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Factors that interfere in the duration of breastfeeding of children in the Metropolitan Region of Cariri, Ceará

Fatores que interferem na duração do aleitamento materno de crianças na Região Metropolitana do Cariri cearense

Abstract

Introduction: Exclusive Breastfeeding (EBF) is a fundamental dietary practice for the promotion of maternal and child health. Unfortunately, the rates for EBF in Brazil are still below that recommended by the World Health Organization. **Objective:** To analyze the factors that interfere in the duration of breastfeeding of children living in the metropolitan region of Cariri, Ceará. **Method:** Descriptive cross-sectional study, with a quantitative approach, carried out in the Metropolitan Region of Cariri, Ceará. The sample consisted of 177 children between 6 and 23 months of age. The data were collected through questionnaires containing information about the socioeconomic and demographic conditions of the family and child health. Statistical analyses were performed using the software Statistical Package for the Social Sciences, proceeding to the data descriptive analysis, application of the Chi-Square test, Odds Ratios (OR), 95% Confidence Interval (95% CI) and respective values of p were calculated by multinomial logistic regression. **Results:** The mean EBF length was 4.33 (\pm 1.98) months, only 38.9% of the evaluated children were exclusively breastfed until 6 months of life. In the multivariate logistic regression analysis, a greater chance of adequate EBF length was verified in families with $<1/4$ minimum wage (OR: 2.270 95% CI 1.104 - 4.666, $p = 0.026$). **Conclusion:** EBF in the municipalities evaluated is still unsatisfactory according to the recommendations recommended by health entities. Low per capita income was the determining factor for the proper practice of EBF in the lives of infants.

Keywords: Breastfeeding. Weaning. Infant. Family Health Strategy.

Resumo

Introdução: O Aleitamento Materno Exclusivo (AME) é uma prática alimentar fundamental para a promoção da saúde materno-infantil. Porém, os índices para o AME no Brasil ainda se encontram abaixo do recomendado pela Organização Mundial da Saúde. **Objetivo:** Analisar os fatores que interferem na duração do aleitamento materno de crianças situadas na Região Metropolitana do Cariri cearense. **Método:** Estudo transversal descritivo, com abordagem quantitativa, realizado na Região Metropolitana do Cariri cearense. A amostra foi composta por 177 crianças entre seis e 23 meses de idade. Os dados foram coletados por meio de questionários, contendo informações a respeito das condições socioeconômicas e demográficas da família e da saúde infantil. As análises estatísticas foram realizadas com o *software* Statistical Package for the Social Sciences, procedendo-se a análise descritiva dos dados e aplicação do teste Qui-Quadrado. Razões de Chance (RC), intervalo de confiança de

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95% (IC95%) e respectivos valores de p foram calculados pela regressão logística multinominal. **Resultados:** O tempo médio para o AME foi de 4,33 ($\pm 1,98$) meses. Somente 38,9% das crianças avaliadas foram amamentadas, exclusivamente, até os seis meses de vida. Na análise de regressão logística multivariada verificou-se maior chance de tempo de AME adequado nas famílias com $< 1/4$ salário mínimo (RC: 2,270 IC95% 1,104 - 4,666, $p = 0,026$). **Conclusão:** O AME, nos municípios avaliados, ainda é insatisfatório de acordo com as recomendações preconizadas pelas entidades de saúde. A baixa renda *per capita* foi o fator determinante para uma adequada prática do AME na vida dos lactentes.

Palavras-chave: Aleitamento Materno. Desmame. Lactente. Estratégia de Saúde da Família.

INTRODUCTION

Exclusive breastfeeding (EBF) refers to the practice of feeding the child only with breast milk, and no other food or liquid should be offered, not even water, except for medicines, solutions containing vitamins, oral rehydration salts and mineral supplements. The World Health Organization (WHO) recommends that EBF be carried out on free demand for at least six months of life.¹

It is already duly proven by the scientific literature that breastfeeding provides benefits for maternal and child health. Andrade's² study demonstrated numerous benefits of breastfeeding for both infants and nursing women. Breastfeeding promotes mother-child interaction, stimulates child facial development, which contributes to chewing, swallowing and breathing, in addition to promoting immune protection and adequate weight gain. Nursing mothers have a lower risk of developing breast and ovarian cancer, osteoporosis and rheumatoid arthritis, in addition to providing faster weight loss in the puerperal period.³

According to the study by Boccolini et al.,⁴ the prevalence of EBF among children under six months old, BF and EBF in the first year of life had an upward trend, whose main gains were observed between 1986 and 2006. In 2013, there was a reduction in the prevalence of EBF among babies from zero to two months of age and babies from three to five months of age, in relation to the 2006 survey. Despite the significant increase in levels of breastfeeding indicators over time, recommendations regarding the duration of breastfeeding and EBF are still below that recommended by the WHO.

Despite the existence of laws, programs and actions aimed at promoting, protecting and supporting Breastfeeding (BF), recent studies reveal low levels for BF in the country, although there are studies that indicate that BF prevents the emergence of infectious and diarrheic diseases, allergies and chronic non-communicable diseases.^{1,5-7}

The interruption of EBF occurs when water, teas, juices, non-maternal milk or other liquid foods, or solid foods, are introduced in the infant's diet before turning six months old. This erroneous practice of offering food early is an important public health problem, which may lead to increased infant morbidity and mortality, decreased consumption of breast milk and nutritional disorders.^{8,9}

The scientific literature reports some barriers that may cause early interruption of EBF, among which are the level of maternal education, pacifier use, type of delivery, family income, maternal age, return to work, low sense of maternal coherence, breastfeeding interferences, cultural inheritance, knowledge deficit linked to maternal insecurity and maternal perception of weak milk. These barriers favor the early introduction of food, thus contributing to early weaning.¹⁰⁻¹³

A cross-sectional study conducted in 2007 at the Basic Health Units (UBS) in the city of Rio de Janeiro with 1,507 nursing mothers showed that maternal age, previous experience in breastfeeding and marital status are related to the introduction of liquids in the diet of children under six months of age. The study also suggests that the concept of EBF is not yet well understood among nursing women, which may be related to the difficulty of maintaining EBF until six months of age.^{9,14}

Despite the recognized importance of the practice of EBF up to the sixth month of age, the indexes in Brazil are still below the recommended according to the II Breastfeeding Prevalence Survey in Brazilian capitals and the Federal District,¹⁵ where the median obtained for EBF was 60.84 days and 182.52 days for total breastfeeding. The WHO and the Ministry of Health recommend six months for EBF and up to 24 months for total breastfeeding. In addition, the research also revealed that the capital of Ceará has the lowest prevalence for EBF in children under six months, compared to other capitals in the Northeast Region.

Starting from what was observed in the scientific literature and taking into account the numerous factors related to the early interruption of EBF, this research gathers several scientific aspects in order to answer the following question: what factors can influence the duration of BF in children assisted in the FHS (Family Health Strategies) of some municipalities of Cariri, Ceará?

Although Law n. 11,265/2006¹⁶ seals the disclosure, special exhibitions, discount coupons or price below cost, prizes, gifts, sales linked to other products and special presentations of infant formulas for infants, there is a growing search for industrial formulas that provide practicality and agility to feed infants. According to the conception of some mothers, breast milk is weak because it does not sustain the child's satiety for a long time when compared to infant formulas. In view of such evidence, the hypothesis raised by this research assumes that maternal variables, together with socioeconomic variables, may influence the duration of BF in children assisted in the FHS.

Researches on this theme are important for maternal and child health, since they detect factors that influence the duration of BF in children under two years of age in the semi-arid region of the northeastern region. The results obtained in this study may help health professionals invest in interventions aimed at promoting EBF in communities and health units. In this context, the present study aimed to analyze the factors that interfere in the duration of breastfeeding of children located in the Metropolitan Region of Cariri, Ceará.

METHOD

This is a descriptive cross-sectional research, with a quantitative approach, carried out in the municipalities of the Metropolitan Region of Cariri, Ceará, which stands out for its religious tourism, paleontological treasures and university centers. Orlando Bezerra de Menezes airport is strategically located to serve the central and southern regions of Ceará, being one of the main instruments for the economic development of the region. This arose from the conurbation between the municipalities of Juazeiro do Norte, Crato and Barbalha, called CRAJUBAR triangle, and later included the neighboring municipalities of Caririaçu, Farias Brito, Jardim, Missão Velha, Nova Olinda and Santana do Cariri.

The probabilistic sampling process considered the draw of two municipalities in the Metropolitan Region of Cariri, Ceará, with Barbalha as the central representation and Old Mission the peripheral region. The municipality of Barbalha has 20 Family Health Strategies (FHSs), 10 located in the rural area and 10 in the urban area, while the municipality of Missão Velha has 17 FHSs, with 11 located in the rural area and 06 in the urban area.

The study sample was composed of mothers/guardians of children assisted by Primary Health Care in the Metropolitan Region of Cariri, Ceará. Only the FHSs located in the urban area were included in the sample, since those in the rural area have difficult access. Information regarding the number of children followed and met in childcare consultations was made available by the Health Bureaus of both municipalities.

In view of this information, a sampling error of 5% and a 95% confidence interval were applied, in addition to the increase of 10% for sample loss, which totaled a final sample of 177 children, 88 from the city of Missão Velha and 89 children from the city of Barbalha. The sampling process considered the free demand, that is, all the mothers/guardians invited who wanted to participate until reaching the sample were included in the study.

Mothers aged 18 years or older, with children aged six months to 24 months of life and who signed the Informed Consent Form (ICF) were included in the study. Mothers with children younger than six months of

life, adolescent mothers, with physical or mental restrictions that hindered understanding the investigation and answering the questionnaires in question were excluded from the study.

In order to ensure compliance with ethical and legal issues, the study was submitted to the Research Ethics Committee at the College of Juazeiro do Norte, and approved under opinion n. 2.920.644. The research subjects were previously informed, in accessible language, about the objectives of the investigation, the form of data collection, confidentiality of information, discomfort, freedom to refuse during the process of data collection and publication of the results of the investigation, preserving confidentiality.

After knowing the objectives, risks and benefits of the study, the individuals who agreed to participate signed the Informed Consent. A room reserved in the FHS was used to perform the study, in order to avoid possible embarrassment in the application of the questionnaires, thus ensuring the confidentiality and comfort of the collaborators during the research.

Data collection occurred from September 2018 to January 2019, being conducted through interviews with companions of children registered and accompanied by the FHSs. Data were collected after childcare consultations, through a pre-coded and semi-structured questionnaire, containing information about socioeconomic and demographic conditions of the family and child health. Information on food consumption was collected through an instrument formulated by Oliveira et al.¹⁷ to monitor complementary feeding among children under two years of age. A trained and qualified team of Nutrition students applied the questionnaires, with an average duration of 15 minutes, having as work supervision a researcher with experience in epidemiological studies.

The questionnaire containing socioeconomic and demographic information included questions such as: age of the mother/guardian, marital status, schooling in years of study, participation in the *Bolsa Família* Program, family income, number of members over 18 years and underage, access to electric light, water supply, domestic water treatment for drinking, sewage treatment and garbage collection. The questionnaire regarding child health included questions regarding birth weight, weight and height, total and exclusive breastfeeding length.

The study adopted as a dependent variable the EBF indicator in children under six months of life (yes or no), and as independent variables the child's gender (female or male), birth weight ($\geq 2,500$ or $> 2,500$ grams), maternal age (20 to 34 years or < 20 and > 34 years), maternal education (< 12 or ≥ 12 years of schooling) and smoking during pregnancy (yes or no).

Statistical analyses were performed with the help of the software Statistical Package for the Social Sciences (SPSS) version 20.0. First, descriptive data were analyzed, in which the frequency distribution of the variables was performed, being these data presented in tables. Subsequently, the Chi-Square test was applied in order to analyze the association between the variables selected with the exclusive breastfeeding length.

A bivariate analysis was also performed between the exclusive breastfeeding length and the independent variables. Gross Odds Ratios (gOR), confidence intervals (95% CI) and their p-values were calculated. All variables of the respective levels that presented p values < 0.20 were inserted in the multivariate logistic regression model. The construction of tables was developed to present the results obtained in the sample.

RESULTS

The participants were 185 guardians of children under two years of age. Regarding maternal variables, a higher frequency was observed for age from 18 to 24 years (50.3%), schooling of 12 years or more (50.8%) and stable union (71.4%). Regarding the economic variables, 75.1% were beneficiaries of the income transfer program, and the average value of the benefit received was R\$ 203.51. Regarding income, 70.3% had *per capita* income less than or equal to one quarter of the minimum wage, while average family income was 912.41 BRL. Referring to the child variables, 57.3% were female, with a minimum age of six months and a maximum of 23 months; the mean age was 13.43 (\pm 4.94) months; 64.9% of the children were born with adequate weight. The mean exclusive breastfeeding length was 4.33 (\pm 1.98) months, and total breastfeeding was 11 months, and only 38.9% of the children evaluated were exclusively breastfed up to six months of life (Table 1).

Tabela 1. Sociodemographic profile of mothers and characteristics of children followed-up by the Family Health Strategies, Cariri, Ceará, 2020.

Variables	n	%
Maternal age		
20 - 34 years	153	82.7
< 20 and > 34 years	32	17.3
Schooling in years		
< 12 years of study	91	49.2
\geq 12 years of study	94	50.8
Marital status		
Non-stable union	53	28.6
Stable union	132	71.4
Family income		
\leq 1/2 MW	26	14.1
1 a 1/2 MW	108	58.4
> 1 MW	51	27.6
<i>Bolsa Família</i> Social Program		
Yes	139	75.1
No	46	24.9
Maternal BMI (kg/m ²)		
Low weight	7	3.8
Eutrophy	99	53.5
Overweight	62	33.5
Obesity	17	9.2
Sex		
Female	106	57.3
Male	79	42.7
Birth weight		
\leq 2500	7	3.8
>2500	178	96.2
Exclusive breastfeeding length		
< 6 months	105	56.8
6 months	72	38.9
> 6 months	8	4.3

BMI - body mass index

The bivariate analysis showed that there was a statistically significant association ($p < 0.05$) between the variables: maternal age and schooling, *per capita* family income, water treatment, sewage destination (tables 2 and 3).

Table 2. Bivariate analysis of the association between child and maternal independent variables and exclusive breastfeeding. Cariri, Ceará, 2020.

Variable	Exclusive breastfeeding		p*
	Yes	No	
CHILD VARIABLES			
Sex			0.727
Female	47 (44.3%)	59 (55.7%)	
Male	33 (41.8%)	46 (58.2%)	
Birth weight			0.424
≤2500	2 (28.6%)	5 (71.4%)	
>2500	78 (43.8%)	100 (56.2%)	
MATERNAL VARIABLES			
Maternal age			0.043
20 - 34 years	61 (39.9%)	92 (60.1%)	
< 20 and > 34 years	19 (59.4%)	13 (40.6%)	
Maternal schooling			0.048
< 12 years of study	46 (50.5%)	45 (49.5%)	
≥ 12 years of study	34 (36.2%)	60 (63.8%)	
Smoking in pregnancy			0.132
Yes	21 (53.8%)	18 (46.2%)	
No	59 (40.4%)	87 (59.6%)	

* Pearson's chi-square test

Table 3. Bivariate analysis of the association between socioeconomic and household independent variables and exclusive breastfeeding. Cariri, Ceará, 2020.

Variable	Exclusive breastfeeding		p*
	Yes	No	
SOCIOECONOMIC VARIABLES			
<i>Per capita</i> income			0.028
≤1/4 MW	63 (48.5%)	67 (51.5%)	
> 1/4 MW	17 (30.9%)	38 (69.1%)	
<i>Bolsa Família</i> Program			0.516
Yes	62 (44.6%)	77 (55.4%)	
No	18 (39.1%)	28 (60.9%)	
N. of people per household			0.797
< 5 people	51 (44.0%)	65 (56.0%)	
≥ 5 people	29 (42.0%)	40 (58.0%)	
N. of people underage			0.518
< 3 Children	56 (41.8%)	78 (58.2%)	
≥ 3 Children	24 (47.1%)	27 (52.9%)	
Marital status			0.312
Non-stable union	26 (49.1%)	27 (50.9%)	
Stable union	54 (40.9%)	78 (59.1%)	
HOUSEHOLD VARIABLES			
Electric light			0.846
Yes	79 (43.2%)	104 (56.8%)	
No	1 (50.0%)	1 (50.0%)	
Access to water			0.783
Public network	78 (43.1%)	103 (56.9%)	
Well/cacimba/cistern	2 (50.0%)	2 (50.0%)	
Water treatment			0.030
Yes	36 (53.7%)	31 (46.3%)	
No	44 (37.3%)	74 (62.7%)	

Table 3. Bivariate analysis of the association between socioeconomic and household independent variables and exclusive breastfeeding. Cariri, Ceará, 2020. (Continues).

Variable	Exclusive breastfeeding		p*
Garbage			0.052
Municipal collection	63 (47.7%)	69 (52.3%)	
Incinerated/ uncovered	17 (32.1%)	36 (67.9%)	
Sewage			0.033
Public network	62 (48.4%)	66 (51.6%)	
Septic tank/ rudimentary tank / raw sewage	18 (31.6%)	39 (68.4%)	

* Pearson's chi-square test

After regression, only families with <1/4 minimum wage (OR: 2.270, 95%CI 1.104 - 4.666, p= 0.026) remained significantly associated with adequate exclusive breastfeeding, according to table 4.

Table 4. Multivariate logistic regression and risk measures (odds ratio - OR) and confidence interval (95% CI) for factors associated with the duration of adequate exclusive breastfeeding in children between six and 24 months. Cariri, Ceará, 2020.

Risk factors	Gross OR 95%CI	Adjusted OR 95%CI	P-value
Maternal age	2.204 (1.014-4.790)	1.803 (0.767 - 4.235)	0.176
Maternal schooling	1.804 (1.002-3.248)	1.519 (0.790 - 2.920)	0.210
<i>Per capita</i> income	2.102 (1.078-4.097)	2.270 (1.104 - 4.666)	0.026
Water treatment	1.953 (1.063-3.588)	1.877 (0.957 - 3.684)	0.067
Sewage	2.035 (1.055-3.927)	1.670 (0.728 - 3.830)	0.226
Garbage	1.934 (0.989-3.780)	11.584 (0.671 - 3.741)	0.294
Smoking	1.720 (0.845-3.503)	1.698 (0.792 - 3.639)	0.173

OR = odds ratio; CI = confidence interval.

DISCUSSION

The study indicates that EBF was practiced by approximately two out of five women registered and followed-up by the FHSs of the municipalities evaluated. Low access to exclusive breastfeeding favors the early introduction of other types of milk and other food sources, which can cause choking, dental malocclusion, atopy, overweight, anemia, intestinal microhemorrhages and impaired growth and development of the child in early childhood.^{1,18-20}

The data found for EBF length and total breastfeeding show that the results are much lower than the recommended. The mean EBF was 4.33 months, while, for total breastfeeding, it was 11 months, i.e., values well below the recommendations of the WHO and the Ministry of Health, which is six months for EBF and up to 24 months or more for total breastfeeding.¹

Regarding maternal age, the study showed that there was no significant association between this variable and EBF length. Previous studies report that early weaning is more frequent in younger women when compared to women of advanced age. Thus, it can be inferred that older women have greater experience and emotional stability in relation to various aspects that can positively influence breastfeeding.^{21, 22}

Regarding maternal education and breastfeeding length, mothers with higher schooling tend to interrupt EBF early, favoring the introduction, prematurely, of other foods in the child's diet. This inversely proportional association may occur because mothers with a higher educational level are more likely to be inserted in the labor market, which may limit the exclusive breastfeeding length.

Some studies have shown results contrary to that found in this study, i.e., the highest maternal educational level was considered a protective factor for EBF, since mothers with higher educational level have more opportunities to access information about the advantages and benefits of EBF for the child's and nursing mother's health when compared to mothers with lower educational level.²³⁻²⁷

When analyzing the relationship between the final destination of garbage and EBF, there was no significant association between these variables, although the findings of the study did not show an association between these factors. The studies by Escobar et al.²³ and Oliveira et al.²⁸ reveal that families with better water supply conditions, garbage collection and sanitation breastfeed their children for longer.

Household waste generates great concern, since, in most cases, it is disposed incorrectly in the social environment. In the present study, it is possible to observe inadequate behaviors in relation to the final destination of garbage, such as incineration, burial or uncovered dumping. Such information implies a deficiency in the execution of municipal collection, since, unfortunately, there are municipalities without adequate garbage collection systems. Incorrectly disposed garbage causes bad smell and contributes to the proliferation of insects and rodents, causing damage to human and nature health,^{29,30} and may cause communicable diseases of great risk to children's health, such as diarrhea.

Regarding socioeconomic data, *per capita* income was the only variable that presented one of the most significant results in multinomial logistic regression, and the relationship between this variable and EBF length is implicit. Thus, families with low *per capita* income are twice as likely to stay and achieve adequate EBF length according to the statistical analysis of the study. The literature review by Faleiros et al.³¹ reveals that lower-class women breastfed more than those of the upper class, due to the economic difficulties found to purchase other foodstuffs, especially from the sixth month of life. Similar results were found in the study by Wenzel & Souza,³² which sought to identify the factors that determine breastfeeding in different Brazilian regions and concluded that, in all regions evaluated, higher income was also associated with shorter breastfeeding length.

It is believed that families in situations of economic vulnerability can maintain adequate EBF because the BF is an economic and sustainable practice of feeding a small child, besides being a way to protect their children from inadequate nutrition due to food restriction or lack of availability of food adequacy.

CONCLUSION

The mean for EBF found in the study was higher than the national average for the Northeast Region, although still unsatisfactory, according to the recommendations from national and international agencies. Regarding the factors associated with EBF length, mothers with low *per capita* income were more likely to achieve duration of exclusive breastfeeding, according to WHO recommendations.

Actions aimed at promoting, adhering, maintaining, supporting and encouraging EBF should be expanded and intensified in all income strata of the population, in order to strengthen EBF practices. Finally, the findings of this research are expected to serve as a scientific contribution for future researches in relation to the factors that lead to early interruption of EBF.

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Contributors

Tavares AMC participated in data collection, statistical analysis, writing and final review of the manuscript; Silva FR participated in data collection, statistical analysis and final review; Silva RF participated in data collection and final review; Callou MAM participated in the planning of the research project and final review of the manuscript; Morais MPS participated in data collection and statistical analysis; Rocha EMB participated in the planning of the research project, statistical analysis, writing and critical review of the manuscript for submission.

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