

BREASTFEEDING IN PATIENTS ADMITTED IN A PEDIATRIC INTENSIVE CARE UNIT

ALEITAMENTO MATERNO EM PACIENTES ADMITIDOS EM UNIDADE DE TERAPIA INTENSIVA PEDIÁTRICA

LACTANCIA MATERNA EN PACIENTES INGRESADOS EN UNIDAD DE CUIDADOS INTENSIVOS PEDIÁTRICOS

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Funding: No funding.

Submitted on: 2020/06/15

Approved on: 2021/01/25

Responsible Editors:

 Mariana Santos Felisbino Mendes
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ABSTRACT

Objectives: to analyze the proportion of breastfeeding (BF) in patients under six months of age admitted to the pediatric intensive care unit (UTP), to compare the type of BF offered at admission and at discharge and to verify, using quantitative and qualitative variables, groups with a higher proportion of early weaning. **Method:** retrospective and longitudinal study. Medical records of infants up to six months of age admitted between 2014 and 2016 to the PICU were consulted. The data collected were: the type of breastfeeding on admission and discharge of infants, data on the characterization of mothers and clinical data on patients. The data were submitted to descriptive statistics, with a significance level of 5%. **Results:** of the 104 medical records analyzed, 46.2% registered weaning on admission. At discharge, 13.6% of those admitted to exclusive breastfeeding were weaned. **Conclusion:** in patients admitted to the PICU from 2014 to 2016, the prevalence of EBF (21.1%) was lower than the national indexes in the age group between zero and six months (45.7%), as well as the goals recommended by the WHO (above 50%). Hospitalization had a significant impact on breastfeeding, with a total of only 38 patients being discharged with some type of breastfeeding. The following were significant for weaning: length of stay; formula offering days; and enteral catheter feeding.

Keywords: Intensive Care Units, Pediatric; Hospitalization; Breast Feeding; Weaning; Infant; Nursing.

RESUMO

Objetivos: analisar a proporção de aleitamento materno (AM) em pacientes menores de seis meses admitidos na unidade de terapia intensiva pediátrica (UTIP), comparar o tipo de AM oferecido na admissão e na alta e verificar, a partir de variáveis quantitativas e qualitativas, grupos com maior proporção de desmame precoce. **Método:** estudo retrospectivo e longitudinal. Consultados prontuários de lactentes com até seis meses de idade internados entre 2014 e 2016 na UTIP. Os dados coletados foram: o tipo de aleitamento materno na admissão e na alta hospitalar dos lactentes, dados de caracterização das mães e dados clínicos dos pacientes. Os dados foram submetidos à estatística descritiva, com nível de significância de 5%. **Resultados:** dos 104 prontuários analisados, 46,2% registraram desmame já na admissão. Na alta, apresentaram desmame 13,6% dos admitidos em aleitamento materno exclusivo. **Conclusão:** nos pacientes admitidos na UTIP de 2014 a 2016, a prevalência de AME (21,1%) foi inferior aos índices nacionais na faixa etária entre zero e seis meses (45,7%), bem como às metas recomendadas pela OMS (acima de 50%). A hospitalização teve relevante impacto no aleitamento, com o total de apenas 38 pacientes tendo alta com algum tipo de aleitamento. Foram significantes para o desmame: tempo de internação; dias de oferecimento de fórmula; e alimentação por cateter enteral.

Palavras-chave: Unidades de Terapia Intensiva Pediátrica; Hospitalização; Aleitamento Materno; Lactente Desmame; Enfermagem.

RESUMEN

Objetivos: analizar la proporción de lactancia materna (LM) en pacientes menores de seis meses ingresados en la unidad de cuidados intensivos pediátricos (UCIP), comparar el tipo de lactancia materna ofrecida al ingreso y egreso y verificar, mediante variables cuantitativas y cualitativas, grupos con mayor proporción de destete precoz. **Método:** estudio retrospectivo y longitudinal. Se consultaron las historias clínicas de los lactantes hasta los seis meses ingresados entre 2014 y 2016 en la UCIP. Los datos recogidos fueron: tipo de lactancia materna al ingreso y egreso de los lactantes, datos de caracterización de las madres y datos clínicos de los pacientes. Los datos se sometieron a estadística descriptiva, con un nivel de significancia del 5%. **Resultados:** de las 104 historias clínicas analizadas, el 46,2% registró destete al ingreso. Al alta, registró destete 13,6% de los ingresados en lactancia materna exclusiva. **Conclusión:** en los pacientes ingresados en la UCIP entre 2014 y 2016, la prevalencia de LME (21,1%) fue menor que los índices nacionales en el grupo de edad entre cero y seis meses (45,7%), así como las metas recomendadas por la OMS (arriba 50%). La hospitalización tuvo un impacto significativo en la lactancia materna, con un total de solo 38 pacientes dadas de alta con algún tipo de lactancia. Los siguientes fueron significativos para el destete: duración de la estadia; días de oferta de fórmula; y alimentación por catéter enteral.

Palabras clave: Unidades de Cuidado Intensivo Pediátrico; Hospitalización; Lactancia Materna; Destete; Lactante; Enfermería.

How to cite this article:

Marcuz JC, Emidio SCD, Carmona EV. Breastfeeding in patients admitted in a pediatric intensive care unit. REME - Rev Min Enferm. 2021[cited _____];25:e-1359. Available from: _____ DOI: 10.5935/1415.2762.20210007

INTRODUCTION

Exclusive breastfeeding (EBF) is recommended from the first hour of life to six months of age. The World Health Organization (WHO) recommends this practice in order to reduce mortality and promote child growth and development.¹ Breast milk is a complete food that reduces the occurrence of various diseases in infants, reducing the chances of hospitalization.²

In Brazil, the prevalence of EBF in children under six months has increased significantly in the last decades: from 2.9%, in 1986, to 45.7% in 2020. However, the prevalence of national EBF has not yet reached the goal recommended by the WHO: above 50%.³

There are several factors that can lead breastfeeding mothers to early weaning, among them, the need for the hospitalization of the child.⁴ In care practice, clinical instability represents a relevant challenge for the promotion of breastfeeding (BF), as it demands the use of invasive devices and therapeutic measures that prevent feeding orally and in the mother's breast. In this situation, the alternative to maintain the supply of breast milk is to extract it to be offered by gastric or transpyloric catheters - thus, the multi-professional team needs to instruct and assist the mother.⁵ This intervention is also important for maintaining lactation, since the physiological process of milk production requires constant stimulation.^{5,6}

During the hospitalization of an infant, milk production can be altered due to several factors experienced by the Nursing mother: emotional changes related to the child's clinical condition; changes in routine, food and hydration; change in physical comfort; limitations for adequate rest periods; absence of adequate peri-areolar stimulus, among others.⁷

Most publications on BF in intensive care units (ICUs) deal with the neonatal population. In order to better understand this phenomenon from the perspective of Pediatrics, there was an interest in developing research on the prevalence of breastfeeding in the context of the pediatric intensive care unit (PICU), in order to provide support for future interventions.⁸ In addition, the clinical experience of the authors of the present study brought the perception that the infant's admission to the ICU adds challenges that make this population more prone to early weaning.⁷ Therefore, the authors' literature and empirical observation led to the elaboration of the hypothesis that hospitalization can have a negative impact on BF.

Thus, this research aimed to analyze the proportion of BF in patients younger than six months admitted to the pediatric intensive care unit, to compare the type of BF of-

ferred at admission and at discharge and to verify groups with a higher proportion of early weaning from variables quantitative and qualitative aspects of the sample.

METHOD

This is a descriptive, retrospective and longitudinal study that was carried out at the PICU of a public teaching hospital in the countryside of *São Paulo* state. In the hospital studied, the Pediatrics service has 12 ICU beds and 36 inpatient units. The institution is not accredited to the Baby Friendly Hospital Initiative and does not have a human milk bank. The promotion of BF is carried out according to his previous training of the team, as well as its individual and spontaneous search for continuing education on the topic.

The medical records of patients under six months of age were consulted, whose admission to the study hospital occurred between January 1, 2014 and December 31, 2016. A hospitalization flow of patients for inclusion in this study was considered: admission by the referenced emergency unit, followed by stay in the PICU and, before hospital discharge, later stay in the pediatric inpatient unit (UIP). Those who started their hospitalization period via the IPU after the referenced emergency were excluded. This is a non-probabilistic sample. To avoid bias, medical records of patients with the following characteristics were not included in the study: children with malformations or genetic syndromes that make breastfeeding impossible since birth; children who died or were transferred to another health service before hospital discharge; children admitted to the UIP or other service prior to admission to the PICU.

For data collection, an own instrument was developed containing maternal information, clinical data of the child in the PICU and type of breastfeeding at admission and discharge. The dependent variable of this research was "breastfeeding at discharge", which was the record that the infant was receiving breast milk in any quantity or route. The independent ones were: medical diagnosis; age; infant's weight at admission; number of days spent in the ICU, in the IPU and total length of stay; type of breastfeeding at admission and discharge; type of food received during hospitalization; registration of breastfeeding by the mother and breast supply during hospitalization; use of invasive devices that could interfere with oral feeding; use of invasive and non-invasive ventilation; submission to surgical procedures. Maternal data were also collected, such as age, city of origin, number of children and presence of a partner.

All medical records were consulted at the hospital's Medical Archive Service by two authors of the study. The data were submitted to descriptive statistics. The McNemar and Stuart-Maxwell tests were used to compare the type of breastfeeding at admission and at discharge. To assess the differences between the proportions, the chi-square test and Fisher's exact test were applied.⁹For comparisons involving a qualitative variable with two categories and a quantitative variable, the Mann-Whitney non-parametric test was applied. And for comparisons involving a qualitative variable with more than two categories and a quantitative variable, the Kruskal-Wallis non-parametric test was applied, followed by the Dunn post-test.¹⁰The Statistical Package for the Social (SPSS), version 22 was used. The level of significance adopted for the statistical tests was 5%.

This research complied with the recommendations regarding the ethical aspects of Resolution 466/2012 of the Brazilian National Health Council (*Conselho Nacional de Saúde* – CNS) and was approved by the Research Ethics Committee (CEP),¹⁰ with Opinion Nr. 1.987.987.

RESULTS

During the study period, 124 patients under six months of age were admitted to the PICU. Initially, 104 medical records were included, identifying the prevalence of BF on admission: 56 patients (53.8%) were admitted with some type of BF, of which only 22 (21.1%) on EBF; while 48 (46.2%) have already been admitted at weaning. The results of this research emphasized the 56 patients who were on some type of breastfeeding at the time of admission (Figure 1).

Considering the 56 patients with some type of BF, the majority were white (73.2%), male (73.2%) and born at term (62.5%). The most frequent cause of hospitalization of infants younger than six months in the PICU was related to respiratory disorders (42.9%). The infants' ages ranged from six days to five months of life, while the maternal age was 16 to 40 years. Regarding the number of children, the responses ranged from one to five (Table 1).

The infants admitted to EBF were compared with those who were in non-exclusive AM, according to the variables: age ($p=0.063$) and weight ($p=0.167$) of the patient, maternal age ($p=0.408$) and number of children ($p=0.697$). This analysis did not identify any statistically significant differences. It was also analyzed whether there were statistically significant differences between the type of BF on admission and variables of characterization, such as: gestational age ($p=0.152$), patient's race ($p=0.477$), sex ($p=0.184$), provenience ($p=0.034$) and the mother's marital status ($p=0.662$). These same variables were compared with the type of BF at discharge and there was a statistically significant difference only between the type of BF on admission and the mothers' origin: it was identified that EBF was more frequent among infants born in *Campinas-SP* ($p=0.034$). On the other hand, the statistical analyzes did not show statistically significant differences of these variables in the context of discharge.

There was a statistically significant difference between the type of BF at admission and at discharge, thus noting that hospitalization demonstrated a relevant impact on changing the type of BF. Due to the eight medi-

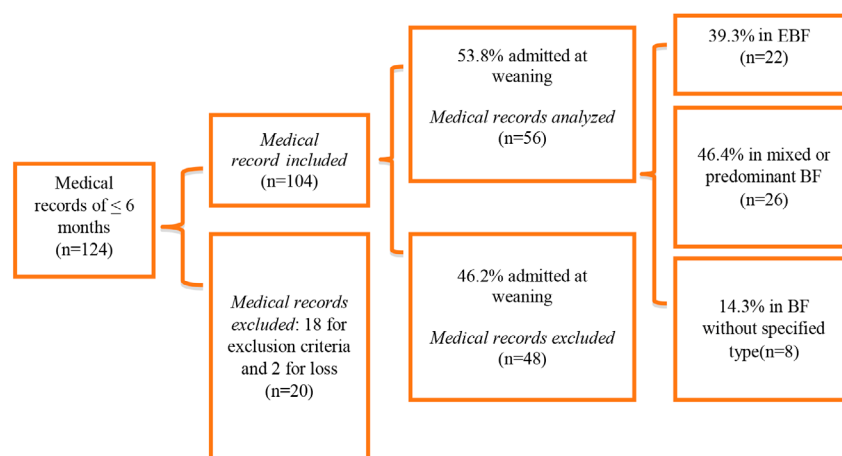


Figure 1 - Flow of eligibility and classification of medical records according to maternal breastfeeding of infants admitted to the PICU from 2014 to 2016. *Campinas*, SP, Brazil. 2018
Source: data of the authors.

Table 1 - Distribution of characteristics of infants admitted to the PICU from 2014 to 2016 and their mothers. Campinas, SP, Brazil, 2018 (n=56)

| Characteristics | N | % |
|---|-----------|------------|
| INFANT | | |
| Sex | | |
| Female | 15 | 26.8 |
| Male | 41 | 73.2 |
| Race | | |
| White | 41 | 73.2 |
| Brown | 15 | 26.8 |
| Black | 0 | 0 |
| Gestational age at birth | | |
| ≥ 37 weeks | 35 | 62.5 |
| > 34 and < 37 weeks | 11 | 19.6 |
| ≤ 34 weeks | 10 | 17.9 |
| Age at admission | | |
| ≤ 28 days | 6 | 10.7 |
| 29 to 60 days | 34 | 60.7 |
| 61 to 120 days | 13 | 23.2 |
| > 120 days | 3 | 5.4 |
| Diagnosis that motivated hospitalization | | |
| Respiratory disorders | 24 | 42.9 |
| Postoperative | 8 | 14.3 |
| Shock /sepsis | 6 | 10.7 |
| Neurological disorder | 5 | 8.9 |
| ALTE* | 4 | 7.1 |
| Hydroelectrolytic/metabolic disorder | 3 | 5.3 |
| Cardiorespiratory arrest | 2 | 3.6 |
| Other causes | 4 | 7.1 |
| Provenience | | |
| Campinas-SP | 20 | 35.7 |
| Other cities in São Paulo state | 33 | 58.9 |
| Other states | 1 | 1.8 |
| No registration | 2 | 3.6 |
| MOTHER | | |
| AGE | | |
| < 18 years | 2 | 3.6 |
| 18 to 20 | 4 | 7.1 |
| 21 to 30 | 20 | 35.7 |
| 31 to 40 | 8 | 14.3 |
| No registration | 22 | 39.3 |
| Partner | | |
| No | 6 | 10.7 |
| Yes | 34 | 60.7 |
| No registration | 16 | 28.6 |
| Number of children | | |
| 1 | 18 | 32.2 |
| 2 | 11 | 19.6 |
| 3 to 5 | 16 | 28.6 |
| No registration | 11 | 19.6 |
| TOTAL | 56 | 100 |

* ALTE: Aparent life-threatening event.

cal records in which the type of BF was not specified at admission, the number used in these analyzes was 48 and not 56 (Table 2).

Table 2 - Comparison between the type of maternal breastfeeding at admission and at discharge from infants under six months of age admitted to the PICU, between 2014 and 2016. Campinas, SP, Brazil (n = 48)

| Variable | Type of BF at Discharge | | | p-value* |
|-----------------------------|-------------------------|---------------|---------|----------|
| | AME | Outro tipo AM | Desmame | |
| BF Type at Admission | | | | 0.009 |
| EBF | 12 | 7 | 3 | |
| Another type of BF | 3 | 16 | 7 | |
| Weaning | 0 | 0 | 0 | |

p-value obtained using the Stuart-Maxwell test.

The total hospitalization time ranged between two and 350 days, with a median of 13.5 days. When comparing the type of breastfeeding at discharge with the number of days of hospitalization, there was a statistically significant difference ($p=0.004$). The length of stay in the ICU, the IPU and the total time of hospitalization, i.e., the sum of the days spent in the ICU and the IPU, were evaluated (Table 3).

The infants who were weaned at discharge was the median of 18.5 days of hospitalization, while that of those who were discharged in non-exclusive BF was five days. For patients who were discharged from EBF, the ICU time was four days. Patients who were discharged at weaning had a median of 14 days in the IPU and a median total hospital stay of 36.5 days.

The number of days on which patients received formula, breast milk (BM) or mixed breastfeeding (BM and formula) was quantified, as well as the period of fasting and parenteral nutrition. With these data, comparisons were made between the type of food and the type of breastfeeding at discharge. The comparisons whose results were statistically significant are described in Table 4, in which it was found that patients weaned at discharge received formula for a longer time during hospitalization than those who left with some type of BF ($p=0.001$).

When analyzing the number of fasting days in the ICU and the total length of hospital stay (fasting time when in the ICU plus the fasting time in the IPU), there were statistically significant differences in the type of BF at discharge ($p=0.009$), being that the median of fasting days was higher among patients weaning at the time of discharge. However, when the number of fasting

Table 3 - Comparison between days of hospitalization and type of breastfeeding at hospital discharge for infants younger than six months admitted to the PICU. Campinas, SP, Brazil, 2014-2016 (n=56)

| Variable | Type of BF at discharge | N | Mean | Standard-Deviation | Minimum | Q1 | Median | Q3 | Maximum | p-value* |
|--------------|-------------------------|----|-------|--------------------|---------|-------|--------|-------|---------|----------------|
| HD† PICU | EBF | 17 | 5.82 | 5.57 | 1.00 | 2.00 | 4.00 | 10.00 | 18.00 | 0.009 A.B** |
| | Non exclusive | 27 | 7.63 | 8.18 | 2.00 | 2.00 | 5.00 | 12.00 | 40.00 | |
| | Weaning | 12 | 36.75 | 55.92 | 1.00 | 7.00 | 18.50 | 43.50 | 205.00 | |
| HD† IPU | EBF | 17 | 4.71 | 2.62 | 1.00 | 2.00 | 5.00 | 7.00 | 8.00 | 0.027 A** |
| | Non exclusive | 27 | 9.30 | 7.80 | 0.00 | 4.00 | 5.00 | 14.00 | 29.00 | |
| | Weaning | 12 | 25.83 | 39.32 | 1.00 | 7.00 | 14.00 | 24.00 | 145.00 | |
| HD† Total | EBF | 17 | 10.53 | 6.83 | 2.00 | 5.00 | 10.00 | 15.00 | 23.00 | 0.004 A** |
| | Non exclusive | 27 | 16.93 | 13.63 | 3.00 | 7.00 | 13.00 | 24.00 | 65.00 | |
| | Weaning | 12 | 63.42 | 93.74 | 3.00 | 19.00 | 36.50 | 65.50 | 350.00 | |

HD†: Hospitalizationdays.

*p-value obtained using the Kruskal-Wallis test.

**Dunn's post-test showed a significant result in: A= EBF x weaning; B = another type of BF x weaning; C= EBF x other BF type.

Table 4 - Comparisons between the duration in days of the type of food or fast, according to the place of hospitalization, and the type of breastfeeding at discharge. w, SP, Brazil, 2014-2016 (n=56)

| Variable | Type of BF at discharge | N | Mean | Standard-Deviation | Minimum | Q1 | Median | Q3 | Maximum | p-value* |
|--------------------------------|-------------------------|----|-------|--------------------|---------|-------|--------|-------|---------|------------------|
| Days of formula in the ICU | EBF | 17 | 2.41 | 4.40 | 0.00 | 0.00 | 0.00 | 2.00 | 16.00 | 0.001 A.B** |
| | Non exclusive | 27 | 3.26 | 5.11 | 0.00 | 0.00 | 1.00 | 5.00 | 21.00 | |
| | Weaning | 12 | 31.50 | 51.41 | 0.00 | 4.50 | 15.00 | 38.50 | 186.00 | |
| Days of formula in the AI† | EBF | 17 | 0.35 | 1.22 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | < 0.001 A.B** |
| | Non exclusive | 27 | 2.04 | 3.74 | 0.00 | 0.00 | 0.00 | 3.00 | 15.00 | |
| | Weaning | 12 | 25.92 | 39.20 | 1.00 | 7.50 | 14.50 | 23.50 | 145.00 | |
| Total days of formula | EBF | 17 | 2.76 | 5.48 | 0.00 | 0.00 | 0.00 | 2.00 | 21.00 | <0.001 A.B** |
| | Non exclusive | 27 | 5.30 | 8.33 | 0.00 | 0.00 | 3.00 | 7.00 | 36.00 | |
| | Weaning | 12 | 56.58 | 89.65 | 2.00 | 17.50 | 27.00 | 60.50 | 331.00 | |
| Days of BM+ formula in the ICU | EBF | 17 | 1.12 | 1.54 | 0.00 | 0.00 | 0.00 | 2.00 | 4.00 | 0.013 B** |
| | Non exclusive | 27 | 1.81 | 2.30 | 0.00 | 0.00 | 1.00 | 3.00 | 10.00 | |
| | Weaning | 12 | 0.25 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | |
| Days of BM+ formula in the AI† | EBF | 17 | 0.47 | 0.80 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | <0.001 B.C** |
| | Non exclusive | 27 | 6.33 | 6.46 | 0.00 | 3.00 | 4.00 | 8.00 | 29.00 | |
| | Weaning | 11 | 0.09 | 0.30 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | |
| Total days of BM+formula | EBF | 17 | 1.59 | 1.94 | 0.00 | 0.00 | 1.00 | 2.00 | 6.00 | <0.001 B.C** |
| | Non exclusive | 27 | 8.15 | 6.90 | 1.00 | 3.00 | 5.00 | 13.00 | 30.00 | |
| | Weaning | 12 | 0.42 | 0.67 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | |
| Days of fasting in the ICU | EBF | 17 | 1.71 | 2.78 | 0.00 | 1.00 | 1.00 | 2.00 | 12.00 | 0.009 A** |
| | Non exclusive | 27 | 2.70 | 3.46 | 0.00 | 1.00 | 2.00 | 3.00 | 17.00 | |
| | Weaning | 12 | 4.92 | 4.74 | 0.00 | 2.00 | 4.00 | 6.00 | 18.00 | |
| Total days of fasting | EBF | 17 | 1.76 | 3.01 | 0.00 | 1.00 | 1.00 | 2.00 | 13.00 | 0.008 A** |
| | Non exclusive | 27 | 3.20 | 3.99 | 0.00 | 1.00 | 2.00 | 3.00 | 18.00 | |
| | Weaning | 12 | 5.33 | 5.07 | 0.00 | 2.00 | 4.00 | 6.00 | 18.00 | |

AI†= admissionunit.

* p-value obtained using the Kruskal-Wallis test.

** Dunn's post-test showed a significant result in: A= EBF x weaning; B = another type of BF x weaning; C= EBF x other BF type.

days during the IPU stay was analyzed in isolation, there were no statistically significant differences in the type of BF at discharge. When analyzing the duration of parental nutrition therapy and the type of BF at discharge, no statistically significant differences were identified: either during the total length of hospital stay or considering separately the period of stay in the PICU or UIP.

Among the tests that analyzed the relationship between the type of BF at discharge and factors related to treatment (use of non-invasive ventilation, orotracheal intubation, tube feeding and exposure to surgical procedures), the differences were statistically significant only between the type of BF and feeding via an enteral catheter ($p=0.019$), in which the use of this device did not favor BF. When analyzing the type of BF, the supply of maternal breast and the extraction of breast milk to offer by tube, it was found that the supply of maternal breast showed statistically significant results in all periods of hospitalization, whether in PICU ($p=0.002$) or in UIP ($p<0.001$), related to human milk consumption at discharge.

DISCUSSION

In the patients admitted to the hospital's PICU in a study from 2014 to 2016, it was found that the prevalence of EBF (21.1%) was lower than the national indexes in the age group between zero and six months (45.7%) and that the goals recommended by the WHO (above 50%).³ These data show that there is a need to intensify efforts in primary care to improve these rates, since the population served is already vulnerable in terms of early weaning even before the event of hospitalization. Thus, there is an urgent need to strengthen public strategies and policies to encourage, protect and promote BF involving the context of prenatal and childcare consultations.^{11,12}

As for the reasons that led to hospitalization, the results were similar to those obtained in other studies, in which respiratory disorders stood out as the cause of hospitalization.^{2,13} There is evidence in the literature that the maintenance of BF is related to prevention this and other diseases. Thus, promoting this practice can help prevent hospitalizations and reduce child mortality. The low prevalence of EBF on admission and the high rates of hospitalization for respiratory disorders emphasize the relevance of this recommendation in the studied context.^{2,13,14}

Most of the patients included in the study were born at term (62.5%), which is compatible with the results of other studies, since prematurity is a risk factor for early interruption of BF.¹⁵

Data analysis suggested that older infants have a lower frequency of EBF. This is related to the median age of patients admitted to EBF (33.5 days), which was almost twice as low as that of those admitted to another type of BF (60 days). This trend was also observed in a study carried out in a *Hospital Amigo da Criança*, which followed the infants for six months after discharge: considering the total of 261 patients, 99% of those born in the hospital were discharged in EBF, which declined over time of the time: 75% maintained EBF for 30 days, 52% for 90, 33% for 120 days, 19% for 150 and 5.7% for 180 days.¹⁶ These data reveal that a differentiated monitoring by the health team is essential for the maintenance of EBF, so that its benefits can be experienced by the population, considering its important impact on health.

As for the provenience, 57.1% of the patients admitted to EBF had been born in the same city as the researched institution. This fact may be related to the efforts directed by the municipality to promote EBF, either in primary care or in maternity hospitals. The literature states that the existence of large research centers and public hospitals accredited to the Baby Friendly Hospital initiative, with measures to encourage BF, is related to more favorable results regarding BF.¹⁶ Other research conducted in the city of Campinas identified the occurrence of EBF in the first four months of life, with a prevalence of 46% in infants aged zero to six months.^{3,16,17}

In the studied sample, the low frequency of adolescent mothers (3.6%) corresponds to a protective factor against BF, since the literature shows an unfavorable relationship between the maintenance of EBF and low maternal age.¹⁸

Of the total number of mothers, 18 were primiparous, which requires a closer look from the team, since the publications show shorter duration of EBF in the first pregnancy. This maternal characteristic demands a specific care plan, especially when there is a need for hospitalization. In addition, the child's clinical condition, institutional policies and family dynamics are factors that can make it difficult to maintain BF.¹¹

In the present study, hospitalization had statistically significant differences in the modification of the type of BF: of the patients admitted to some type of BF, 20.8% were fully weaned during hospitalization. Among those admitted, 39.3% were in EBF and formulas were introduced in 45.4% of them during hospitalization, and the prevalence of EBF dropped from 39.3% to 31.3% after that period. In a survey of 50 children admitted to a pediatric teaching hospital in *Curitiba*, formulas were introduced in 28% of patients admitted to EBF and the

prevalence of EBF dropped from 60% to 32% after hospitalization.¹³ It appears that, in both studies, hospitalization negatively influenced BF, reducing the prevalence of BF of any type and BF in both samples. Considering this probable outcome referred to in the literature, it is imperative that pediatric institutions develop strategies to protect and promote BF, even though they are not accredited as Child-Friendly hospitals.

The prevalence of EBF at discharge (31.3%) and length of hospital stay (median of 13.5 days) were similar to those found in an international multicentric investigation carried out in neonatal ICUs: a median of 16 days of hospitalization was found, and the prevalence of EBF at discharge was 33% among infants weighing $\geq 2,500$ g.¹⁹ In the present study, the number of days of hospitalization was proportional to early weaning. The length of stay in the PICU was significant for the weaning of all infants admitted to some type of BF ($p=0.009$), while the days of hospitalization in the UIP or total days of hospitalization influenced only the weaning of those hospitalized in EBF. These results corroborate those of another study that mentioned the length of hospital stay as a risk factor for weaning.²⁰ Thus, strategies to promote BF should be intensified in long-stay patients.

Although hospitalization is a challenge to the process of establishing and maintaining breastfeeding, it is essential to take into account that the offer of BM can help in the recovery of the patient and, thus, reduce the length of hospital stay, according to other authors, which strengthens the importance of promoting BF in the hospital environment.^{20,21}

A recent study reported that practices to encourage intra-hospital BF are effective and improve the incidence of EBF. Some strategies were mentioned, such as: treatment of nipple pain during breastfeeding; the restriction of supplementation for babies who are in BF; stimulating BF on demand; and spaces to promote education through individual and/or group support during the baby's hospitalization.²² In the context of the pediatric ICU, there is a need for guidance on milk extraction as a strategy for maintaining milk production, even if there are no favorable conditions to offer it to the child.

In addition to the number of days of hospitalization, other factors detected during hospitalization negatively influenced BF: number of days receiving formula ($p < 0.001$); fasting days ($p=0.009$); and feeding through gastric or transpyloric catheters ($p=0.019$). However, stimulating BF on demand during hospitalization helped to maintain breastfeeding. Milk production is influenced by several physiological factors, such as the baby's su-

cking, but emotional aspects can also alter this process.⁵⁻⁸ The team must have access to continuing education and awareness activities that encourage and instrumentalize them to implement this be careful whenever possible.

In the present study, it is not possible to identify significant data regarding the extraction of milk for the maintenance of BF, since it has not been a practice encouraged in the studied institution, in addition to the limitation imposed by data collected retrospectively. An international cohort study found that the early enteral supply of breast milk increased the chances of breastfeeding at hospital discharge, especially for mothers with a low level of education.²³ This encourages the rethinking of maternal and child care in pediatric hospital units, with the aim of to value the promotion of BF as health care.

There was also an absence of practices to encourage BF and clinical management strategies, recognized as effective in the literature. Some examples are: relocation; provision of breast milk in a cup; mothers' free access to the ICU; the institutional philosophy of *Hospital Amigo da Criança*; as well as a partnership with a milk bank to supply human milk to patients whose mothers were unable to extract the necessary volume. This demonstrates the need to instrumentalize the multi-professional team and reorganize the service structure where the research was carried out.⁵ The different professional levels that work in the care of women and children in the breastfeeding process must be involved with this proposal, from the initial training.

These measures are justified not only by the importance of BF in the health and recovery of infants, but also by the relevance of the emotional meaning that this practice has for Nursing mothers: one of the reasons reported by mothers for breastfeeding is the affective bond. In addition, when empowered by the health team, women tend to recognize the benefits of breastfeeding and, therefore, feel motivated to maintain this practice even with challenges.²⁴

The limitations of the study are the loss of data due to the absence or inadequacy of some records and the loss of medical records. This emphasizes the relevance of complete and qualified records for both scientific research and assistance purposes. Thus, it was not possible to analyze relevant information about the Nursing mothers, such as, for example, education level, work and obstetric complications.

The bibliographic search to support the discussion of the data evidenced the need for further studies on BF in the hospital context from the perspective of Pediatrics, primarily in PICU, since there are more researches in

neonatal ICUs. As for the researched place, as it is a public teaching hospital, investment in the teaching-learning process of students and professionals on the clinical management of breastfeeding is essential to reduce the rates of early weaning and its implications for the health of the child population.

CONCLUSION

The prevalence of EBF among patients admitted to the PICU (21.1%) was lower than the national indexes in the age group between zero to six months (45.7%), as well as the goals recommended by the WHO (above 50%). The high rates of early weaning (48=46.2%), prior to admission, and the low prevalence of EBF demonstrate that the population served is vulnerable to weaning even before being exposed to hospitalization.

The high percentage of hospitalization for respiratory disorders (42.9%) reinforces the relevance of promoting EBF in the first six months of life, since the literature shows that this measure has the potential to reduce hospitalizations for this cause.

The percentages of BF at discharge were lower than those at admission, suggesting a negative influence of hospitalization on breastfeeding in the PICU. The significant variables for weaning were: length of stay; formula offering days; and enteral catheter feeding.

The findings show the need to improve the incentive to breastfeed, both in primary care and in hospital care. It is urgent to implement interventions to raise awareness and prepare the team to promote breastfeeding, as well as restructuring the service organization.

It is expected that this study will trigger reflections on BF in children hospitalized in PICUs, especially when considering referral services, in order to provide subsidies for interventions. In addition, more research is needed, with the design of quality improvement projects addressing the factors that encourage and disadvantage BF, in order to reduce the rates of early weaning in children admitted to the ICU, with a consequent improvement in the population's health.

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