



## Factors associated with the use of milk complement among newborns in the hospital environment

*Fatores associados ao uso de complemento lácteo entre recém-nascidos no ambiente hospitalar*

*Factores asociados al uso de complemento de leche entre recién nacidos en el entorno del hospital*

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### ABSTRACT

**Objective:** to identify factors associated with the use of milk supplement among newborns in the hospital environment.

**Method:** this cross-sectional study conducted at a public institution in Rio de Janeiro state was based on data collected from medical records of live births. Associations between variables were identified using Chi-square test and Binary Logistic Regression. **Results:** of the 351 medical records consulted, 43 (12.0%) newborns used milk supplements during hospitalization. One factor that decreased the newborn's chances of needing this type of complement was early delivery room skin-to-skin contact (OR: 0.286; CI: 0.086-0.954; p: 0.042). **Conclusion:** placing the naked newborn in direct contact with the skin of the mother's chest or abdomen in the delivery room contributes to reducing the use of milk supplements during hospitalization in the maternity ward, which may favor early initiation of exclusive breastfeeding.

**Descriptors:** Infant, Newborn; Breast Feeding; Rooming-in Care; Hospitals, Maternity.

### RESUMO

**Objetivo:** identificar os fatores associados ao uso de complemento lácteo entre recém-nascidos no ambiente hospitalar.

**Método:** estudo transversal desenvolvido em instituição pública no interior do estado do Rio de Janeiro, a partir da coleta de dados em prontuários de nascidos vivos. Foram realizadas associações entre variáveis utilizando-se o teste de Qui-quadrado e a Regressão Logística Binária. **Resultados:** entre os 351 prontuários consultados, 43 (12,0%) recém-nascidos fizeram uso de complemento lácteo durante a internação na maternidade. O contato pele a pele precoce na sala de parto (OR: 0,286; IC: 0,086-0,954; p: 0,042) constituiu-se como fator que diminuiu as chances do recém-nascido necessitar desse tipo de complemento. **Conclusão:** colocar o recém-nascido despido em contato direto com a pele do tórax ou abdome da mãe na sala de parto contribui para a redução do uso de complemento lácteo durante a internação na maternidade, o que pode favorecer o início precoce do aleitamento materno exclusivo.

**Descritores:** Recém-Nascido; Aleitamento Materno; Alojamento Conjunto; Maternidades.

### RESUMEN

**Objetivo:** identificar factores asociados al uso de complementos lácteos en recién nacidos en el ámbito hospitalario. **Método:** este estudio transversal realizado en una institución pública en el estado de Río de Janeiro se basó en datos recolectados de registros médicos de nacidos vivos. Las asociaciones entre variables se identificaron mediante la prueba de Chi-cuadrado y la regresión logística binaria. **Resultados:** de las 351 historias clínicas consultadas, 43 (12,0%) recién nacidos utilizaron suplementos lácteos durante la hospitalización. Un factor que disminuyó las posibilidades del recién nacido de necesitar este tipo de complemento fue el contacto piel a piel en la sala de partos temprano (OR: 0,286; IC: 0,086-0,954; p: 0,042). **Conclusión:** colocar al recién nacido desnudo en contacto directo con la piel del tórax o abdomen de la madre en la sala de partos contribuye a reducir el uso de suplementos lácteos durante la hospitalización en maternidad, lo que puede favorecer el inicio temprano de la lactancia materna exclusiva.

**Descritores:** Recién Nacido; Lactancia Materna; Alojamiento Conjunto; Maternidades.

## INTRODUCTION

The World Health Organization (WHO) and the Brazilian Ministry of Health (MoH) advocate exclusive breastfeeding during the first six months of life and supplemented up to two years or more<sup>1</sup>. This recommendation is based on evidence that proves that breast milk is the most complete food for the child, because it has all the nutrients necessary for growth and development in childhood in a healthy and harmonious way, besides having unique properties that offer protection and immunity<sup>1-4</sup>. The expansion of breastfeeding can prevent about 823,000 deaths per year of children and 20,000 deaths of women from breast cancer<sup>2</sup>.

Several beneficial effects related to breastfeeding persist during childhood, promoting positive consequences throughout life. As an example, exclusively breastfed children for at least four months exhibit a higher level of cognitive, emotional and psychosocial development. However, data from the United Nations Children's Fund (UNICEF) reveal that



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the worldwide rate of exclusive breastfeeding in this age group is only 35% and that Brazilian children receive only breast milk, on average, for only 23 days<sup>3</sup>, despite the growth of rates related to this practice in Brazil in recent decades<sup>5</sup>.

As strategies to leverage these rates, in the first hour after the birth of the newborn, considered the golden hour, it is necessary to promote immediate skin-to-skin contact and early breastfeeding. Such practices, in addition to stimulating the formation of the bond between mother and baby, increase the probability of the child receiving colostrum and remaining on exclusive breastfeeding from the maternity ward, without the introduction of dairy supplements, which significantly contributes to the reduction of early weaning and of neonatal and infant morbidity and mortality<sup>6,7</sup>.

However, the provision of dairy supplements for newborns during hospitalization in the maternity ward, including in Rooming-In, is still common in hospital institutions, often without a plausible clinical indication, which can generate a negative stimulus to the mothers' support for exclusive breastfeeding in the post-discharge period. In this argumentative line, a study verified that infants who received milk formula while in the hospital environment were twice as predisposed to discontinue exclusive breastfeeding before the end of the first month of life when compared to those who did not receive it<sup>8,9</sup>.

Therefore, it is reinforced that such conduct is associated with early interruption of breastfeeding, which increases the probability of infant morbidity and mortality, as it is recognized that the composition of industrialized milks is not equal to the properties of human milk, and the introduction of these before six months can be associated with diarrhea and respiratory disease, among other diseases<sup>8</sup>, in addition to increasing family financial expenses with infant formulas, baby tools, medications and hospital admissions<sup>1</sup>.

Therefore, it is necessary to investigate factors associated with the use of dairy supplements in maternity hospitals in Brazil, aiming at the reflection of the health professionals on the care practices adopted in different scenarios, so that strategies for promoting, protecting and supporting breastfeeding are improved.

Thus, the present study aimed to identify the factors associated with the use of dairy supplement among newborns in the hospital environment.

## METHOD

A cross-sectional study developed in a public institution located in the coastal lowland of the state of Rio de Janeiro, Brazil, specifically in the maternity sector. This unit stands out as the only public service of the care network for delivery and birth in the municipality, serving the population of the territory of coverage and neighboring cities, which reveals its relevance to the region.

Data was collected from medical records of live births from 2015 to 2017, through a structured form containing data of puerperal women and newborns. Considering a population of approximately 4,000 neonates born between 2015 and 2017, in the research scenario, a sample calculation was performed for finite populations adopting a 95% confidence interval, sampling error of 5%, estimated prevalence of 50% and test power of 80%, resulting in a minimum sample of 351 medical records, randomly selected by simple draw.

The inclusion criterion established was the following: medical records of newborns whose birth occurred in the research scenario during the study period. The exclusion criterion was medical records unavailable for access. The medical records were located and obtained from the Archive Service of the institution, with the support of the professionals of the unit, who located and separate the selected medical records. In sequence, data collection, performed by the team of researchers, took place in a reserved environment of the institution itself, close to the file sector, in order to ensure the confidentiality of the information obtained.

The outcome variable (dependent) was the use of dairy supplement during hospitalization in the maternity ward. The independent variables regarding maternal sociodemographic characteristics and obstetric history comprised: mother's age (< 19 years old or ≤ 19 years old); maternal schooling (< 10 years of schooling or ≤ 10 years of schooling); prenatal care (no or yes) and number of consultations (< 6 or ≤ 6); multiple pregnancy (no or yes); pregnancy complications (no or yes); and type of delivery (vaginal or cesarean section). The neonatal independent variables included the following: gender (female or male); skin color/race (white or brown/black); prematurity - less than 37 weeks of gestational age - (no or yes); fetal distress identified (no or yes); Apgar at 5' (< seven or ≤ seven); resuscitation maneuvers recorded (no or yes); low weight - less than 2,500 g - (no or yes); contact with maternal breast in the delivery room recorded (no or yes); medical diagnosis (no or yes); and referral to Rooming-In after birth (no or yes).

The data collected were entered in a Microsoft Office Excel® spreadsheet, by double typing, and analyzed using descriptive statistics with absolute and relative frequency measurements for all the categorical variables. To analyze the association between the outcome variable and the independent variable, the Chi-Square test was adopted. The statistically significant associations with  $p < 0.05$  were subjected to logistic regression, in order to estimate the probabilities related to the use of dairy supplement, by calculating Odds Ratio (OR) and their respective 95% confidence intervals, with a significance level of 5%. The data were analyzed in the IBM SPSS® v.21 program.

The project was approved by the Research Ethics Committee (CAAE: 82844818.5.0000.5243; opinion No.: 2,564,375), according to Resolution 466 of the National Health Council, which rules on the ethical aspects of research involving human beings. Thus, all the ethical aspects were contemplated. The study is a subproject of the survey entitled: "Clinical and sociodemographic profile of newborns of a public maternity hospital in Rio das Ostras".

## RESULTS

A total of 351 (100%) medical records of live births were included. Of this total, 43 (12.3%) newborns used dairy supplements during hospitalization in the maternity ward. Considering the valid percentages, excluding absent records, regarding maternal sociodemographic characteristics, the largest proportion were mothers aged 19 years old or older, 260 (74.1%), and with ten years or more of study, 217 (61.8%). About their obstetric history, the vast majority attended prenatal care, 320 (97.6%), with at least six consultations, 213 (68.1%), for monitoring of single pregnancies, 344 (98%), and without records of complications, 238 (67.8%). C-Section was the most recurrent type of delivery: 187 (53.7%) (Table 1).

**Table 1:** Bivariate analysis of the use of dairy supplement among newborns in a maternity ward with maternal sociodemographic characteristics and obstetric history (n=351). Rio das Ostras, RJ, Brazil, 2017.

Variables	Use of dairy supplement		p**
	No n (%)	Yes n (%)	
<b>Maternal age*</b>			
< 19 years old	67 (89.3)	08 (10.7)	0.579
≤ 19 years old	226 (86.9)	34 (13.1)	
<b>Maternal schooling*</b>			
< 10 years of study	103 (89.6)	12 (10.4)	0.589
≤ 10 years of study	190 (87.6)	27 (12.4)	
<b>Prenatal care*</b>			
In	08 (100.0)	0 (0.0)	0.272
Yes	278 (86.9)	42 (13.1)	
<b>Number of consultations*</b>			
< 6 consultations	88 (88.0)	12 (12.0)	0.693
≤ 6 consultations	184 (86.4)	29 (13.6)	
<b>Multiple pregnancy*</b>			
In	301 (87.5)	43 (12.5)	0.318
Yes	07 (100.0)	0 (0.0)	
<b>Complications during pregnancy*</b>			
In	210 (88.2)	28 (11.8)	0.687
Yes	98 (86.7)	15 (13.3)	
<b>Type of delivery*</b>			
Vaginal	146 (90.7)	15 (9.3)	0.110
Cesarean section	159 (85.0)	28 (15.0)	

\*The variable presents missing

\*\*Statistical test: Chi-Square

The data presented in Table 2 refer to the neonatal characteristics. Considering the valid percentages, the majority were female babies, 177 (50.9%), declared white-skinned, 142 (52.0%), full-term, 302 (93.2%), without low birth weight, 319 (91.1%), with Apgar at 5' equal to or greater than seven, 348 (99.4%). In addition, there were mostly no records of medical diagnoses, 331 (94.3%), fetal distress, 338 (96.3%), and resuscitation maneuvers in the delivery room, 318 (90.6%). Moreover, in the vast majority of the medical records there were no notes regarding the placement of babies in contact with the mother's breast in the delivery room, 283 (80.6%). On referral after the delivery room, 296 (84.3%) newborns were directed to Rooming-In.

**Table 2:** Bivariate analysis of the use of dairy supplement among newborns in a maternity ward with neonatal characteristics (n=351). Rio das Ostras, RJ, Brazil, 2017.

Variables	Use of dairy supplement		p**
	No n (%)	Yes n (%)	
<b>Gender*</b>			
Female	160 (90.4)	17 (9.6)	0.113
Male	145 (84.8)	26 (15.2)	
<b>Skin color/Race*</b>			
White	126 (88.7)	16 (11.3)	0.536
Brown or Black	113 (86.3)	18 (13.7)	
<b>Prematurity*</b>			
In	264 (87.4)	38 (12.6)	0.886
Yes	19 (84.6)	03 (13.6)	
<b>Fetal distress recorded*</b>			
In	297 (87.9)	41 (12.1)	0.725
Yes	11 (84.6)	02 (15.4)	
<b>Apgar at 5'*</b>			
Below 7	02 (100)	0 (0)	0.596
Equal to or greater than 7	305 (87.6)	43 (12.4)	
<b>Resuscitation Maneuvers recorded*</b>			
In	279 (87.7)	39 (12.3)	0.981
Yes	29 (87.9)	04 (12.1)	
<b>Low weight*</b>			
In	279 (87.5)	40 (12.5)	0.643
Yes	28 (90.3)	03 (9.7)	
<b>Contact with mother's breast in the delivery room*</b>			
In	244 (85.9)	40 (14.1)	0.031
Yes	64 (95.5)	03 (4.5)	
<b>Medical diagnosis*</b>			
In	293 (88.5)	38 (11.5)	0.073
Yes	15 (75.0)	05 (25.0)	
<b>Referral to Rooming-In*</b>			
In	44 (80.0)	11 (20.05)	0.056
Yes	264 (89.2)	32 (10.8)	

\*The variable presents missing

\*\*Statistical test: Chi-Square

Contact with mother's breast in the delivery room (p=0.031) was the variable that presented statistical significance in the association with the use of dairy supplement (p<0.05), therefore being inserted in the logistic regression model, remaining as a factor that reduces the chances needing this type of supplement among newborns in the maternity ward in relation to those who were not placed in this position (OR: 0.286; CI: 0.086-0.954; p: 0.042).

## DISCUSSION

This study identified early skin-to-skin contact in the delivery room as the main factor associated with the use of dairy supplement among newborns in the hospital environment, in the sense that this humanized practice reduces the chances of the baby using milk formulas during hospitalization.

In this same perspective, other research studies corroborate the current findings, such as that the prevalence of supplement use during hospitalization is similar to another research study conducted in a hospital in the state of Rio Grande do Norte, which, although certified as Child Friendly, presented a frequency of 16% in the use of supplementation among newborns<sup>10</sup>. A similar finding can be observed in another study conducted in six hospitals in the city of São Paulo, three Child Friendly Hospitals (*Hospitais Amigos da Criança*, HAC) and three not accredited as Child Friendly (NHAC), such as the current scenario, in which 15% of the newborns received formula also in the maternity ward<sup>9</sup>.

The supply of beverages or foods to newborns other than breast milk should be restricted to cases in which there is clinical indication<sup>10,11</sup>. The WHO indicates that exclusive breastfeeding rates for infants and young children between 50% and 89% are considered good. It should be reinforced that the maternity ward, the research scenario, is not certified under the title of Child Friendly. Even so, the findings of the current investigation indicate an adequate prevalence of



the timely onset of exclusive breastfeeding. However, to be considered very good, this rate of exclusive breastfeeding must reach a value greater than 90%<sup>12</sup>, which has not yet been obtained.

Thus, deeper knowledge of the factors that influence the use of dairy supplement in maternity hospitals enables the planning of health strategies designed to increase breastfeeding rates, according to the recommendations provided by the WHO.

Regarding the sociodemographic characteristics, it is noteworthy that the mothers in the study are mostly adults with ten years or more of schooling. Such findings, in thesis, would favor exclusive breastfeeding without the need for supplement during hospitalization in the maternity ward, but this profile was not presented as a protective factor related to this practice.

For example, a study conducted in Nigeria that aimed to identify individual, family and community factors associated with early initiation of breastfeeding revealed that the increase in the age of the mothers and higher educational level were significantly associated with a higher rate of access to this practice<sup>12</sup>, which was not verified in the present research.

It is noted that, although approximately one quarter of the women are in their adolescence, considered a risk factor for not performing early skin-to-skin contact and breastfeeding in the first hour of life, this maternal characteristic was not associated with the use of dairy supplements, unlike a research study conducted in São Paulo, Brazil, in which maternal age, specifically younger women, was correlated with the non-performance of these practices<sup>13</sup>.

Moreover, regarding their obstetric history, the vast majority of the women presented substantial numbers of prenatal consultations for the follow-up of low-risk pregnancies, without complications. However, despite prenatal care with more than six consultations, indicated by the literature as a factor for promoting early exclusive breastfeeding<sup>14</sup>, in the scenario under study, there were also no associations between these variables.

Cesarean section was the most recurrent delivery method among the births, with more than half of the deliveries, revealing a high rate, as in other Brazilian studies<sup>15,16</sup>. It is known, however, that vaginal delivery has a protective effect against the delay in the onset of breastfeeding when compared to cesarean section; and that this surgical procedure is considered a risk factor at the beginning of breastfeeding, considering that the contact between mother and baby is delayed due to postoperative care; therefore, it is related to early weaning and shorter time of exclusive breastfeeding<sup>17,18</sup>.

Despite the high rate of cesarean sections in the scenario under study, well above the 10% to 15% recommended by the WHO, the type of delivery did not present a statistically significant association with the use of supplement. However, an international study pointed out that the chance of early initiation of breastfeeding was three times higher for mothers who had vaginal delivery compared to those who had cesarean sections<sup>12</sup>. This finding reinforces the need for advances in institutional and professional strategies that are capable of reducing the incidence of cesarean deliveries in different Brazilian scenarios, which tends to contribute to the promotion of exclusive breastfeeding and the reduction of early weaning.

Also noteworthy are the good birth conditions in the present study, evidenced by the profile of the newborns who, for the most part, were full-term, without low weight, without signs of fetal distress, with Apgar at 5' equal to or greater than 7, who did not require resuscitation maneuvers in the delivery room, and without medical diagnoses. Therefore, they were healthy, low-risk babies who could be exclusively breastfed during the entire hospitalization in the maternity ward.

It is known that the clinical conditions of the baby at birth with adequate weight, good vitality and good Apgar favor the practice of breastfeeding immediately in the delivery room<sup>19</sup>. Healthy infants present behaviors that manifest immediately after birth when placed in skin-to-skin contact with their mothers, locating the nipple through smell, successfully initiating early breastfeeding<sup>20</sup>. However, in the current research there was no association between neonatal clinical characteristics and the use of supplement in the maternity ward.

The factor that presented statistical significance was early skin-to-skin contact in the delivery room, as this practice reduces the chances of the newborn needing a dairy supplement in relation to those who were not placed in this position.

Therefore, the act of positioning the naked newborn in direct contact with the skin in the mother's chest or abdomen immediately after birth in the delivery room and in a continuous manner contributes to the reduction of supplement use during hospitalization in the maternity ward, by favoring the early initiation of exclusive breastfeeding, which corroborates with countless national and international literature publications<sup>3,4,7,19,21-25</sup>.



In this directive, a meta-analysis of five studies from four countries, including more than 135,000 newborns, which examined the association between early initiation of breastfeeding and neonatal mortality, proved that those who began breastfeeding between two and twenty-three hours after birth had a 33% higher risk of dying than those who started within an hour of birth. Among the newborns who began breastfeeding 24 hours or more after birth, the risk was more than double<sup>26</sup>. Furthermore, a prospective cohort study pointed out that the supply of formulas in the maternity ward reduced by two times the chances of breastfeeding at six months of age<sup>9</sup>. Thus, measures to promote, protect and support breastfeeding are necessary for lower rates of neonatal morbidity and mortality and early weaning.

However, despite the benefits of early breastfeeding and the low-risk characteristics of the research babies, more than three quarters were not placed in skin-to-skin contact with their mothers in the first hour of life, which favored the use of dairy supplements. This finding is compatible with another study, conducted in a hospital in the state of São Paulo, which also presented low prevalence of skin-to-skin contact immediately after birth (39.5%), and even lower for early breastfeeding in the delivery room (9.3%)<sup>27</sup>.

In this directive, there is an urgent need for babies to be placed in skin-to-skin contact with their mothers immediately after delivery for at least one hour and to guide the mother to identify if the baby shows signs that it wants to be breastfed, offering assistance if necessary<sup>11</sup>, to the extent that this practice protects babies regarding the use of dairy supplement, without clinical indication, in the maternity ward.

## CONCLUSION

The results of the study make it clear that placing the naked newborn in direct contact with the skin of the mother's chest or abdomen in the delivery room contributes to the reduction of the use of dairy supplements during hospitalization in the maternity ward, which can favor the early initiation of exclusive breastfeeding.

Despite the maternal sociodemographic variables and the obstetric and neonatal history being favorable to exclusive breastfeeding, this practice fell short of the WHO ideal. From this perspective, it is necessary to adopt care and educational strategies that minimize the use of dairy supplement, reserving it only for cases with clinical indication. The findings also testified to cesarean section as the most recurrent type of delivery in the scenario under study, which by itself constitutes a limiting factor to early skin-to-skin contact and breastfeeding in the first hour.

Therefore, the sensitization of health professionals as co-responsible for humanized practices and of recognized importance is pressing in hospital scenarios, because there is still a great abyss between what is recommended and what is accomplished. Thus, it is recommended to conduct further studies on the factors that interfere in the adhering to good practices by the health teams.

Data collection performed through consultation of medical records is a limitation of the study because, often, the information was not properly recorded by the professionals who provided the care.

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