

# Factors associated with early weaning at a Child-Friendly Healthcare Initiative Hospital

## Fatores associados ao desmame precoce em Hospital Amigo da Criança

### Abstract

**Purpose:** Considering the benefits of breastfeeding on children's health, the aim of the present study was to determine factors associated with early weaning among children at a Child-Friendly Healthcare Initiative (CFHI) children's hospital in the city of Campina Grande, state of Paraíba, Brazil.

**Methods:** An analytical, cross-sectional study was carried out involving 800 mothers of children between 0 and 24 months of age at the Elpídio de Almeida Health Institute. A semi-structured questionnaire was administered and contained questions on socio-demographic characteristics, eating habits and nonnutritive sucking habits. The chi-square test and Fisher's exact test were employed for statistical analysis. A multivariate analysis was performed with variables that achieved a  $P$ -value  $< 0.25$  in the bivariate analysis.

**Results:** The prevalence of early weaning was 13.5%. In the bivariate analysis, the factors associated with early weaning were income ( $P=0.001$ ), child's birth weight ( $P=0.016$ ), bottle feeding ( $P=0.003$ ) and pacifier use ( $P<0.001$ ). In the multivariate analysis, pacifier use remained significantly associated with early weaning (OR: 3.23; 95% CI: 1.871 to 5.591;  $P<0.001$ ).

**Conclusion:** Pacifier use was associated with early weaning, even when mothers were advised to avoid this habit.

**Key words:** Breastfeeding; risk factors; early weaning

### Resumo

**Objetivo:** Considerando os benefícios da amamentação para a saúde da criança, o objetivo do presente estudo foi determinar os fatores associados com o desmame precoce entre as crianças em um Hospital Amigo da Criança na cidade de Campina Grande, estado da Paraíba, Brasil.

**Metodologia:** Um estudo analítico e transversal foi realizado com 800 mães de crianças entre 0 e 24 meses de idade, no Elpídio de Almeida Instituto de Saúde. Um questionário semi-estruturado foi aplicado, contendo perguntas sobre características sócio-demográficas, hábitos alimentares e hábitos de sucção não nutritiva. O teste do qui-quadrado e teste exato de Fisher foram empregados na análise estatística. A análise multivariada foi realizada com as variáveis tendo atingido um valor de  $P<0,25$  na análise bivariada.

**Resultados:** A prevalência de desmame precoce foi de 13,5%. Na análise bivariada, os fatores associados com o desmame precoce foram: renda ( $P=0,001$ ), peso de nascimento da criança ( $P=0,016$ ), uso de mamadeira ( $P=0,003$ ) e uso de chupeta ( $P<0,001$ ). Na análise multivariada, o uso de chupeta permaneceu significativamente associada com o desmame precoce (OR: 3,23 IC 95%: 1,871-5,591,  $P<0,001$ ).

**Conclusão:** O uso de chupeta foi associado com o desmame precoce, mesmo quando as mães foram aconselhadas a evitar esse hábito.

**Palavras-chaves:** Amamentação; fatores de risco; desmame precoce

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## Introduction

A public health policy in Brazil that addresses the advantages of breastfeeding has been considered to be one of the fundamental pillars for the promotion, protection and support of nursing mothers and infants (1). Mother's milk has nutritional and immunological properties that play a role in the recovery from illness and the reduction in child mortality rates. The act of breastfeeding also favors the cognitive development of the child (2), avoids the development of mouth-breathing syndrome, and promotes the correct establishment of stomatognathic functions.

The literature reports that early weaning from breastfeeding may disrupt oral motor development, impairing the functions of chewing, swallowing, breathing and the articulation of sounds of speech and can lead to the development of malocclusion (3,4-6). In Brazil, the following prevalence rates of early weaning have been reported: 16.1% in Rio Branco (7), 27.3% in Alagoas (5), 29.9% in Maringá (8), 41.4% in Bezerros (9) and 63.3% in Campinas (1). The cessation of breastfeeding before six months of age may be related to cultural and social factors (8,10,11).

The prevalence of breastfeeding through the age of six months has increased in Brazil from 49% in the 1980s to 60% in the 1990s (12). However, this increase in the breastfeeding rate has not been homogeneous across the country, as significant variations are seen, depending on the region and socioeconomic characteristics of the population studied (1). Thus, early weaning remains a public health problem in the country (13).

As a strategy to encourage breastfeeding, the WHO and the United Nations Children's Fund (UNICEF) proposed the Child-Friendly Healthcare Initiative (CFHI), which aims to encourage institutions, health professionals and the community to make conscious choices regarding the proper feeding of children in early life (14).

The aim of the present study was to identify factors associated with early weaning at a CFHI hospital in the city of Campina Grande, state of Paraíba, Brazil, and to offer data that can contribute to the planning of public health policies directed at the promotion of breastfeeding.

## Methodology

This study received approval from the Human Research Ethics Committee of the Universidade Estadual da Paraíba (Brazil) under process number 0192.0.133.000-08, in compliance with Resolution 196/96 of the Brazilian National Health Council. All interviewed mothers agreed to participate by signing a statement of informed consent.

An analytical, cross-sectional study was carried out for the evaluation of variables related to socio-demographic characteristics, dietary patterns and nonnutritive sucking habits among children of mothers discharged from the

Elpidio de Almeida Health Institute, which is CFHI member, in the city of Campina Grande, state of Paraíba, Brazil. Three hospitals in this city have CFHI status. The Elpidio de Almeida Health Institute is the largest, and it is considered a point of reference in the city and surrounding areas; it was therefore selected as the location for the present study.

The inclusion criteria were mothers whose children (less than two years of age) were treated at the Elpidio de Almeida Health Institute and who signed a statement of informed consent. The exclusion criteria were mothers that were prevented from breastfeeding due to health problems, those with drug addictions, those who had used drugs during lactation, those who refused to participate and those whose infants presented problems that prevented or hindered breastfeeding.

The sample size was calculated from an estimation of annual care ( $n=4800$ ), based on the monthly care estimates of the institute (400 patients per month). Considering a 5% maximal acceptable error and a 99% confidence level, a minimum acceptable sample of 584 mothers was determined using the Epi Info™ 6 program. To compensate for possible losses, the sample was increased to 800 mothers.

Through an interview using a structured questionnaire, the mothers were asked about the feeding patterns of their infants during the period from October 2008 to February 2009. The reliability of the responses was tested using the "face" validation method in 10% of the respondents. With this method, the researcher investigates the understanding of each question by asking the respondent to rephrase with question in her own words (15). Early weaning was defined as the complete interruption of breastfeeding in the first six months of life (1).

Data analysis involved the chi-square test and Fisher's exact test (5% level of significance), using the Statistical Package for the Social Sciences (SPSS v.13.0). A multivariate logistic regression analysis was performed with all variables that achieved a  $P$ -value  $<0.25$  in the bivariate analysis.

## Results

The prevalence of early weaning was 13.5% ( $n=108$ ). Table 1 displays the socio-demographic characteristics of the mothers that reported early weaning. Table 2 displays the characteristics and nonnutritive sucking habits of the children that exhibited early weaning. According to the bivariate analysis, the following factors were associated with early weaning: family income ( $P=0.001$ ), birth weight of the child ( $P=0.016$ ), bottle feeding ( $P=0.003$ ) and pacifier use ( $P<0.001$ ).

Table 3 displays the results of the multiple logistic regression. Only three variables remained in the final model (family income, bottle feeding and pacifier use), with pacifier use alone proving to be significantly associated with early weaning ( $P<0.001$ ).

**Table 1.** Evaluation of early weaning according to mothers' socio-demographic characteristics; Campina Grande, Paraíba, Brazil

Variable	Early weaning				TOTAL		P-value	OR (95% CI)
	Yes		No		N	%		
	N	%	N	%				
Age group								
14-20 years	30	13.5%	193	86.5%	223	100%	0.981 <sup>(1)</sup>	0.994 (0.632-1.564)
21 years or more	78	13.5%	499	86.5%	577	100%		
Marital status**								
Single	25	13.1%	166	86.9%	191	100%	0.837 <sup>(1)</sup>	0.951 (0.588-1.537)
Married	83	13.7%	524	86.3%	607	100%		
Schooling								
< 8 years	90	14%	553	86%	643	100%	0.405 <sup>(1)</sup>	1.257 (0.733-2.155)
8 years or more	18	11.5%	139	88.5%	157	100%		
Works outside home**								
Yes	20	12.9%	135	87.1%	155	100%	0.803 <sup>(1)</sup>	0.936 (0.556-1.575)
No	88	13.7%	556	86.3%	644	100%		
Household Income								
3 or + times the minimum salary	21	26.3%	59	73.8%	80	100%	0.000* <sup>(1)</sup>	2.590 (1.50-4.471)
≤2 times the minimum salary	87	12.1%	633	87.9%	720	100%		
<b>Total group</b>	<b>108</b>	<b>13.5</b>	<b>692</b>	<b>86.5</b>	<b>800</b>			

\* Significant difference at 5.0%; \*\* Some interviewees did not provide this information.

<sup>(1)</sup> Chi-square test.

**Table 2.** Evaluation of early weaning according to pregnancy characteristics and nonnutritive sucking habits of children; Campina Grande, Paraíba, Brazil

Variable	Early weaning				TOTAL		P-value	OR (95% CI)
	Yes		No		N	%		
	N	%	N	%				
Gender								
Male	61	14.2%	368	85.8%	429	100%	0.522 <sup>(1)</sup>	1.14 (0.75-1.72)
Female	47	12.7%	324	87.3%	371	100%		
Birth weight (g)**								
< 2.5kg	16	21.9%	57	78.1	73	100%	<b>0.016</b> * <sup>(1)</sup>	2.065 (1.134-3.761)
2.5 kg or +	84	12%	618	88%	702	100%		
First child								
Yes	60	15.3%	333	84.7%	393	100%	0.151 <sup>(1)</sup>	1.348 (0.896-2.026)
No	48	11.8%	359	88.2%	407	100%		
Planned pregnancy								
Yes	56	12.8%	383%	87.2%	439	100%	0.497 <sup>(1)</sup>	0.869 (0.579-1.304)
No	52	14.4%	309%	85.6%	361	100%		
Prenatal								
Yes	107	13.5%	687	86.5	794	100%	0.582 <sup>(2)</sup>	0.779 (0.090-6.730)
No	1	16.7%	53	83.3	6	100%		
Type of delivery								
Normal	61	13.7%	682	86.3%	790	100%	0.374 <sup>(2)</sup>	0.863 (0.840-0.888)
Cesarean	–	–	10	100%	10	100%		
Pacifier sucking								
Yes	83	27.3%	221	72.7%	304	100%	<b>&lt;0.001</b> * <sup>(1)</sup>	7.076 (4.401-11.376)
No	25	5%	471	95%	496	100%		
Bottle feeding**								
Yes	107	37.4%	179	62.6%	286	100%	<b>0.003</b> * <sup>(2)</sup>	10.760 (1.416-81.751)
No	1	5.3%	18	94.7%	19	100%		
<b>Total Group</b>	<b>108</b>	<b>13.5</b>	<b>692</b>	<b>86.5</b>	<b>800</b>	<b>100.0</b>		

\* Significant difference at 5.0%; \*\* Some interviewees did not provide this information.

<sup>(1)</sup> Chi-square test; <sup>(2)</sup> Fisher's exact test.

**Table 3.** Logistic regression results for early weaning; Campina Grande, Paraíba, Brazil

Variable	OR and 95% CI		P-value
	Bivariate analysis	Adjusted model	
Family income			
3 or + times the minimum salary	2.590 (1.5 to 4.471)	1.307 (0.945 to 1.807)	0.106
≤ 2 times the minimum salary			
Bottle feeding			
Yes	10.760 (1.416 to 81.751)	5.498 (0.697 to 43.362)	0.106
No			
Pacifier sucking			
Yes	7.076 (4.401 to 11.376)	3.234 (1.871 to 5.591)	< 0.001*
No			

(\*) Significant difference at 5.0%.

## Discussion

In the present study, 13.5% of the children were weaned early, which is a lower percentage than those reported in other Brazilian studies (1,5,7,9). This low percentage may be a consequence of the efforts of the Elpidio de Almeida Health Institute to prevent early weaning. The institution follows the ten steps for successful breastfeeding, which include the education of the mother regarding the benefits of exclusive breastfeeding, awareness on the part of the health team regarding the importance of breastfeeding, recommendations for the non-use of bottles and pacifiers on the hospital grounds and the encouragement of mothers to avoid these practices following discharge from the hospital (14). Other studies have evaluated the impact and importance of such programs in promoting breastfeeding (16,17).

In the present study, the mother's age exerted no influence on the discontinuation of breastfeeding (Table 1), which is in agreement with findings described in the literature (1,8,9).

Studies report that greater marital stability or the presence of a partner provides a positive influence in extending the breastfeeding period (8). However, the analysis of the participants' marital status revealed no significant association with the occurrence of early weaning (Table 1). Similar findings have also been described by other authors (1).

Although studies indicate that the mother's education is related to early weaning (1,8,16,18,19), no significant association was found between these variables in the present study (Table 1). Moreover, no significant association was found between working outside the home and early weaning (Table 1), which is in agreement with findings reported in previous studies (9,16). However, some studies report that working outside the home is a factor that hinders the establishment of adequate breastfeeding (20,21).

A significant association was found between a higher household income and early weaning. Families with a monthly income equal to or greater than three times the Brazilian minimum salary (US\$ 320) had a higher risk of early weaning (Table 1), a result that differs from data reported

in the literature (9,22). This finding may be explained by the easier access to breast milk substitutes for this portion of the population.

A number of studies report the influence of gestational characteristics on early weaning, such as primiparity, unwanted pregnancy and the completion of prenatal care (1,9). However, this association was not found in the present study (Table 2). Likewise, no association was found between the child's gender and early weaning (Table 2), which is in agreement with findings reported in the literature (18). Birth weight can interfere with the breastfeeding practice, and it is a determinant of child survival and neonatal nutritional planning (3,14). The bivariate analysis revealed an association between low birth weight and early weaning (Table 2). However, this variable lost its significance following the adjustment of the model. These results are in agreement with findings described in the literature (19).

As in this study (Table 2), a number of authors have reported the influence of pacifier use and/or bottle feeding on early weaning (1,8-10,19,23). However, multivariate analysis indicated that only the habit of pacifier sucking was significantly associated with early weaning (Table 3). The introduction of a pacifier or bottle, especially at the beginning of the breastfeeding period, seems to confuse the sucking reflex through the "nipple confusion" phenomenon, which determines the incorrect positioning of the infant's tongue when suckling at the breast and leads to early weaning (24). Moreover, women who introduce pacifiers tend to breastfeed their infants less frequently and experience breastfeeding problems that are consistent with infrequent feeding, thereby contributing to early weaning (25). In this sense, the CFHI contributes to child health policies in Brazil through the support of breastfeeding with the aim of improving the quality of life of Brazilian children.

Although the prevalence of early weaning reported in the present study may be relatively low, the factors associated with this practice are similar to those reported in previous studies in populations served by institutions not accredited by the CFHI (9,19). This underscores the importance of

strategies aimed at encouraging the practice of exclusive breastfeeding until the sixth month of life and the prevention of pacifier use among infants. Further studies in hospitals not accredited by the CFHI should be conducted in the city of Campina Grande (Paraíba, Brazil) in order to clarify the impact of this strategy on the prevention of early weaning.

## Conclusions

Based on the findings of the present study, pacifier use was associated with early weaning in the analyzed

population, even when the mothers were advised to avoid introducing a pacifier.

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