Original Article

Predisposing factors for breastfeeding in the first hour of life

Fatores predisponentes para a ocorrência da amamentação na primeira hora de vida

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ABSTRACT

Objective: to investigate the prevalence and predisposing factors to breastfeeding in the first hour of life in public maternity hospitals. **Methods:** this is a cross-sectional, analytical, and exploratory study of 390 puerperal women from two public maternity hospitals. Sociodemographic characteristics, obstetric history, and variables relating to labor, delivery, and postpartum were analyzed. Statistical differences were assessed using the chi-square test or Fisher's exact test. The prevalence ratio was calculated using Poisson regression with robust variance. **Results:** the prevalence of breastfeeding in the first hour of life in the delivery room was only 29.2% (95% Confidence Interval: 24.68-33.71) and was associated with noise, the clamping of the umbilical cord, skin-to-skin contact, and the time taken to bathe the newborn for the first time. **Conclusion:** the predisposing factors for breastfeeding in the first hour of life were associated with care measures adopted during labor and birth, calling for strategies to improve care. **Contribution to practice:** the results can provide guidance for structural and educational changes, with a view to improving the care offered to the population during labor and birth.

Descriptors: Breast Feeding; Hospitals, Maternity; Hospital Care.

RESUMO

Objetivo: investigar a prevalência e os fatores predisponentes à amamentação na primeira hora de vida em maternidades públicas. **Métodos:** estudo de corte transversal, analítico e exploratório, desenvolvido com 390 puérperas de duas maternidades públicas. Foram analisadas características sociodemográficas, antecedentes obstétricos e variáveis relativas ao trabalho de parto, parto e pós-parto. Avaliaram-se as diferenças estatísticas pelo teste Qui-quadrado ou exato de Fisher. A razão de prevalência foi calculada por regressão de Poisson, com variância robusta. **Resultados:** a prevalência de amamentação na primeira hora de vida em sala de parto foi de apenas 29,2% (Intervalo de Confiança 95%: 24,68-33,71) e mostrou-se associada ao ruído, ao clampeamento do cordão umbilical, ao contato pele a pele e ao tempo decorrido para o primeiro banho no neonato. **Conclusão:** os fatores predisponentes da amamentação na primeira hora de vida estiveram associados a medidas assistenciais adotadas durante o parto e nascimento, demandando estratégias de qualificação do cuidado. **Contribuição para a prática:** os resultados podem fornecer redirecionamento para a orientação de mudanças estruturais e educativas, visando a qualificação do cuidado na atenção ao parto e nascimento ofertado à população.

Descritores: Aleitamento Materno; Maternidades; Assistência Hospitalar.

Introduction

The *Hospital Amigo da Criança* (Child Friend Hospital) Initiative lists 10 stages for the success of breastfeeding, including breastfeeding in the first hour of life, described in the fourth stage[1]. Combined with skin-to-skin contact between mother and child, it is fundamental not only for reducing neonatal and maternal morbidity and mortality[2-3], but also for the follow-up and success of exclusive breastfeeding, which is higher in newborns who have been breastfed in the first hour of life[4].

Breastfeeding in the first hour of life has benefits both for the newborn, ensuring adequate adaptation and glycemic, cardiorespiratory, and thermal regulation[5-6], and for the mother, reducing the risk of postpartum hemorrhage[2,7] and intensifying lactation, which has been identified as a measure of excellence[6]. Despite these benefits, there is a low prevalence of breastfeeding in the first hour of life in institutions not accredited by the *Hospital Amigo da Criança* Initiative[2,8]. In contrast, accredited institutions have better rates, showing that institutional policies are associated with the prevalence of this practice[9]. Professionals play an important role in the success of this stage, even in non-accredited institutions[4,9].

Adequate support for mothers is crucial to ensure breastfeeding soon after delivery, with guidance on position, latch-on, and the importance of breastfeeding for continued success. However, obstacles such as lack of time, lack of professional upgrading, and lack of institutional support limit this assistance[5]. Health professionals, including nurses, are key to promoting breastfeeding in the first hour of life, providing explanations and support based on scientific knowledge and technical skills, considering the positive short- and long-term impact on maternal and infant health[4,10].

Exclusive breastfeeding is a global public health goal, associated with a reduction in infant morbidity and mortality, especially in low-income countries. According to global data, approximately 34.8% of children receive exclusive breastfeeding during the first six months of life[11]. Data from national surveys conducted in 153 countries revealed that only half of newborns received breastfeeding in the first hour of life[12]. In Brazil, the rate of adequately breastfed children under two years of age is 62.4%, and the northeast region was ranked third in the implementation of this practice[13]. In the African country of Cape Verde, a prevalence of 32.5% of exclusive breastfeeding was found, with the practice being influenced by maternal age, schooling, parity and number of prenatal consultations[14].

In view of the variability in breastfeeding prevalence in different countries, including Brazil, with special attention to the northeastern region, where the scientific literature is still limited, it is justified to carry out studies that seek to identify the factors that influence this practice, especially in public maternity hospitals, in order to develop care strategies that promote the early initiation of breastfeeding and improve practices in maternal and child care. In this context, the study aimed to investigate the prevalence and predisposing factors to breastfeeding in the first hour of life in public maternity hospitals.

Methods

This is a cross-sectional, analytical, and exploratory study, guided by the recommendations of the EQUATOR Network, using the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE). It was carried out in two maternity hospitals which are benchmarks in obstetric and neonatal care in the northeast of Brazil, in the states of Paraíba and Pernambuco. Both maternity hospitals are referral centers for low- and medium-risk parturients.

The population was made up of puerperal women who had been hospitalized up to 48 hours after giving birth in the rooming-in ward of these services. Inclusion criteria were: puerperae of any age group

who had experienced a normal risk pregnancy, with a single fetus, and who had a normal delivery between 37 and 42 weeks of gestation. Those who gave birth to a stillborn child or experienced neonatal death, induced deliveries, and cesarean sections were excluded.

In the state of Pernambuco, the sample was established using the sample calculation for a finite population. Considering a population of 2,603 births at the maternity hospital, according to data provided by the service in the year prior to the survey, a 95% confidence interval, a critical value of 1.96, a sampling error of 5%, and an expected proportion of 50%, a sample of 335 puerperal women was estimated using the public domain program OpenEpi, version 3.0.1.0.1. In Paraíba, the maternity hospital offers around 500 births per month and the sample was non-probabilistic for convenience, due to the suspensions and restrictive orders necessary during the COVID-19 pandemic at the time of data collection. The prolongation of measures to deal with the public health emergency of international importance resulting from COVID-19 made it impossible to resume collection to complete the estimated number of mothers. Thus, 55 mothers were interviewed in Paraíba during the collection period.

Data was collected in maternity hospitals in Pernambuco between January and May 2019, and in Paraíba from November 2019 to March 2020. At first, the puerperal women were invited to take part in the research by informing them of the research objectives and procedures, directing those who agreed to take part to a private environment in order to sign the Free and Informed Consent Term and respond to the data collection instrument. There were no refusals and all the women invited agreed to take part in the study.

In order to attract eligible participants, visits were made to the maternity wards on different days of the week, in the morning and afternoon shifts. The puerperal women were approached while they were in the rooming house, without the need for a prior appointment, and were invited to take part in the survey by a team of researchers who had been duly trained in the use of the form, in order to avoid measurement bias.

Individual interviews were carried out, lasting an average of 15 to 20 minutes, using a form drawn up by three experts in the field of women's health, based on the Ministry of Health's national guidelines for normal childbirth care and the World Health Organization's recommendations for a positive childbirth experience. A pre-test was carried out with five puerperal women, who were not included in the statistical sample, in order to check the instrument's acceptability and clarity. The form was subdivided into three parts: the woman's sociodemographic variables and obstetric history; variables relating to labor and delivery, and variables relating to the postpartum period. In addition, complementary data was extracted from the puerperal women's medical records.

The study's outcome variable was breastfeeding in the first hour of life in the delivery room (yes, no). The exposure variables analyzed were divided and organized as follows: Sociodemographic variables and obstetric history: age; marital status; schooling; self-declared skin color; family income; parity; gestational age; chosen type of delivery. Variables related to labor and delivery: partogram; companion in labor; doula in labor; duration of labor; companion in labor; Kristeller maneuver; doula in labor; episiotomy; adequate light; adequate temperature; adequate noise. Variables relating to the postpartum period: clamping of the umbilical cord; professional who attended to the newborn; skin-to-skin contact; bathing; birth weight; Apgar score at the 1st minute of life; nasal and oral aspiration; guidance on breastfeeding.

The data collected was organized and arranged in a Microsoft Excel 2010 spreadsheet by double typing. The data was then exported and processed using SPSS software, version 23. Categorical variables were presented using absolute and relative frequencies. The prevalence of breastfeeding in the first hour of life in the delivery room and a 95% confidence interval

(CI) were estimated. The comparison of breastfeeding in the first hour of life in the delivery room, according to the puerperal women's sociodemographic and obstetric characteristics, was analyzed using Pearson's chi-square test or Fisher's exact test, when appropriate, to identify statistical differences.

The prevalence ratio (PR) was calculated using Poisson regression with robust variance and the respective 95%CI to control for confounding factors associated with breastfeeding in the first hour of life. The criterion used to include the variable in the multivariate model considered the p-value <0.20 in the bivariate analysis. However, only the variables that maintained a significant association after adjustment (p<0.05), according to the Wald test, remained in the final model. The significance level used was 5%.

This study complied with the norms defined by Resolution 466, of December 12, 2012, of the National Health Council. The consent of the maternity hospitals was obtained and data collection began after approval by the Research Ethics Committee of the Federal University of Pernambuco, under Opinion No. 3,958,607/2020 and Certificate of Submission for Ethical Appraisal No. 94050318.6.0000.5208.

Results

390 puerperal women took part, 55 from Paraíba and 335 from Pernambuco. The prevalence of breastfeeding in the first hour of life in the delivery room was only 29.2% (95% CI = 24.68 - 33.71), which corresponded to 114 women.

With regard to sociodemographic and obstetric variables, the majority of puerperal women were aged 24 or under, lived without a partner, had more than eight years of schooling, declared themselves to be brown, received a monthly income of ≤1 minimum wage, were multiparous, had a gestational age between 37 and 39 weeks and chose the type of delivery, and there was no statistical significance between sociodemographic variables and obstetric history and breastfeeding in the delivery room (Table 1).

Table 1 – Sociodemographic characterization and obstetric history of puerperal women according to breastfeeding in the first hour of life in the delivery room (n=390). Vitória de Santo Antão, PE, Brazil, 2019; João Pessoa, PB, Brazil, 2020

Variables	Total n (%)	Breastfeeding in the delivery room		p-value*
		Yes n (%)	No n (%)	
Age (years)				0.401
< 24	235 (60.3)	65 (27.7)	170 (72.3)	
> 24	155 (39.7)	49 (31.6)	106 (68.4)	
Marital status				0.084
With partner	100 (25.6)	36 (36.0)	64 (64.0)	
Without partner	290 (74.4)	78 (26.9)	212 (73.1)	
Schooling (years)				0.200
< 8	189 (48.5)	61 (32.3)	128 (67.7)	
> 8	201 (51.5)	53 (26.4)	148 (73.6)	
Self-declared race				0.146
White	97 (24.9)	30 (30.9)	67 (69.1)	
Black	25 (6.4)	03 (12.0)	22 (88.0)	
Brown	268 (68.7)	81 (30.2)	187 (69.8)	
Family income (minimum wage)				0.331
≤ 1	329 (84.4)	93 (28.3)	236 (71.7)	
> 1	61 (15.6)	21 (34.4)	40 (65.6)	
Parity				0.663
Primiparous	188 (48.2)	53 (28.2)	135 (71.8)	
Multiparous	202 (51.8)	61 (30.2)	141 (69.8)	
Gestational age (weeks)				0.368
37 to 39	212 (54.4)	66 (31.1)	146 (68.9)	
40 to 42	178 (45.6)	48 (27.0)	130 (73.0)	
Chose type of delivery				0.257
Yes	318 (81.5)	89 (28.0)	229 (72.0)	
No	72 (18.5)	25 (34.7)	47 (65.3)	

*Chi-square test

With regard to the variables relating to prepartum and childbirth, most of the interviewees had a completed partogram, had a companion during labor, were not accompanied by a doula during labor, had a duration of labor ≤ 12 hours, had a companion during labor, did not receive the Kristeller maneuver, were not accompanied by a doula during labor, did not undergo episiotomy, considered the lighting and temperature to be adequate and considered the noise to be inadequate. There was a statistically significant association between breastfeeding in the delivery room and the adequate noise during birth variable (Table 2).

Table 2 – Characterization of variables related to labor and delivery according to the occurrence of breastfeeding in the first hour of life in the delivery room (n=390). Vitória de Santo Antão, PE, Brazil, 2019; João Pessoa, PB, Brazil, 2020

Variables	Total n (%)	Breastfeeding in the delivery room		p-value
		Yes n (%)	No n (%)	
Partogram				0.267*
Yes	233 (59.7)	73 (31.3)	160 (68.7)	
No	157 (40.3)	41 (26.1)	116 (73.9)	
Companion during labor				0.230†
Yes	379 (97.2)	109 (28.8)	270 (71.2)	
No	11(2.8)	5 (45.5)	6 (54.5)	
Doula in labor				0.983*
Yes	75 (19.2)	22 (29.3)	53 (70.7)	
No	315 (80.8)	92 (29.2)	223 (70.8)	
Length of labor (hours)				0.504*
< 12	317 (81.3)	95 (30.0)	222 (70.0)	
> 12	73 (18.7)	19 (26.0)	54 (74.0)	
Companion during delivery				0.588*
Yes	357 (91.5)	103 (28.9)	254 (71.1)	
No	33 (8.5)	11 (33.3)	22 (66.7)	
Kristeller maneuver				0.085*
Yes	87 (22.3)	19 (21.8)	68 (78.2)	
No	303 (77.7)	95 (31.4)	208 (68.6)	
Doula at birth				0.743*
Yes	48 (12.3)	15 (31.2)	33 (68.8)	
No	342 (87.7)	99 (28.9)	243 (71.1)	
Episiotomy				0.281*
Yes	100 (25.6)	25 (25.0)	75 (75.0)	
No	290 (74.4)	89 (30.7)	201 (69.3)	
Adequate lighting				0.452*
Yes	238 (81.0)	100 (29.9)	234 (70.1)	
No	56 (19.0)	14 (25.0)	42 (75.0)	
Suitable temperature				0.417*
Yes	308 (79.0)	93 (30.2)	215 (69.8)	
No	82 (21.0)	21 (25.6)	61 (74.4)	
Adequate noise				0.001*
Yes	62 (15.9)	29 (46.8)	33 (53.2)	
No	328 (84.1)	85 (25.9)	243 (74.1)	

*Chi-square test; †Fisher's exact test

of mothers reported having received guidance on breastfeeding. The bivariate analysis showed that the variables umbilical cord clamping, skin-to-skin contact, and bathing the newborn were statistically significant in relation to early initiation of breastfeeding in the delivery room (Table 3).

Table 3 – Characterization of postpartum variables according to the occurrence of breastfeeding in the first hour of life in the delivery room (n=390). Vitória de Santo Antão, PE, Brazil, 2019; João Pessoa, PB, Brazil, 2020

Variables	Total n (%)	Breastfeeding in the delivery room		p-value
		Yes n (%)	No n (%)	
Clamping of the umbilical cord				0.018*
Immediate	204 (52.3)	49 (24.0)	155 (76.6)	
Late	186 (47.7)	65 (34.9)	121 (65.1)	
Professional who assisted the newborn (n=352)†				0.624*
Doctor	211 (59.9)	65 (30.8)	146 (69.2)	
Nurse	141 (40.1)	40 (28.4)	101 (71.6)	
Skin-to-skin contact				0.004*
Yes	345 (88.5)	109 (31.6)	236 (68.4)	
No	45 (11.5)	5 (11.1)	40 (88.9)	
Bathing the newborn (hours)				0.006*
1	24 (6.2)	13 (54.2)	11 (45.8)	
2 to 24	366 (93.8)	101 (27.6)	265 (72.4)	
Birth weight (grams)				0.172*
≥ 2.500	377 (96.7)	108 (28.6)	269 (71.4)	
< 2.500	13 (3.3)	6 (46.2)	7 (53.8)	
Apgar score 1st minute of life				0.108*
< 7	26 (6.7)	4 (15.4)	22 (84.6)	
> 7	364 (93.3)	110 (30.2)	254 (69.8)	
Nasal and oral aspiration in newborns				0.266‡
Yes	86 (22.1)	21 (24.4)	65 (75.6)	
No	304 (77.9)	93 (30.6)	211 (69.4)	
Guidance on breastfeeding				0.980*
Yes	233 (59.7)	68 (29.2)	165 (70.8)	
No	157 (40.3)	46 (29.3)	111 (70.7)	

*Chi-Square Test; †Variable with reduced number of responses; ‡Fisher's Exact Test

Immediate clamping of the umbilical cord was performed on 52.3% of the newborns and most of them were assisted by a doctor, had skin-to-skin contact with the mother, had their first bath between two and 24 hours of life, had a birth weight ≥ 2,500 grams, had a 1st-minute Apgar score > 7, and were not submitted to nasal or oral aspiration. In addition, 59.7%

The variables with p<0.20 in the bivariate analysis were tested in the Poisson Regression model with robust variance. After adjusting for confounding factors, the variables of adequate noise, skin-to-skin contact in the delivery room, and delayed bathing of the newborn remained significantly associated with breastfeeding in the first hour of life (Table 4).

Table 4 – Multivariate analysis of factors associated with breastfeeding in the first hour of life in the delivery room (n=390). Vitória de Santo Antão, PE, Brazil, 2019; João Pessoa, PB, Brazil, 2020

Variables	Prevalence Ratio (95% CI)*	p-value[†]
Adequate noise		
Yes	1.12 (1.03 – 1.22)	0.007
No	1.00	
Skin-to-skin contact		
Yes	1.11 (1.04 – 1.18)	0.001
No	1.00	
Bathing the newborn (hours)		
1	1.00	
2 to 24	1.18 (1.04 – 1.34)	0.012

*CI: Confidence interval; [†]Wald test

Discussion

This study showed a low prevalence of breastfeeding in the first hour of life in the delivery room. This finding differs from the values observed in a study carried out in 153 high- and low-middle-income countries, in which 50% of children were breastfed at the right time[12], as well as the prevalence indicated in international studies, in which more than 50% of children were breastfed in the first hour of life[15-16].

This difference can therefore be attributed to cultural diversity and the better dissemination of knowledge about the benefits of breastfeeding in these countries[17], both in the training process for health professionals and in the dissemination of this information to mothers. Prenatal care, whether in individual consultations or in groups of pregnant women in primary health care, is an important strategy for disseminating this knowledge to mothers.

The predominance of breastfeeding in the first hour of life observed at a national level (62.4%) and in the Northeast region (63.2%)[13] is also higher than that observed in this study. However, it should be noted that the information on the start of breastfeeding was collected directly from mothers in the first 48 hours after delivery, whereas in the National Infant Feeding and Nutrition Study, this data was collected in interviews with parents of children under two years old[13], which entails the possibility of recall bias, probably overestimating this figure.

However, a survey of 450 mothers identified a prevalence of only 24% of breastfeeding up to one hour after delivery[18]. This marked variation found in the studies underscores the need to conduct surveys on a regular basis in order to map the real disparities in breastfeeding rates in the first hour of life between geographic regions. In addition, it is essential to monitor the progress of strategies aimed at promoting breastfeeding. The discrepancy in prevalence between the studies can be explained by the lack of standardization in carrying out what is disseminated about the benefits of breastfeeding in the first hour of life, which reinforces the need to improve the encouragement of this practice[19] in the operational procedures of the services through permanent education of the professionals who provide care in the delivery room, leading to important transformations in care and the implementation of conducts based on scientific evidence.

There was a statistically significant association between the level of noise considered adequate by mothers during labor and an increase in breastfeeding in the first hour of life, establishing the importance of ambiance in maternity hospitals, which includes transforming the hospital space into a receptive environment conducive to the implementation of good obstetric care practices, with the active collaboration of users[20].

Umbilical cord clamping proved to be significant in relation to the outcome investigated. An observational study of 6,488 mothers in Nepal showed that newborns who underwent this procedure late were 47% more likely to start breastfeeding than those who underwent it early[21].

Another quantitative study of 244 puerperal women in Brazil found that 79.1% of mothers who did not breastfeed in the first hour after giving birth had the umbilical cord clamped early[22]. This reality can be explained by the resistance of professionals to change their practices, even in the face of robust pro-

tocols and research that highlight the beneficial effects of late clamping of the umbilical cord, carried out 1 to 3 minutes after delivery. It is important to note that early umbilical cord clamping is indicated for neonates who require resuscitation. Thus, it can be seen that this broad knowledge available is not translated into action in the daily lives of some professionals[23].

Another factor that contributed to breastfeeding in the first hour of life was skin-to-skin contact between mother and child. There is strong evidence of this relationship in the scientific literature[24]. A cross-sectional study of 727 women showed that there was an increased chance of breastfeeding occurring at the right time if there was skin-to-skin contact between the mother and child dyad[25]. A higher prevalence of breastfeeding in the first hour of life was found among puerperal women who had skin-to-skin contact[19]. Newborns should be kept in skin-to-skin contact with their mothers during the first hour after birth, as this prevents hypothermia and promotes breastfeeding[26].

However, worldwide there are discrepancies in clinical practice around skin-to-skin contact in the first hour after birth, despite the multiple benefits for both mother and baby[24]. In addition, the implementation of this practice is related to the maternity hospital where the birth takes place[27], based on the care provided by the professionals. An investigation carried out to assess the practice of 286 health professionals in Ethiopia, in relation to early skin-to-skin contact between mother and newborn after childbirth, found that only 44.7% of participants placed the newborn on the mother's abdomen for at least 30 minutes after birth[28]. Health education with mothers during prenatal care and training programs for health professionals in maternity hospitals are viable interventions that can promote uninterrupted skin-to-skin contact after childbirth and the establishment of early breastfeeding.

Giving newborns their first bath between two and 24 hours of life showed a significant association with breastfeeding in the first hour of life. In healthy full-term newborns, when postponed for at least 24 hours after birth, delaying bathing reduces infant mortality by 54%[29] and prevents hypothermia and its sequelae. When this is not possible, bathing should be postponed for at least six hours[26]. Postponing the baby's first bath by around 12 hours increased the rate of exclusive breastfeeding in an American hospital, increasing the likelihood of the baby receiving breast milk after discharge[30].

Study limitations

Some limitations of this study should be considered. Firstly, considering its cross-sectional nature, the results presented should be interpreted with caution, due to the impossibility of determining relationships of temporality and chance. However, the panorama identified represents the first stage in proposing interventions in the process of safe labor and birth. In addition, there is the possibility of inaccuracies in the information on the time elapsed until the first breastfeed, since this data was estimated by the mothers. However, this problem was minimized by conducting the interviews up to the first 48 hours after childbirth. Finally, additional information that would have enhanced the investigation and debate on the subject was not collected, such as whether the mother received explanations during prenatal care about the importance of breastfeeding in the first hour of life; whether she took part in educational groups; and whether there was professional help during the first feeding.

Contributions to practice

The results presented here contribute to health professionals' knowledge of the factors that influence the early initiation of breastfeeding in the delivery room. A commitment to implementing evidence-based practices that promote breastfeeding in the first hour of life can reorient structural and educational changes, with a view to improving care in the delivery and birth services offered to the population. It is

hoped that this study will encourage discussions and reviews of good practices in maternity services in the healthcare network.

Conclusion

The prevalence of breastfeeding in the first hour of life, in public maternity hospitals, is quantitatively unfavorable compared to the parameters determined by the World Health Organization, and associations of this practice with noise level during birth, umbilical cord clamping time, skin-to-skin contact, and time elapsed between birth and the newborn's first bath were evidenced.

Authors' contribution

Conception and design or analysis and interpretation of data; Writing of the manuscript; Agreement to be responsible for all aspects of the manuscript relating to the accuracy or integrity of any part of the manuscript to be investigated and resolved appropriately: Azevêdo JAF.
Conception and design or analysis and interpretation of data; Relevant critical revision of the intellectual content; Agreement to be responsible for all aspects of the manuscript to be investigated and resolved adequately; Final approval of the version to be published: Holanda ER, Abreu DWM, Holanda VR.

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