ORIGINAL ARTICLE

Factors influencing mother-child-environment interaction in the breastfeeding process: a cross-sectional study

Fatores que influenciam na interação mãe-filho-ambiente no processo de amamentação: estudo transversal

Factores que influyen en la interacción madre-hijo-entorno en el proceso de lactancia materna: un estudio transversal

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ABSTRACT

Objective: analyze the factors that influence the mother-child-environment interaction in the breastfeeding process. **Methods:** this is a cross-sectional study carried out in the Primary Health Care Network of a municipality in the interior of Maranhão, Brazil, with mothers of children up to one year old who were breastfeeding. Data was collected at the Basic Health Unit or in their households, between April and July 2021, using the Interactive Breastfeeding Scale (EINA, as per its acronym in Portuguese). Student's t and one-way ANOVA tests were used, with a p-value < 0.05. **Results:** the average total score on the scale was 210.75 (Standard Deviation - SD ± 16.95), indicating adequate interaction between mother-child-environment in the breastfeeding process. Having a higher level of education (complete higher education), being married and wanting to breastfeed were associated with mother-child-environment interaction in the breastfeeding process. **Conclusions:** higher levels of education, being married and wanting to breastfeed are associated with greater mother-child interaction in the breastfeeding process. The greater the desire to breastfeed, the greater the mother-child-environment interaction in the breastfeeding process. These findings make it possible to plan strategies to improve the identification of pairs at greater risk of early weaning, and to develop specific actions for caring for the predictors that interfere with the breastfeeding process.

Descriptors: Risk Factors; Breast Feeding; Mother-Child Relationships.

RESUMO

Objetivo: *analisar os fatores que influenciam na interação mãe-filho-ambiente no processo de amamentação.* ***Métodos:*** *trata-se de estudo transversal realizado na Rede de Atenção Básica de Saúde de um município do interior do Maranhão, Brasil, com mães de crianças até um ano de idade em processo de amamentação. A coleta de dados foi realizada na Unidade Básica de Saúde ou domicílio, entre abril e julho de 2021, utilizando a Escala Interativa de Amamentação (EINA). Utilizaram-se testes t de Student e ANOVA a um fator, com p-valor < 0,05.* ***Resultados:*** *a média do total de pontuação na escala foi de 210,75 (Desvio Padrão - DP ±16,95), indicando adequada interação entre mãe-filho-ambiente no processo de amamentação. Ter maior escolaridade (ensino superior completo), ser casada e desejar amamentar apresentaram associação com a interação mãe-filho-ambiente no processo de amamentação.* ***Conclusões:*** *maior escolaridade, ser casada e desejar amamentar estão associadas à maior interação mãe-filho-ambiente no processo de amamentação. Quanto maior a vontade de amamentar, maior será a interação mãe-filho-ambiente no processo de amamentação. Estes achados permitem planejar estratégias para melhorar a identificação de binômios*

com maiores riscos de desmame precoce; e desenvolver ações específicas para o cuidado frente aos preditores que interferem no processo de amamentação.

Descritores: *Fatores de Risco; Aleitamento Materno; Relações Mãe-Filho.*

RESUMEN

Objetivo*: analizar los factores que influyen en la interacción madre-hijo-entorno en el proceso de lactancia materna.* ***Métodos****: Se trata de un estudio transversal realizado en la Red de Atención Primaria de Salud de un municipio del interior de Maranhão, Brasil, con madres de niños de hasta un año que estaban amamantando. Los datos fueron recolectados en la Unidad Básica de Salud o en el domicilio, entre abril y julio de 2021, utilizando la Escala Interactiva de Lactancia Materna (EINA, por sus siglas en portugués). Se utilizaron pruebas t de Student y ANOVA unidireccional, con un valor p < 0,05.* ***Resultados****: la puntuación media total de la escala fue de 210,75 (desviación estándar - DE ± 16,95), lo que indica una interacción adecuada entre madre-hijo-entorno en el proceso de lactancia. Tener un mayor nivel de educación (educación superior completa), estar casada y querer amamantar se asociaron con la interacción madre-hijo-ambiente en el proceso de lactancia.* ***Conclusiones****: mayores niveles de educación, estar casada y querer amamantar se asocian a una mayor interacción madre-hijo-entorno en el proceso de lactancia. Cuanto mayor es el deseo de amamantar, mayor es la interacción madre-hijo-entorno en el proceso de lactancia. Estos hallazgos permiten planificar estrategias para mejorar la identificación de las parejas con mayor riesgo de destete precoz y desarrollar acciones específicas para el cuidado de los predictores que interfieren en el proceso de lactancia.*

Descriptores: *Factores de Riesgo; Lactancia Materna; Relaciones Madre-Hijo.*

INTRODUCTION

The importance of breastfeeding has been repeatedly proven by various scientific studies[1-4]. The benefits of this practice include protection against diarrhea and pneumonia, which are the main causes of death in children under five in low- and middle-income countries[5].

Around the world, the prevalence of breastfeeding at 12 months varies, with most high-income countries having less than 20%. Despite comparatively higher rates, in low- and middle-income countries, on average, only 37% of children under six months of age are exclusively breastfed[6].

In Brazil, the National Infant Feeding and Nutrition Study (Portuguese acronym: ENANI), which evaluated 14,505 children under the age of five between February 2019 and March 2020, found that among those under six months, the exclusive breastfeeding rate is 45.7%[7].

Despite the social and health benefits of breastfeeding and the comprehensive knowledge on how to protect, promote and support this practice, it is worrying that the recommended behaviors (exclusive breastfeeding for six months and continued for two years or more) continue to be suboptimal in the 21st century among large segments of the population, globally[8]. These insufficient rates are related to the complexity of the reasons surrounding the duration of breastfeeding and early weaning practices, with a variety of social, psychological and physical factors[9], including the characteristics of the mother and child[10] and the interactions between them[11].

For these reasons, breastfeeding must be studied in all its complexity. In this context, the Interactive Theory of Breastfeeding (ITB)[12] emerges, proposing an examination of the factors that precede, influence and are consequential to the breastfeeding process[13]. The ITB, built on Imogene King's Conceptual Model, presents among its assumptions that breastfeeding is a process of dynamic interaction, in which mother and child interact with each other and with the environment, to achieve the benefits of human milk; and that breastfeeding time is directly influenced and modulated by this interaction[12].

There is significant information in the scientific literature about the experiences and conditions that influence breastfeeding, but this practice is more intricate than simply describing the experiences and conditions of women who can or cannot breastfeed[14]. Although socioeconomic and obstetric factors related to breastfeeding have been investigated in previous studies[15,16], there are gaps in the production of knowledge about the relationship between the mother-child-environment interaction and these factors, and the influence of this interaction on breastfeeding time. In view of this, the study question was: What socioeconomic and obstetric factors influence the mother-child-environment interaction in the breastfeeding process?

Given that an analysis based on nursing theory on interactive breastfeeding can be useful in interpreting breastfeeding experiences and supporting extrapolations that can contribute to the advancement of knowledge

on this subject[17], and that there is an incipient number of studies that use theories in health and nursing in the context of the Brazilian Unified Health System[18], the objective of this study was to analyze the factors that influence the mother-child-environment interaction in the breastfeeding process.

METHODS

This is an analytical cross-sectional study, carried out between April and July 2021, in the Primary Health Care Network (Portuguese Acronym: RABS) of a non-capital city in the state of Maranhão, Brazil.

Population

The study population was made up of mothers of children up to one year old who were breastfeeding. The inclusion criteria were: being primiparous, being 18 years old or older, being the mother of a child up to one year old; being breastfeeding; and living in the municipality of the study. Breastfeeding mothers who had difficulty understanding the guiding questions of the data collection instrument during the interview were excluded.

Sampling

Convenience sampling was used. The sampling calculation for a finite population was used, considering the data from the Department of Informatics of the Unified Health System (Portuguese acronym: DATASUS), referring to the number of live births according to the mother's municipality of residence, in 2019, in which the estimated population was 160 live births in the period[19].

We established a proportion of 45.7% of mothers of children up to six months of age who were exclusively breastfeeding[7], a 95% confidence interval, and a sampling error of 9.77%, obtaining a sample of 62 participants.

We chose to use the prevalence of breastfeeding in children under six months of age as an indirect reference variable, due to the lack of studies evaluating the mother-child-environment interaction as a continuous variable, estimated by average. Based on the assumptions of the Interactive Theory of Breastfeeding (ITB), exclusive breastfeeding is considered evidence of adequate mother-child-environment interaction. It should be noted that the municipality does not have data on this prevalence, which is why it was necessary to use the national rate.

Data collection

In order to recruit the study participants, one of the researchers asked the community health agents to indicate women in their micro-areas with children up to one year old who were breastfeeding. The potential participants were then contacted by telephone, where the study proposal was presented and the invitation to collaborate was made. Once they had accepted, an interview was scheduled, in a private place chosen by the participant, at the Basic Healthcare Unit (BHU) or at home, which lasted between 20 and 30 minutes and was guided by the following instruments: (1) a form for socioeconomic and obstetric characterization; and (2) the Interactive Breastfeeding Scale (IBS)[20], developed following the ITB[12] and applied to measure mother-child-environment interaction. There were no losses or refusals of participants in this process.

Measurements

Socioeconomic and obstetric characteristics

Socioeconomic variables were analyzed, namely: mother's age (years); ethnicity (white, black, or brown); level of education (incomplete elementary school, complete elementary school, incomplete secondary education, complete secondary education, incomplete tertiary education or complete tertiary education); marital status (single or married); number of residents in the household (two, three, or four or more); family income in minimum wages (ranging from less than one to four minimum wages); and paid work (yes or no).

The following obstetric variables were investigated: number of prenatal consultations (six consultations or seven to 18 consultations); complications during pregnancy (yes or no); type of delivery (cesarean section or natural); guidance on breastfeeding (yes or no); desire to breastfeed (yes or no); breastfeeding immediately after delivery (yes or no); skin-to-skin contact at birth (yes or no); time, in minutes, of initiation of skin-to-skin contact (one to 60 minutes or >120 minutes); and breastfed or is breastfeeding exclusively (yes or no).

Mother-child-environment interaction

This variable was evaluated using the Interactive Breastfeeding Scale (IBS), which has 58 items, allocated to the following concepts: woman's perception of breastfeeding (20 items, including "I place my baby on the breast correctly"); child's perception of breastfeeding (six items, including "My baby is relaxed after feeding"); woman's biological conditions (four items, including "I feel pain when I breastfeed"); child's biological conditions (three items, such as "My baby sucks my breast

correctly"); mother's role (three items, including "I feel pleasure in breastfeeding"); women's body image (four items, such as "I think having bigger breasts produces more milk"); space for breastfeeding (five items, including "I am embarrassed to breastfeed in public places"); family and social authority (two items, such as "I feel influenced by my family to decide to breastfeed"); organizational systems for protecting, promoting, and supporting breastfeeding (three items, including "I have my family's support for breastfeeding"); and women's decision-making (three items, including "I want to breastfeed")[20].

Each item is scored using a five-point Likert scale, where 1 means "Never"; 2 "Rarely"; 3 "Sometimes"; 4 "Often" and 5 "Always". The sum of the item scores ranges from 58 to 290; the higher the score, the greater the mother-child-environment interaction[20].

This scale is applicable to all breastfeeding women in different social, cultural, political, and economic contexts and provides an outline of how the complex concept of breastfeeding can be operationally measured, making explicit the indicators referred to by women involved in breastfeeding[21].

Statistical analysis

The data was entered into an Excel® spreadsheet (version 2021, Microsoft®, United States), with double entry, and analyzed using SPSS - International Business Machines Statistics Package for the Social Sciences statistical software (version 26.0, IBM SPSS Statistics 26, United States). Absolute and relative frequencies were calculated for categorical variables, and the mean and Standard Deviation (SD) for numerical variables. In the inferential analysis, the Kolmogorov-Smirnov normality test was applied to evaluate the symmetry of the IBS scores presented by the participants. The relationship between the socioeconomic and obstetric variables and the mean score on this scale was evaluated using Student's t-tests and one-way ANOVA to compare more than two groups, considering p-value < 0.05 as the cut-off point for statistical significance. For those with a significant difference, the post hoc Tukey test was applied.

Linear regression was then used to identify the factors associated with the mother-child-environment interaction. To build the model, bivariate analysis was carried out using simple and multiple linear regression between the covariates of interest. To build the final model, equations with a p-value below 0.20 were selected. The final model was assembled using the stepwise backward technique, with the manual removal of each of the variables, observing their interaction on both the equation's p-value and the influence on the F statistic. Variables that maintained a p-value below 0.05 and had a large influence on the F-statistic were kept in the model. After selecting the final model, the homoscedasticity test and the evaluation of the normality of the residuals were carried out to confirm that the equation fitted the linear regression model[22].

Ethical aspects

The study was submitted to the Research Ethics Committee of the Federal University of Piauí (Certificate of Presentation for Ethical Consideration - Portuguese acronym: CAAE - No: 42468821.9.0000.5660). The participants were informed about the aim of the study, procedures and ethical issues, and signed an informed consent form (ICF), in accordance with current ethical standards for research involving human subjects in Brazil.

RESULTS

Sixty-two primiparous mothers participated in the study, aged between 18 and 36, with a mean age of 25.9 years old (SD ± 5.56). Most of the participants declared themselves to be brown (64.5%), had completed high school (40.3%), were single (59.8%), lived with four or more residents in the household (80.6%), had a family income of less than one minimum wage (58.1%) and reported not working (85.5%).

Regarding obstetric characterization, all the mothers had between six and 18 prenatal care visits (mean 8.27 - SD ± 1.92). The majority reported that they had no complications during pregnancy (74.2%) and that they gave birth naturally (54.8%). There was a predominance of participants who had been instructed on breastfeeding (61.3%), who said they wanted to breastfeed (93.5%), who breastfed immediately after giving birth (58.1%), and who had skin-to-skin contact with the newborn (67.7%), mostly between one and 60 minutes (87.1%). Finally, 64.5% breastfed exclusively for six months.

Analysis of the sum of the IBS scores revealed a mean of 210.75 points (SD ± 16.95), with a minimum score of 155.00 and a maximum of 243.00.

According to the data in Table 1, there was an association between the mother's age (p = 0.039), level of education (p = 0.008), marital status (p = 0.003), and paid work (p = 0.034) and the score on the mother-child-environment interaction during the breastfeeding process. Based on the post hoc Tukey test, there was a difference between women with incomplete elementary education and those with complete tertiary education.

As can be seen in Table 2, only the variables maternal desire to breastfeed (p = 0.025) and exclusive breastfeed-

ing up to six months of the child's life ($p = 0.038$) were associated with higher IBS scores.

The results of the multiple linear regression analysis are shown in Table 3. The overall multiple linear regression model was statistically significant ($F(5, 56) = 7.210$; $p < 0.001$; $R^2 = 0.392$). After controlling for all predictor variables, education ($p = 0.0001$), marital status ($p = 0.007$), and desire to breastfeed ($p = 0.017$) were significantly associated with the total score of mother-child-environment interaction in the breastfeeding process.

Table 1 - Distribution of the socio-economic characteristics of the participating mothers, according to the mean of the Interactive Breastfeeding Scale (IBS), Maranhão, Brazil, 2021

Characteristics	n	%	IBS[a] Score (SD[b])	*p*-value
Age				0.039[c]
15 to 20 years old	14	28.6	202.57 (19.92)	
21 to 36 years old	48	74.4	213.14 (15.39)	
Ethnicity				0.749[d]
White	6	9.7	213.66 (11.77)	
Black	16	25.8	208.18 (21.45)	
Brown	40	64.5	211.35 (15.80)	
Level of education				0.008[d]
Incomplete elementary education	13	21.0	201.92 (15.90)[e]	
Complete elementary education	5	8.1	203.00 (11.06)	
Incomplete secondary education	6	9.7	208.50 (12.11)	
Complete secondary education	25	40.3	210.28 (18.72)	
Incomplete tertiary education	4	6.5	216.75 (8.26)	
Complete tertiary education	9	14.9	228.00 (7.58)[f]	
Marital status				0.003[d]
Single	37	59.7	205.70 (17.66)	
Married	40	40.3	218.24 (12.79)	
Number of residents in the household				0.662[d]
Two	4	6.5	206.75 (9.39)	
Three	8	12.9	215.37 (13.03)	
Four or more	50	80.6	210.34 (17.96)	
Family income (minimum wages)				0.202[d]
No family income	2	3.2	230.50 (17.67)	
<1	36	58.1	207.00 (18.11)	
1	17	27.4	214.82 (12.85)	
2	5	8.1	213.00 (15.70)	
3	1	1.6	205.00	
4	1	1.6	232.00	
Paid work				0.034[d]
No	53	85.5	208.88 (16.98)	
Yes	9	14.5	221.77 (12.43)	

Note: [a] Interactive Breastfeeding Scale; [b] Standard Deviation; [c] Student's T Test; [d] One-way ANOVA; [e,f] Tukey's Test.

Table 2 - Distribution of the obstetric characteristics of the participating breastfeeding mothers, according to the mean (± SD) of the Interactive Breastfeeding Scale, Maranhão, Brazil, 2021

Obstetric characteristics	n	%	IBS[a] Score (SD[b])	*p*-value
Number of prenatal consultations				0.283[c]
6 consultations	9	14.5	205.11 (21.33)	
7 to 18 consultations	53	85.5	211.71 (16.13)	
Complications during pregnancy				0.217[c]
No	46	74.2	209.47 (18.39)	
Yes	16	25.8	214.43 (11.51)	
Type of delivery				0.440[c]
Cesarean section	28	45.2	212.60 (16.03)	
Natural	34	54.8	209.23 (17.74)	
Received guidance on breastfeeding				0.070[c]
No	24	38.7	206.29 (12.15)	
Yes	38	61.3	213.57 (18.98)	
Had the desire to breastfeed				0.025[c]
No	4	6.5	192.50 (25.01)	
Yes	58	93.5	212.01 (15.78)	
Breastfed immediately after delivery				0.273[c]
No	26	41.9	207.96 (16.53)	
Yes	36	58.1	212.77 (17.17)	
Skin-to-skin contact at birth				0.164[c]
No	20	32.3	206.40 (13.61)	
Yes	42	67.7	212.83 (18.09)	
Time, in minutes, of initiation of skin-to-skin contact				0.683[c]
1 to 60 minutes	54	87.1	210.57 (17.99)	
>120 minutes	8	12.9	212.00 (6.80)	
Breastfed or is breastfeeding exclusively (6 months)				0.038[c]
No	22	35.5	204.77 (18.35)	
Yes	40	64.5	214.05 (15.36)	

Note: [a] Interactive Breastfeeding Scale; [b] Standart Deviation; [c] Student's T Test.

Table 3 - Multiple linear regression model to evaluate factors independently related to mother-child-environment interaction in the breastfeeding process, Maranhão, Brazil, 2021

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Predictor variables	n	t	Beta	*p*-value[a]
Mother's age		0.151	0.017	0.881
15 to 20 years old	14			
21 to 36 years old	48			
Level of education		3.396	0.374	0.001
Incomplete elementary education	13			
Complete elementary education	5			
Incomplete secondary education	6			
Complete secondary education	25			
Incomplete tertiary education	4			
Complete tertiary education	9			

Table 3 - Multiple linear regression model to evaluate factors independently related to mother-child-environment interaction in the breastfeeding process, Maranhão, Brazil, 2021

Conclusion.

Predictor variables	n	t	Beta	*p*-value[a]
Marital status		2.811	0.313	0.007
Single	37			
Married	40			
Had the desire to breastfeed		2.450	0.262	0.017
No	4			
Yes	58			
Breastfed or is breastfeeding exclusively		1.000	0.108	0.322
No	22			
Yes	40			

Note: [a] Student's T Test.

DISCUSSION

The participants had a good level of mother-child-environment interaction, which was associated with their level of education, marital status, and desire to breastfeed. From an ITB perspective[12], these are factors that precede breastfeeding and are central to describing and explaining the reasons for failure, limited decision-making, and feelings experienced by the participants[13].

Higher levels of education are associated with a higher IBS score, i.e. greater mother-child interaction with the breastfeeding environment. This factor is intertwined with the ITB concept "Women's perception of breastfeeding", according to which information obtained through the senses and memory is organized, interpreted, and transformed[12]. Women's perceptions can be influenced by their knowledge and experiences[23], but there is significant variability, as knowledge has different origins[12].

Previous studies have shown that women with a higher level of education have a longer duration of breastfeeding, as they generally have a broader understanding and knowledge of the benefits of breastfeeding, access to health care services, and greater social support[10,24].

Regarding marital status, married mothers had higher levels of interaction, and it can be inferred that the support and inclusion of fathers increase the mother-child-environment interaction in the breastfeeding process and, consequently, significantly reduces the risk of weaning before six months of age, making it relevant to breastfeeding and the creation of a bond between mother and baby[25,26]. This factor is related to ITB's concept of "organizational systems for the protection, promotion, and support of breastfeeding", made up of the family, community, and government, which use resources to achieve the promotion, protection, and support of this practice. It is necessary to recognize the most influential individuals in the mother's social network and understand how these people interact with the woman during the breastfeeding process, which is susceptible to multiple positive or negative influences[12].

A study carried out with Brazilian breastfeeding mothers on the implications of the COVID-19 pandemic on breastfeeding practices showed that the main support network during the pandemic was limited to family members, especially the husband. It can be seen that the support of the partner/spouse is fundamental for successful breastfeeding, as their presence with the mother and baby, helping with household chores and caring for the child, can ease the difficulties experienced when breastfeeding[27]. For this reason, it is important for health professionals to appreciate the influence that positive and active partner support has on maternal feelings of confidence in breastfeeding and to include it in interventions for the initiation and maintenance of breastfeeding[28].

The greatest effects and differences in the mother-child-environment interaction in the breastfeeding process were the result of the desire to breastfeed. This factor refers to the ITB concept of "Women's decision making", understood as a dynamic and systematic process through which women choose to breastfeed from among alternatives. According to this theory, a woman's decision to start breastfeeding and to continue breastfeeding after each feed is influenced by various factors, including her desire and personal choice to breastfeed[12].

An Australian study of 156 mothers of children aged 3 to 9 months found that breastfeeding mothers spent 8.5 hours more per week feeding, carrying, holding, soothing, or cuddling their child than non-breastfeeding mothers, and that this interaction increased with

exclusive breastfeeding. This is consistent with lactation hormones influencing the amount of time mothers provide important interactive emotional support to their child[29].

The rapid onset of the anti-stress effect caused by breastfeeding and, in particular, skin-to-skin contact between mothers and babies, corresponds to the release of pre-formed fragments of oxytocin with anti-stress properties that influence dopamine activity, which can stimulate not only social interaction, but also promote other actions linked to this hormone, such as the well-being of mother and baby and the bond between the two during breastfeeding[30].

It is recommended that it may be beneficial to protect breastfeeding if health care focuses on identifying those women who do not report a desire to breastfeed, since they will have less interaction and therefore a greater risk of weaning. It has been shown that a strong desire to breastfeed can mitigate problems that can hinder the establishment and prolonged duration of breastfeeding[31].

This data needs to be valued, since the desire to breastfeed is a significant factor that influences breastfeeding[32]. On the other hand, it is possible to determine that a woman's desire and decision to continue interacting with her child, which culminates in breastfeeding, is reconstructed from each breastfeeding experience[12], thus forming a cyclical system that feeds back on itself: the more a woman interacts with her child, the more she will breastfeed; the more she breastfeeds, the more she will interact with her child.

Considering that individuals differ in their needs, desires, and objectives, because they are unique beings with distinct perceptions, values, cultures, and beliefs, transmitted intergenerationally[12] is the first step towards comprehensive and individualized care for women in the context of breastfeeding. Understanding that women who do not wish to breastfeed, who are single and have a low level of education have a lower mother-child-environment interaction in this practice could be the starting point for tracking and, above all, welcoming them in their difficulties and potentialities with a view to successful breastfeeding.

In this context, nurses can identify the factors that interfere with the achievement of breastfeeding in order to act interactively and systemically, using the concepts of the Theory, with a particular contribution to the identification of nursing diagnoses that are more specific to breastfeeding[12]. It is hoped that these findings will provide empirical evidence to promote strategies that consider the importance of the interaction between mother and child and the environment for successful breastfeeding.

Despite its contributions to knowledge in the field of child health nursing, the study has limitations, especially with regard to sample size and the sampling process (convenience). Another limitation is that the data was collected from version 1 of the IBS, published in 2018. A new version, with only 30 items, was presented in 2020[21]. It is noteworthy that, although the instrument is in a previous version, the new, shorter version derives from the original, which does not invalidate the results regarding the measurement of mother-child-environment interaction in breastfeeding.

CONCLUSIONS

Women who had completed higher education, were married, and had the desire to breastfeed showed greater mother-child-environment interaction in the breastfeeding process, with emphasis on the modifiable personal variable "desire to breastfeed".

These findings allow health professionals, especially nurses, to plan actions to improve the identification of binomials with limited mother-child-environment interaction and to direct care, with an emphasis on the factors that interfere with the breastfeeding process.

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Conflicts of interest

None.

Author contributions - CRediT

IJLS: conceptualization; investigation; methodology; and writing – original draft.
ALCBO: methodology and writing - review & editing.
RCR: data curation; formal analysis; and writing – original draft.
MAB: data curation and writing - review & editing.
CTC: formal analysis and writing – original draft.
MARB: conceptualization; data curation; formal analysis; methodology; project administration; supervision; and writing - review & editing.

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