishment of bond between mother and child and to breastfeeding. Although it should be considered that the beginning of the diet depends on the clinical evolution of preterm infants, it is recommended that they receive breastmilk as early as possible and that such practice should be considered<sup>(25)</sup>.

Thus, this population lacks a more targeted, humanized and preventive action, aiming at a strong contribution, with early initiation and hence a positive influence on maintenance. It is believed that the hospitalization of a child in neonatal units is challenging and mothers should receive all the comfort so that they can participate effectively in the process and minimize complications.

Added to the fact that infant hospitalization is challenging, most of the preterm infants assessed also presented adverse behavioral signs for the practice of breastfeeding, such as incorrect grip on the nipple, respiratory rate with the presence of dyspnea throughout the feed, sleepiness in the beginning of the feed, and weak suction. Similar results were found in a study conducted in western Paraná, in the city of Cascavel, which assessed breastfeeding in preterm infants in the first month and after hospital discharge and also found unfavorable signs regarding breastfeeding<sup>(25)</sup>.

In order to achieve successful breastfeeding it is necessary that babies have rhythmic sucking, swallowing,

and breathing; however, due to prematurity, they do not exhibit steady and vigorous suction, with rapid sucking ratio of 2:1, and when they present it, they are not initially able to coordinate this synchrony<sup>(26)</sup>.

In this study, the rooting reflex was most often incomplete and approximately more than half of the infants presented choking and coughing during breastfeeding, accomplishing just a few minutes of feeding. These data are similar to other studies<sup>(25)</sup>. The presence of the rooting reflex is a precursor to the correct grip on the nipple, directing lips and tongue to latch on<sup>(27)</sup>.

There was also a lack of coordinated positioning between the mother-child binomial, as the mother's position during breastfeeding was classified as good, but, among preterm infants, more than half were positioned in a wrong way during the observation.

These parameters suggest a negative practice of breastfeeding, especially during lactation maintenance, although such limitations do not represent an insurmountable obstacle. Given this reality, it is expected and acceptable that professionals do not only provide information on the advantages of breastfeeding to this population, but also teach the correct technique and accompany this moment more closely. Thus, the professional will be at the same time providing social support for mothers to feel confident and reducing the incidence of early weaning in the hospital.

The degree of breastfeeding self-efficacy in mothers was high, which seems to be related to the fact that mothers appear to be capable of recognizing the technical management of the baby's suckling, and the fact that they believe that one way to calm babies down would be by offering him the nipple when he is crying.

Similar data in studies using BSES-F showed that mothers with high efficacy are significantly more likely to breastfeed and do it exclusively from the first week to four months after delivery than mothers with low efficacy<sup>(28)</sup>.

It is essential to emphasize that the prematurity of babies suggests conditions of weak suction presented after birth, which, associated with little knowledge of mothers regarding baby behavior signs during breastfeeding, may contribute to a worse efficacy while breastfeeding<sup>(25)</sup>.

Mother's perception regarding whether the baby has had enough milk or the decision not to offer EB may indicate low efficacy and reinforce that breastfeeding is not a total ability of the mother, but something that must be learned by them, and, in such cases, accompanying each binomial is a necessity in these neonatal care units.

The high breastfeeding self-efficacy is related to the start and exclusivity of breastfeeding<sup>(29)</sup> and cannot be dissociated from the personal motivation of postpartum women. In addition, mothers, when ready for breastfeeding challenge,

as shown by the participants of this study, appear confident and willing to breastfeed, especially in special conditions like those women who have their children, newborns, hospitalized in ICU.

## CONCLUSION

Mothers have presented with high efficacy to breastfeed their preterm children, facing breastfeeding in the same way they overcome the daily challenges. However, the observation of breastfeeding technique showed it was ineffective. The evidence listed so far act positively as a favorable impact on the increase in breastfeeding rates, especially in the UCINCO, as well as in the home environment.

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- Mailing address:**  
Antonia Mauryane Lopes  
Campus Universitário Ministro Petrônio Portella  
Bairro: Ininga  
CEP: 64049-550 - Teresina - PI - Brasil  
Email: lopes\_mauryane\_lopes@hotmail.com