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ORIGINAL ARTICLE

Exclusive breastfeeding and its association with the growth and development of low birth weight infants

Lactancia materna exclusiva y su asociación conel crecimiento y desarrollo de niños con bajo peso al nacer

Aleitamento materno exclusivo e sua associação com o crescimento e desenvolvimento de recém-nascidos de baixo peso

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ABSTRACT

Introduction: breastfeeding is an important issue for children's health and development, particularly for those born with low birth weight. **Objective:** to determine the relationship between exclusive breastfeeding and growth and development at 1 year of corrected age in children born with low birth weight at the Policlínico Universitario Previsora, Camagüey province, Cuba, from January 2020 to May 2023. **Method:** a cohort study was carried out on 61 children born with low birth weight during this period who survived their first birthday. The exposure factor was the use or lack thereof of exclusive breastfeeding until the sixth month of life. Nutritional and clinical indicators were assessed at 1 year of corrected age. Variables were described using summary measures. Associations were performed using the chi-square test of independence; if significant, the relative risk was calculated to measure the strength of the association. **Results:** the majority of children were not exclusively breastfed until the sixth month. All nutritional indicators, except head circumference, were statistically significantly associated with breastfeeding, with a relative risk >1. Similarly, non-breastfeeding was a significant risk factor for psychomotor and dental development, as well as for hospitalizations for acute diarrheal disease and respiratory and urinary tract infections. **Conclusions:** the fundamental role of exclusive breastfeeding in the growth and development of children born with low birth weight is demonstrated.

Keywords: low birth weight; breastfeeding; exclusive breastfeeding; nutritional indicators; growth and development

RESUMEN

Introducción: la lactancia materna es un tema de importancia en la salud y desarrollo de los niños, en particular, para aquellos que nacen con bajo peso. **Objetivo:** determinar la relación del uso de la lactancia materna exclusiva con el crecimiento y desarrollo al año de edad corregida de niños nacidos con bajo peso en el Policlínico Universitario Previsora, provincia Camagüey, Cuba, desde enero 2020 a mayo 2023. **Método:** estudio de cohorte en los 61 niños nacidos con bajo peso en dicho periodo, que arribaron vivos a su primer año. El factor de exposición fue el uso o no de lactancia materna exclusiva hasta el sexto mes de vida. Se evaluaron indicadores nutricionales y clínicos al año de edad corregida. Se describieron las variables a través de medidas de resumen. Las asociaciones se realizaron mediante la prueba de independencia Ji cuadrado; de resultar significativa se calculó el riesgo relativo para medir la fuerza de la asociación. **Resultados:** predominaron los niños sin lactancia materna exclusiva hasta el sexto mes. Todos los indicadores nutricionales, excepto el perímetro cefálico, presentaron asociación estadística significativa con la lactancia materna, obteniéndose un riesgo relativo >1. De igual forma, el no uso de lactancia materna fue un factor de riesgo importante en el desarrollo psicomotor y dentario, al igual que en los ingresos por enfermedad diarreica aguda e infecciones respiratorias y urinarias. **Conclusiones:** se demuestra el rol fundamental de la lactancia materna exclusiva en el crecimiento y desarrollo de los niños nacidos con bajo peso.

Palabras clave: bajo peso al nacer; lactancia materna; lactancia materna exclusiva; indicadores nutricionales; crecimiento y desarrollo

RESUMO

Introdução: a amamentação é uma questão importante para a saúde e o desenvolvimento das crianças, particularmente para aquelas que nasceram com baixo peso. **Objetivo:** determinar a relação entre aleitamento materno exclusivo e crescimento e desenvolvimento em 1 ano de idade corrigida em crianças nascidas com baixo peso na Policlínico Universitario Previsora, província de Camagüey, Cuba, de janeiro de 2020 a maio de 2023. **Método:** foi realizado um estudo de coorte em 61 crianças nascidas com baixo peso durante este período que sobreviveram ao seu primeiro aniversário. O fator de exposição foi o uso ou não de aleitamento materno exclusivo até o sexto mês de vida. Indicadores nutricionais e clínicos foram avaliados em 1 ano de idade corrigida. As variáveis foram descritas usando medidas de resumo. As associações foram realizadas usando o teste qui-quadrado de independência; se significativo, o risco relativo foi calculado para medir a força da associação. **Resultados:** a maioria das crianças não foi amamentada exclusivamente até o sexto mês. Todos os indicadores nutricionais, exceto o perímetro cefálico, apresentaram associação estatisticamente significativa com a amamentação, com risco relativo >1. Da mesma forma, a não amamentação foi um fator de risco significativo para o desenvolvimento psicomotor e dentário, bem como para hospitalizações por doença diarreica aguda e infecções do trato respiratório e urinário. **Conclusões:** demonstra-se o papel fundamental da amamentação exclusiva no crescimento e desenvolvimento de crianças nascidas com baixo peso.

Palavras-chave: baixo peso ao nascer; aleitamento materno; aleitamento materno exclusivo; indicadores nutricionais; crescimento e desenvolvimento

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INTRODUCTION

Low birth weight (LBW) newborns are more prone to nutritional problems in the postnatal period; this includes impaired growth, with their height often being lower than expected. According to some authors, the possibility of a low birth weight child achieving optimal growth is limited, with the risk being highest during the first six months of life. [1,2]

Therefore, these first months are crucial; inadequate nutrition during this period reduces the chances of full growth and development. Frequent hospitalizations during this stage of life are a negative factor; it is estimated that 27% of discharged infants will not achieve ideal anthropometric values. [2]

Most of the factors that cause low birth weight, as well as related complications, directly affect the child's nutrition, further impairing normal growth. This is especially true for preterm infants, due to their immaturity, as they are unable to absorb enough nutrients for recovery. [1,2]

Several studies have shown that breastfeeding (BF) offers nutritional and clinical advantages for low birth weight infants. For example, it has been observed that preterm infants who are breastfed have a lower risk of developing necrotizing enterocolitis, a serious gastrointestinal disease that affects premature newborns. [3,4,5]

Breastfeeding has also been shown to positively influence the neurodevelopment of preterm infants, which is particularly relevant, given that this group has a high risk of neurodevelopmental delays. Furthermore, breastfeeding reduces the risk of respiratory and gastrointestinal infections in these infants, contributing to their overall well-being. [6]

In addition to short-term benefits, breastfeeding can also have long-term effects on low birth weight infants. For example, it has been observed that preterm infants who are breastfed have a lower risk of developing overweight or obesity later in life, suggesting that breastfeeding may have a long-term impact on metabolic programming. This finding is particularly relevant, given that low birth weight infants are at increased risk of overweight and obesity, as well as non-communicable diseases in adulthood. [7]

Both the World Health Organization (WHO) and the American Academy of Pediatrics recommend that breastfeeding is the appropriate feeding method for low birth weight newborns and other high-risk infants, as it is healthy and promotes the well-being of all infants. Therefore, in line with WHO recommendations, they advise exclusive breastfeeding for the first six months of life and continued breastfeeding, with the gradual introduction of complementary foods, until two years of age. [8,9,10]

The Previsora University Polyclinic has not achieved the established targets for exclusive breastfeeding rates at four and six months of age. Furthermore, there has been an increase in the rates of low birth weight infants in recent years. This trend, to varying degrees, is also observed in other health areas within the province of Camagüey, Cuba.

All of the above justifies conducting research that studies the different variables involved, as well as the relationships between them, to understand their effect on the health status of this patient group. The present study aims to determine the relationship between the use of exclusive breastfeeding (EBF) and the growth and development at one year of corrected age in low birth weight infants at the Previsora University Polyclinic during the period from January 2020 to May 2023.

METHOD

A retrospective, analytical, observational cohort study was conducted to determine the relationship between the use of exclusive breastfeeding (EBF) and the growth and development at one year of corrected age in low birth weight infants at the Previsora University Polyclinic, during the period from January 2020 to May 2023.

The study population consisted of the 61 low birth weight infants (N=61) born during the study period, who were patients at this clinic and who survived to their first year of corrected age.

The exposure factor was whether the infants were exclusively breastfed until six months of age, which resulted in two groups. One group consisted of low birth weight infants who were exclusively breastfed until six months of age, and the other group consisted of low birth weight infants who were not exclusively breastfed until six months of age.

Using the low birth weight infant registry in the Statistics Department of the polyclinic, the medical records of the infants were reviewed and became the primary source of information. All the collected data were entered into a data collection form, which facilitated better organization, summarization, and interpretation of the information.

All infants in the study were evaluated at one year of corrected age. Corrected age was defined as the age the child would have been if born at 40 weeks of gestation, calculated by subtracting the gestational age at birth from 40 weeks, which is the expected due date. This allows for the correction or adjustment of the child's developmental stage according to the severity of prematurity. [(11)]

Variables were determined, such as anthropometric indicators: weight-for-length, weight-for-age, height-for-age, and head circumference-for-age. Nutritional indicators were considered normal when they fell between the 10th and 90th percentiles of the Cuban growth and development charts for nutritional monitoring in children. [(12)] Other variables evaluated included psychomotor development, dental development, and the presence of ophthalmological and/or auditory problems, using the Cuban guidelines for pediatric health consultations. [(11)] Finally, the frequency of hospital admissions during the first year of life and the diseases recorded during that period were quantified.

The statistical software SPSS version 26.0 for Windows was used to process the data. The different variables were described using summary statistics such as absolute numbers and percentages for categorical variables. The mean and standard deviation were also calculated for quantitative variables, and frequency distribution tables were created.

To investigate the possible association between the use of exclusive breastfeeding and nutritional and clinical outcomes, a univariate analysis was performed using the chi-square test of independence. If a significant association was found ($p \leq 0.05$), the relative risk (RR) was calculated to measure the strength of the association.

$$RR = \frac{\text{Incidence rate in exposed group}}{\text{Incidence rate in non} - \text{exposed group}}$$

Therefore, the following conclusions were drawn:

- RR > 1: not using formula is a nutritional or clinical risk factor.
- RR < 1: not using formula is a nutritional or clinical protective factor.
- RR = 1: no association.

A significance level of 5% was used for all hypothesis tests. The results were presented in statistical tables.

Ethical considerations relevant to the study were taken into account. The project was approved by the Ethics Committee and the Scientific Committee of the Previsora University Polyclinic. The research adhered to ethical principles, confidentiality of information was guaranteed, and informed consent was obtained from the parent or guardian for each child's participation in the study.

RESULTS

Table 1 shows the number of low-birthweight infants at one year of corrected age, according to whether or not they received formula feeding up to six months of age. It was observed that 52.5% of the infants did not receive formula feeding by six months of age, compared to the remaining 47.5% who were exclusively breastfed.

Table 1: Exclusive breastfeeding at six months

Exclusive breastfeeding practice	No.	%
Yes	29	47,5
No	32	52,5
Total	**61**	**100,0**

Source: Medical records

Table 2 shows the characteristics of the infants with bronchopulmonary dysplasia (BPD) who reached the age of one year (corrected for prematurity) with inadequate nutritional indicators. The most common issue observed was weight-for-age abnormalities (34.4%), followed by height-for-age abnormalities (31.1%); abnormalities in head circumference were the least frequent, at 0.17%.

Table 2: Inadequate nutritional indicators and exclusive breastfeeding at six months

Inadequate nutritional indicators	EBF						p	RR	IC 95 %	
	No.		Yes		Total					
	No.	%	No.	%	No.	%			Inf.	Sup.
Weight/age	18	29,5	3	4,9	21	34,4	-	4,5	1,5	13,2
Height/age	17	27,9	2	3,3	19	31,1	-	6,1	1,6	20,0
Weight/Height	11	18,0	1	1,6	12	19,7	0,02	6,8	2,4	21,7
Head circumference/age	2	3,3	-	-	2	3,3	0,17	-	-	-

Source: medical records

When establishing the association between each of these parameters and the use or non-use of exclusive breastfeeding (EBF) until six months of age, it was observed that, with the exception of head circumference, all other parameters showed a statistically significant association.

The strength of the calculated association showed that a low birth weight infant who does not receive EBF until six months of age increases the risk of: fivefold for having inadequate weight for age at one year; sixfold for having inadequate height for age; and sevenfold for having inadequate weight for height. All of these findings were at a 95% confidence level, with values ranging within specific intervals (confidence intervals).

Among the inadequate clinical indicators observed in children who reached one year of corrected age, as shown in Table 3, dental development was present in 44.3% of cases, followed by psychomotor development in 31.1%. The use of EBF until six months showed a significant association with these two parameters. However, no significant association was found with ophthalmological and auditory problems, which were also present in fewer cases.

Table 3: Inadequate clinical indicators and exclusive breastfeeding at six months

Inadequate clinical indicators	EBF						p	RR	IC 95 %	
	No.		Si		Total					
	No.	%	No.	%	No.	%			Inf.	Sup.
Psychomtor development	16	26,2	3	4,9	19	31,1	-	3,9	1,3	11,3
Dental development	21	34,4	6	9,8	27	44,3	-	3,04	1,44	6,38
Ophthalmological abnormalities	3	4,9	1	1,6	4	6,6	0,35	-	-	-
Auditory abnormalities	3	4,9	1	1,6	4	6,6	0,35	-	-	-

Source: medical records

When assessing the strength of the association, it was shown that low-birth-weight infants who were not breastfed until six months of age had a four-fold increased risk of inadequate psychomotor development, with this risk ranging from one to eleven times higher. Similarly, these infants had a three-fold increased risk of inadequate dental development, with this risk ranging from one to six times higher.

Table 4 shows the distribution of the number of hospital admissions these infants had during the study period, in relation to whether they were breastfed at six months. It was observed that the largest percentage of infants (68.9%) had no hospital admissions during the period, 21.3% had between one and three admissions, and the remaining 9.8% had between four and seven admissions. No cases with more than seven admissions were reported.

Table 4: Number of hospitalizations during the period and exclusive breastfeeding at six months

Number of hospitalizations in the first year of life	EBF				Total	
	No.		Sí			
	No.	%	No.	%	No.	%
None	19	31,1	23	37,7	42	68,9
1-3	9	14,8	4	6,6	13	21,3
4-7	4	6,6	2	3,3	6	9,8
Total	**32**	**52,5**	**29**	**47,5**	**61**	**100,0**

p=0,06

Although it is evident from the table that the largest number of children hospitalized belonged to the group that was not breastfed, the p-value associated with the Student's t-statistic was greater than 0.05; therefore, based on the data analyzed, there was insufficient evidence to conclude that a relationship existed between breastfeeding status and the number of hospitalizations.

Regarding the main causes of hospitalization during the study period in relation to breastfeeding (Table 5), acute diarrheal disease (ADD) was the most frequent cause, accounting for 24.6% of hospitalizations, followed by respiratory and urinary tract infections, with 21.3% and 16.4%, respectively.

Table 5: Main causes of hospitalization in relation to exclusive breastfeeding up to six months of age (n=61)

Causes	EBF						p	RR	IC 95 %	
	No.		Yes		Total					
	No.	%	No.	%	No.	%			Inf.	Sup.
Acute diarrheal disease	14	23,0	1	1,6	15	24,6	0,00	9,1	1,3	3,8
Acute respiratory infection	10	16,4	3	4,9	13	21,3	0,04	2,3	1,2	6,5
Urinary tract infection	10	16,4	-	-	10	16,4	0,01	2,1	1,5	6,8
Wheezing	3	4,9	3	4,9	6	9,8	0,89	-	-	-
Atopic dermatitis	-	-	2	3,3	2	3,3	0,13	-	-	-
Anemia	-	-	2	3,3	2	3,3	0,13	-	-	-
Others	1	1,6	1	1,6	2	3,3	0,89	-	-	-

Source: medical records

These three most prevalent conditions showed a statistically significant association with breastfeeding status. Thus, it was found that low birth weight infants who are not breastfed until six months of age have a nine-fold increased risk of developing diarrhea and a two-fold increased risk of acute respiratory infection and urinary tract infection; these values were within a specific confidence interval of 95%.

DISCUSSION

Few studies evaluate and monitor breastfeeding practices in low birth weight infants; most research focuses on identifying the reasons for breastfeeding cessation. In any case, it is clear that the lack of exclusive breastfeeding until six months is an important problem that needs to be addressed, both in Cuba and worldwide.

This is demonstrated by Rosada Navarro et al. [13] in their study on risk factors influencing breastfeeding discontinuation, where 66.7% of the participants stopped breastfeeding before their child reached six months of age. Similar results were found in a study conducted in Havana, where 52.5% of mothers discontinued breastfeeding before six months. [14]

In Manzanillo, Granma, of the 30 patients studied by Sánchez-Smith L et al. [15], only 17 (56.7%) were exclusively breastfed during the first six months of life. Mixed breastfeeding was observed in 6.7% of cases, while 3.3% received complementary feeding.

In a study conducted in Ecuador, also on factors influencing breastfeeding discontinuation, mixed breastfeeding was predominant in 57.7% of cases. These authors describe low birth weight and prematurity as major causes of early weaning. (16) Another study in that country, conducted in 2019, shows a prevalence of exclusive breastfeeding (EBF) of 43.8%, higher in rural areas (53.9%) than in urban areas, where the rates of use are 39.6%. (17) Meanwhile, research conducted in Peru shows that 46.4% of the study participants practiced exclusive breastfeeding until the sixth month. [4]

Furthermore, a systematic review on EBF in Latin America concluded that the average duration of exclusive breastfeeding reported was 5.5 months. [18]

Following anthropometric guidelines is a very sensitive way to assess nutritional status. These are particularly important in the early stages of life, especially during the first year, as this is the period of greatest growth acceleration. Anthropometric assessment is the most common method for determining nutritional status. [19]

In this regard, breast milk provides essential nutrients in optimal concentrations to meet the needs of a child with low birth weight. There are few studies that evaluate the growth and development of low birth weight infants in relation to the use of EBF.

In the nutritional assessment conducted by Reyes Montero et al. [20], 51.3% of the infants were of normal weight; among the weaned infants, 253 children (48.6%) were malnourished, with the majority being underweight (37.3%).

In a study conducted in Madrid by Chinea Jiménez et al. [21], it was shown that children who were exclusively breastfed had a higher weight at two years (11,910 ± 2,148 g) than children fed with formula (10,915 ± 1,493 g), p=0.045. At two years, the head circumference Z-score was higher in breastfed children compared to those fed formula. At five years of age, children who were breastfed had a larger head circumference than those who were formula-fed (51 ± 1.6 cm vs. 49.9 ± 1.9 cm; p=0.037). Other anthropometric measurements, such as skinfold thickness, body density, body fat percentage, Waterlow index for weight and height, and nutritional status index, showed no differences at five years of age based on feeding method.

Giménez Ceccotti and Oeschger [22], in a study conducted at the Santa Fe branch, aimed to identify the relationship between inadequate breastfeeding practices and low birth weight with the development of overweight and obesity in childhood. They found that most children (70.6%) were of normal weight, while 15.7% were overweight and 13.7% were obese. A significant relationship was found between inadequate breastfeeding practices and the subsequent development of overweight and obesity. Of the children who developed overweight or obesity, 66.6% had not been breastfed. This study did not specifically examine children aged one year, as the scale used to measure the variable was different, making direct comparison with these authors difficult. However, the percentage of children who were not breastfed was quite similar to that found in the aforementioned study.

After an exhaustive literature search, no national studies from the last five years were found that specifically addressed this issue. However, there are numerous international studies that examine the link between breastfeeding and neurodevelopment.

Castaño Flórez et al. [23] established the relationship between the duration of breastfeeding and the neurodevelopment of children with low birth weight. They found that a large proportion of these children achieved motor milestones such as sitting, crawling, and walking at the expected age, reinforcing the positive effect of breastfeeding on infant neurodevelopment.

Other studies on newborns with very low birth weight indicate that consuming more than 50% breast milk is associated with a larger volume of central gray matter at term and better cognitive and motor outcomes at seven years of age. Low brain volumes in childhood are associated with unfavorable long-term outcomes. [24,25]

Regarding a study on brain volumes based on MRI scans of preterm infants, conducted by Romberg et al., it demonstrates greater brain growth in measurements taken at 2 and 5 years of age, through head circumference measurements, in children who were breastfed at the time of hospital discharge. (26) Breast milk contains neurotrophic substances and polyunsaturated fatty acids that promote brain development in preterm infants, which could explain this finding.

Chinea Jiménez et al. [21] conclude that the distribution of children according to their overall and verbal developmental levels differs depending on feeding practices during the first year (Kruskal-Wallis test, p=0.0162 and p=0.0083, respectively). A below-average overall intelligence level was observed in 24% of non-breastfed infants; in contrast, none of the exclusively breastfed infants were in this category. In the case of mixed feeding, only 5% were classified in this group. Regarding language development, children who were exclusively breastfed for the first six months of life were considered to have "high" verbal development in 26% of cases, while this was only true for 6% of non-breastfed infants.

When analyzing the influence of inadequate breastfeeding practices on hospitalization rates the results obtained were consistent with those of Guerra-Domínguez et al. [7], who associate breastfeeding practices and infant morbidity in the Granma province, concluding that 59.7% of hospitalizations are related to early cessation of breastfeeding; of these, more than half of the children require an average of two hospitalizations per year.

For their part, Sánchez-Smith L et al. [15], in their research on early cessation of breastfeeding in infants under one year of age, determine that the number of hospitalizations is higher in infants who were fed formula early. Of the patients who were exclusively breastfed, seven required hospitalization, compared to thirteen hospital admissions in the group of non-breastfed infants.

Similarly, in Havana, Reyes Montero et al. [20] concluded that the shorter the duration of exclusive breastfeeding, the greater the risk of illness and the need for hospital admissions, thus diminishing the protective effect on the child's health. These authors describe that, among the non-breastfed infants, 61.7% had one or two previous hospitalizations, and twelve patients had three or more hospitalizations; this was not observed in exclusively breastfed infants. This finding (relating previous hospitalizations to feeding method) is statistically significant.

On the other hand, Ávalos González et al. [27], in their study on the effect of exclusive breastfeeding on the health status of patients, found that 55.2% of the children required hospitalization, and these children were predominantly those whose mothers stopped exclusive breastfeeding before the third month of life (53.3%). There is statistical significance when comparing these two variables at a 95% confidence level ($p<0.05$) and 1 degree of freedom.

A study conducted in Peru showed that 46.4% of the mothers surveyed exclusively breastfed their infants; of these, 4% reported at least one hospitalization during the year, while 49.5% of the remaining 53.6% who did not exclusively breastfeed were hospitalized at least once during the year, with a higher prevalence among infants requiring more than three hospitalizations. [4]

Alterations in the health status of infants who do not receive exclusive breastfeeding during the first six months are described in several studies, and the most frequently reported negative effects include respiratory tract infections, gastroenteritis, skin diseases, and iron deficiency anemia. These studies conclude on the importance of exclusive breastfeeding during this crucial stage of infancy. This includes nutritional, immunological, psychological, and economic benefits.

In this regard, there was partial agreement with a study conducted in Havana by Ávalos González et al. [27], which describes the relationship between inadequate breastfeeding practices and morbidity, showing that among non-breastfed infants, respiratory tract infections increased by 40%, diarrheal diseases by 23.8%, and skin diseases and iron deficiency anemia by 15.2% and 18%, respectively. This study did not find statistical significance regarding the discontinuation of exclusive breastfeeding and the presence of morbidity at a 95% confidence level ($p<0.05$) and 1 degree of freedom; this result differs from the findings of the present study, which did find statistical significance for three of the conditions studied.

Several studies agree that exclusive formula feeding is a risk factor for respiratory and digestive infections in infants. For example, Gorrita Pérez et al. [28] show that respiratory tract infections and gastroenteritis are more prevalent among these infants who are not adequately breastfed, although this relationship was not statistically significant. This differs from the current study, which did find statistical significance when relating these variables.

Sánchez-Smith L, et al. [15] describes that respiratory tract infections were predominant among infants who were not breastfed, at 61.5%, followed by gastrointestinal infections at 53.8%. Meanwhile, Fuentes Díaz, et al. [29] in their study analyzed the association between diarrheal diseases and the duration of exclusive breastfeeding, calculating an Odds Ratio of 10.22131; this means that breastfeeding for less than four months increases the likelihood of suffering from acute enteritis by ten times. This result is similar to that of the current study.

Of the 122 infants studied by Alverca-Ordóñez, et al. [30] in their study on breastfeeding as a protective factor against upper respiratory tract infections, it was determined that of the 77 children who were exclusively breastfed, only ten had respiratory tract infections; this shows that breastfeeding is a protective factor against respiratory infections in the first six months of life, with an OR of 0.11 (CI 0.04–0.29).

The study published by Rodríguez Varga, et al. [31] describes that one of the most important factors is the protective effect of breast milk against diarrheal diseases and malnutrition, even after the first year of life.

In Colombia, Madero-Zambrano, et al. [32] determined that complementary feeding was statistically significant in relation to the occurrence of acute diarrheal disease (51.6%; $p<0.000$), as well as urinary tract infections (32.1%; $p<0.001$). However, respiratory infections were not associated (8.7%; $p=0.996$); these results are partially consistent with those of the current study.

Similar results were obtained by Minchala-Urgiles, et al. [33] who conducted a systematic review on breastfeeding as an alternative for the prevention of maternal and child diseases, demonstrating that exclusive breastfeeding acts as a protective factor against acute diarrheal disease, acute respiratory infections, and malnutrition. On the other hand, Flores Estrella et al. [34] found no differences in nutritional status among the 155 children selected, but did find differences in the number of episodes (≥ 6) of respiratory infections (1.3% vs. 9.0%; $p=0.03$) between the groups with and without exclusive breastfeeding.

CONCLUSIONS

This study demonstrates that exclusive breastfeeding plays a fundamental role in the growth and development of low birth weight infants; however, its use is still insufficient at the Previsora University Polyclinic, even up to six months of age.

All nutritional indicators, except for head circumference/age, showed a statistically significant association with the use or non-use of exclusive breastfeeding, with a relative risk greater than one for all of them.

Similarly, the non-use of exclusive breastfeeding is an important risk factor for the psychomotor and dental development of these children, as well as for hospital admissions due to acute diarrheal disease and respiratory and urinary tract infections.

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