








Breastfeeding within one hour of birth among women in the Northeast region of Brazil: prevalence and related factors

Amamentação na primeira hora de vida entre mulheres do Nordeste brasileiro: prevalência e fatores associados

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ABSTRACT

Objective: Identify the prevalence and factors associated with breastfeeding within one hour of birth. **Method:** This is a cross-sectional study conducted between March and July 2018 with 655 postpartum women in Lagarto, Sergipe, Brazil. The chi-square test and prevalence ratios were used in the analysis. **Results:** Prevalence of breastfeeding within one hour of birth was 45.5%, and higher among women who planned their pregnancy (PR= 1.26; 95%CI 1.06-2.01), received prenatal care in public health centers (PR= 1.34; 95%CI 1.01-2.10), and received guidance about the importance of prenatal care (PR= 1.35; 95%CI 1.08-1.96). Parturition in public health centers (PR= 2.59; 95%CI 1.89-4.38), vaginal delivery (PR= 2.46; 95%CI 1.65-5.04), and skin-to-skin contact (PR= 2.60; 95%CI 2.10-5.10) were associated with breastfeeding. **Conclusion:** Prevalence of breastfeeding within one hour of birth is below the level recommended by the World Health Organization and associated with variables of pregnancy, parturition and birth.

Descriptors: Breastfeeding; Obstetric Nursing; Postpartum Period; Infant, Newborn; Epidemiologic Studies.

RESUMO

Objetivo: Identificar a prevalência e os fatores associados à amamentação na primeira hora de vida. **Método:** Estudo transversal realizado entre março e julho de 2018 com 655 puérperas de Lagarto, Sergipe, Brasil. Utilizou-se o Qui-quadrado e Razão de Prevalência. **Resultado:** A prevalência da amamentação na primeira hora de vida foi de 45,5%, sendo maior entre as mulheres que planejaram a gravidez (RP= 1,26; IC95% 1,06-2,01), realizaram o pré-natal no serviço público (RP= 1,34; IC95% 1,01-2,10) e receberam orientações sobre a sua importância (RP= 1,35; IC95% 1,08-1,96). A parturição no serviço público (RP= 2,59; IC95% 1,89-4,38), o parto vaginal (RP 2,46; IC95% 1,65-5,04) e o contato pele a pele (RP= 2,60; IC95% 2,10-5,10) mostraram-se associadas à amamentação. **Conclusão:** A prevalência da amamentação na primeira hora de vida está aquém das recomendações da Organização Mundial de Saúde e associada a variáveis da gravidez, parturição e nascimento.

Descritores: Aleitamento Materno; Enfermagem Obstétrica; Período Pós-Parto; Recém-Nascido; Estudos Epidemiológicos.

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INTRODUCTION

Breastfeeding within one hour of birth is potentially beneficial for all children in all countries, with an important protective effect against neonatal mortality⁽¹⁾. Breastfeeding contributes positively to child growth and development and mother's physical and psychological health. The benefits for the child include strengthened immune system and prevention of dental malocclusions, in addition to recently reported protection against overweight and diabetes mellitus at older ages. For mothers, breastfeeding prevents breast cancer, increases the interdelivery interval and reduces the risk of developing diabetes and/or ovarian cancer⁽²⁾.

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) emphasize skin-to-skin contact immediately after birth must be a priority for newborns (NBs), as it facilitates breastfeeding within one hour of birth. This practice promotes bonds between mother and child, warming the NB and enabling the provision of the baby's first natural form of immunization — the colostrum⁽³⁾.

In Brazil, the Baby-Friendly Hospital Initiative (BFHI) ensures the practice of breastfeeding, having developed the "10 Steps to Successful Breastfeeding," contributing to the increase in the prevalence and duration of breastfeeding⁽³⁾. According to step 4 of this document, health professionals must help mothers initiate breastfeeding within a half-hour of birth⁽⁴⁾. Brazilian hospitals participating in the BFHI are estimated to double the chance of a child being breastfed within the first hour of birth, which shows the importance of this initiative for timely initiation of breastfeeding⁽⁵⁾.

In this context, nursing education is linked with the care process, also involving breastfeeding guidance strategies. Nurses have a critical role in promoting, protecting and supporting breastfeeding, since they are directly supporting women during the pregnancy-birth period, so prenatal visits are an opportunity to prepare mothers for breastfeeding and highlight the benefits of this practice⁽⁶⁾.

Considering the above, variables related to pregnancy and parturition/birth can positively or negatively influence breastfeeding within the first hour of birth, so being aware of these factors is essential. Therefore, this study aimed to identify the prevalence and factors associated with breastfeeding within one hour of birth in a normal-risk maternity hospital in the Northeast region of Brazil.

METHODS

This is a cross-sectional study conducted from March to July 2018 with 655 women in postpartum period, who were assessed through interviews and their prenatal care form during the immediate postpartum period. This study was conducted at a normal-high maternity hospital in Lagarto, Sergipe, Brazil.

Eligible population for the study consisted of 1,250 women based on the estimated annual number of births provided by the hospital management where the study was conducted. Then, the sample was calculated with a 97% confidence level and a 3% sampling error. A 10% margin of safety was also added to the calculated number, resulting in 655 postpartum interviewees.

The postpartum women were selected by simple random sampling, from a daily admission list; all women who had delivered a live baby of any weight or gestational age were considered eligible for this study. The exclusion criteria were women who did not speak and/or understood the Portuguese language and/or who had severe mental disorders.

For data collection, face-to-face interviews were conducted with mothers at least six hours after birth and after reviewing the participant's prenatal care forms. The study questionnaire addressed variables of prenatal care, delivery and birth.

Associations were estimated between variables related to pregnancy (planned pregnancy, feelings regarding pregnancy, and time perception during pregnancy), prenatal care (early start, number of visits, follow-up by the same professional, type of health center of most prenatal visits, and guidance about the importance of breastfeeding within the first hour of birth) and parturition/birth (type of service for delivery, type of delivery to be performed and skin-to-skin contact right after birth) with breastfeeding within one hour of birth (n=297).

SPSS — Statistical Package for the Social Sciences 20.0 was used for statistical analysis. Univariate and bivariate techniques were applied to obtain the distribution of absolute and relative frequencies. Associations were investigated using the Chi-square test between qualitative/categorical variables. The prevalence ratio (PR) was estimated as a measurement of association and its respective 95% confidence intervals (95%CI). A 5% significance level was adopted for all cases.

This study is linked with *Projeto Nascer em Lagarto, SE: Inquérito Municipal sobre Parto e Nascimento*, approved in March 2018 by the Research Ethics Committee of the Federal University of Sergipe, under approval n° 2.553.774 and CAAE n° 82426418.0.0000.5546. The researchers observed the guidelines and regulatory standards recommended in Resolution n° 466/12 of the National Health Council regarding research with human beings. Postpartum women signed an informed consent form, ensuring their withdrawal at any moment without any damage.

RESULTS

The prevalence of breastfeeding within the first hour of birth was 45.5%, higher among women who planned their pregnancy (PR= 1.26; 95%CI 1.06-2.01) (Table 1).

Table 1. Distribution of pregnancy-related variables associated with breastfeeding within the first hour of birth (n=653). Lagarto, Sergipe, Brazil, 2018.

Variables related to pregnancy	Breastfeeding within one hour of birth		p-value	PR (95%CI)
	Yes (n=297) %	No (n=356) %		
Planned pregnancy				
Yes	51.1	48.9	0.011	1.26 (1.06-2.01)
No	41.1	58.9		
Feelings regarding pregnancy				
Satisfied	46.8	53.2	0.371	1.09 (0.85-1.42)
More or less/ Dissatisfied	43.1	56.9		
Time perception during pregnancy				
Wanted pregnancy now	49.3	50.7	0.080	1.17 (0.86-1.60)
Wanted pregnancy later	42.4	57.6		

%; Relative Frequency; PR: Prevalence Ratio; 95%CI: 95% confidence interval.

A higher prevalence of breastfeeding within the first hour of birth was observed among women who used the public service for prenatal care (PR= 1.34; 95%CI 1.01-2.10) and among women who were instructed during follow-up period about the importance of this practice in the immediate postpartum period (PR= 1.35; 95%CI 1.08-1.96) (Table 2).

Use of public service for parturition (PR= 2.59; 95%CI 1.89-4.38), vaginal delivery (PR= 2.46; 95%CI 1.65-5.04) and skin to skin contact (PR= 2.60; 95%CI 2.10-5.10) were other parturition/birth variables associated with breastfeeding within the first hour of birth (Table 3).

DISCUSSION

This study demonstrated the prevalence of breastfeeding within the first hour of birth was similar to that of other studies conducted in the Northeast region of Brazil (28.7% and 33.1%)^(3,7) and almost the same as that of an international study (43.6%)⁽⁸⁾. The WHO considers breastfeeding within the first hour of birth as an indicator of excellence, classifying the percentages of 0 to 29% as “very bad”, 30 to 49% as “bad”, 50 to 89% as “good”, and 90 to 100% as “very good”⁽⁹⁾. Therefore, the

Table 2. Characteristics of prenatal care associated with breastfeeding within the first hour of birth (n=653). Lagarto, Sergipe, Brazil, 2018.

Variables related to pre-natal care	Breastfeeding within one hour of birth		p-value	PR (95%CI)
	Yes (n=297) %	No (n=356) %		
Early start				
Yes	44.7	55.3	0.545	0.93 (0.90-1.52)
No	47.7	52.3		
Number of visits				
6 or more visits	44.7	55.3	0.408	0.90 (0.89-1.49)
≤5 visits	48.8	51.2		
Followed up by the same professional				
Yes	46	54	0.675	1.04 (0.71-1.37)
No	44.3	55.7		
Type of health center of most visits				
Public	47	53	0.048	1.34 (1.01-2.10)
Private	35.9	64.1		
Guidance about the importance of breastfeeding within one hour of birth				
Yes	50.3	49.7	0.003	1.35 (1.08-1.96)
No	38.1	61.9		

%; Relative Frequency; PR: Prevalence Ratio; 95%CI: 95% confidence interval.

prevalence found in these studies requires improvements in incentive and implementation of breastfeeding within the first hour of birth, as it is classified as “bad”.

Brazilian authors consider adherence to step 4 of the BFHI a challenge throughout the national territory, especially in the Northeast region where, even with consolidated BFHI, few babies have a chance to be breastfed within the first hour of birth⁽¹⁰⁾. In this context, other factors can also have a positive or negative influence on the success of breastfeeding⁽¹¹⁾. Some negative factors are inadequate prenatal care, cesarean section, and the fact that the mother and child do not stay in the same room⁽¹²⁾.

Also, women who are unaware of the benefits of breastfeeding for child growth and development are more vulnerable to myths regarding the nutritional value of breastfeeding⁽¹¹⁾, which may result in non-implementation of breastfeeding and/or early weaning. This fact highlights the importance of health education activities to address the

Table 3. Distribution of variables related to parturition and birth associated with breastfeeding within the first hour of birth (n=653). Lagarto, Sergipe, Brazil, 2018.

Variables related to parturition/birth	Breastfeeding within one hour of birth		p-value	PR (95%CI)
	Yes (n=297) %	No (n=356) %		
Type of health center for birth				
Public	48.9	51.1	<0.001	2.59 (1.89-4.38)
Private	20	80		
Type of delivery				
Vaginal	60.2	39.8	<0.001	2.46 (1.65-5.04)
Cesarean section	26	74		
Skin-to-skin contact right after birth				
Yes	54.4	45.6	<0.001	2.60 (2.10-5.10)
No	22.3	77.7		

%; Relative Frequency; PR: Prevalence Ratio; 95%CI: 95% confidence interval.

aspects of breastfeeding performed by health professionals, particularly those who provide prenatal care, whether in public and/or private centers in the country.

According to the literature, pregnancy planning favors breastfeeding within the first hour of birth, with the intention to be pregnant as one positive factor for early initiation of breastfeeding⁽¹³⁾. Planned pregnancy involves an even more favorable context in mother's preparation for breastfeeding, which may eventually contribute to its implementation right after birth. Mother's intention to breastfeed is also influenced by the number of pregnancies, education level and maternal age, prior experience with breastfeeding, and living with a partner⁽¹⁴⁾.

Prenatal care in public health centers was also associated with breastfeeding. The support from National Policies for Comprehensive Health Care for Women and Children in primary care, such as *Rede Cegonha* and the Prenatal and Birth Humanization Program, promote better breastfeeding indicators in Brazil. These actions show the effectiveness of breastfeeding initiatives linked with the Brazilian National Health System.

Pregnant women receiving guidance in prenatal care about the importance of breastfeeding within the first hour of birth presented a higher percentage of breastfeeding right after the baby was born. This finding was consistent with a study conducted in Paraná, which found 58.3% of women

who received guidance about breastfeeding during pregnancy adhering to these recommendations in the immediate postpartum period⁽¹⁵⁾. In this sense, authors emphasize that health professionals must have advising skills to support mothers and/or fathers and training about breastfeeding strategies, to ensure effective guidance and mothers feeling confident to implement and overcome possible challenges that may arise in the breastfeeding process⁽¹⁶⁾.

When analyzing the associations between the variables of parturition/birth and breastfeeding within the first hour of birth, delivery in public health centers is positively related to breastfeeding. This result is consistent with the findings of another Brazilian study⁽⁷⁾. This positive effect is attributed to national public policies focused on maternal and child health and the fact that, in the case of private services, a higher number of elective cesarean sections may occur, which is a negative factor for early skin-to-skin contact and, consequently, for breastfeeding⁽¹⁰⁾.

Regarding the type of delivery, vaginal delivery was associated with breastfeeding, in agreement with another Brazilian study conducted in Rio Grande do Sul, in which 80% of women who had a vaginal delivery breastfed their babies in the delivery room⁽¹⁷⁾. This finding can be explained by the fact that vaginal delivery favors a direct contact between mother and child in the first moments after birth, while a cesarean section involves the effect of anesthesia, making breastfeeding difficult within the first hour of birth.

Finally, early skin-to-skin contact contributed to a higher prevalence of breastfeeding within the first hour of birth among the interviewees. Skin-to-skin contact triggers positive psychological and physical effects thanks to the establishment of a bond between mother and child, stimulating the child's search for the breast and sucking reflexes, which, consequently, contribute to milk extraction⁽¹⁸⁾.

CONCLUSION

The prevalence of breastfeeding within the first hour of birth is quantitatively below the standards established by the WHO, with associations with factors related to pregnancy, parturition and delivery, evidenced with the implementation of this practice right after birth.

The factors associated with breastfeeding within the first hour of birth were: planned pregnancy; use of the public health center for prenatal care and parturition; receiving, in the prenatal period, guidance about the importance of breastfeeding within the first hour of birth; implementation of skin-to-skin contact right after birth; and vaginal delivery. Health professionals — particularly nurses and/or physicians providing prenatal care — who are aware of these factors can support pregnant women in their preparation process for breastfeeding right after birth.

In this sense, special attention must be dedicated to guidelines about breastfeeding during prenatal care, whether in public and/or private health centers in the country. Such health education activities must have accessible language for women and their companions, positively reducing non-implementation of breastfeeding in the immediate postpartum period and/or early weaning.

A potential study limitation refers to the fact that data were obtained only from interviewed mothers and their prenatal care form, without confirmation of actual implementation of breastfeeding within the first hour of birth by the health professionals from the maternity hospital analyzed in this study.

REFERENCES

1. Boccolini CS, Carvalho ML, Oliveira MIC, Pérez-Escamilla R. A amamentação na primeira hora de vida e mortalidade neonatal. *Rev Soc Bol Ped* [Internet]. 2015 [access at: Nov. 02, 2019];54(3):141-7. Available at: http://www.scielo.org/bo/pdf/rbp/v54n3/v54n3_a05.pdf.
2. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *The Lancet Journal* [Internet]. 2016 [access at: Nov. 02, 2019];387(10017):475-90. Available at: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(15\)01024-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)01024-7/fulltext). [https://doi.org/10.1016/S0140-6736\(15\)01024-7](https://doi.org/10.1016/S0140-6736(15)01024-7).
3. Silva JLP, Linhares FMP, Barros AA, Souza AG, Alves DS, Andrade PON. Fatores associados ao aleitamento materno na primeira hora de vida em um hospital amigo da criança. *Texto Contexto Enferm* [Internet]. 2018 [access at: Nov. 02, 2019];27(4): e4190017. Available at: <http://www.scielo.br/pdf/tce/v27n4/0104-0707-tce-27-04-e4190017.pdf>. <https://doi.org/10.1590/0104-07072018004190017>.
4. Silva CM, Pellegrinelli ALR, Pereira SCL, Passos IR, Santos LC. Práticas educativas segundo os “Dez passos para o sucesso do aleitamento materno” em um Banco de Leite Humano. *Ciênc Saúde Coletiva* [Internet]. 2017 [access at: Feb. 17, 2019];22(5):1661-71. Available at: <http://www.scielo.br/pdf/csc/v22n5/1413-8123-csc-22-05-1661.pdf>. <https://doi.org/10.1590/1413-81232017225.14442015>.
5. Carvalho ML, Boccolini CS, Oliveira MIC, Leal MC. The baby-friendly hospital initiative and breastfeeding at birth in Brazil: a cross sectional study. *Reprod Health* [Internet]. 2016 [access at: Nov. 04, 2019];13(119). Available at: <https://reproductive-health-journal.biomedcentral.com/articles/10.1186/s12978-016-0234-9>. <https://doi.org/10.1186/s12978-016-0234-9>.
6. Costa EFG, Alves VH, Souza RMP, Rodrigues DP, Santos MV, Oliveira FL. Atuação do enfermeiro no manejo clínico da amamentação: estratégias para o aleitamento materno. *Revista de Pesquisa: Cuidado é Fundamental Online* [Internet]. 2018 [access at: Nov. 04, 2019];10(1):217-23. Available at: <http://seer.unirio.br/index.php/cuidadofundamental/article/view/5953>. <http://dx.doi.org/10.9789/2175-5361.2018.v10i1.217-223>.
7. Bezerra FD, Menezes MAS, Mendes RB, Santos JM, Leite DCF, Kassar SB, et al. Perinatal care in a Northeastern Brazilian state: structure, work processes, and evaluation of the components of essential newborn care. *Rev Paul Pediatr* [Internet]. 2019 [access at: Nov. 05, 2019];37(2):140-8. Available at: http://www.scielo.br/pdf/rpp/v37n2/pt_0103-0582-rpp-2019-37-2-00003.pdf. <https://doi.org/10.1590/1984-0462/2019;37;2;00003>.
8. Ahmed AE, Salih OA. Determinants of the early initiation of breastfeeding in the Kingdom of Saudi Arabia. *Int Breastfeed J* [Internet]. 2019 [access at: Nov. 05, 2019]; 14(13). Available at: <https://internationalbreastfeedingjournal.biomedcentral.com/articles/10.1186/s13006-019-0207-z#citeas>. <https://doi.org/10.1186/s13006-019-0207-z>.
9. World Health Organization. *Infant and young child feeding: a tool for assessing national practices, policies and programmes*. Geneva: WHO; 2003. [access at: Nov. 04, 2019]. Available at: <https://apps.who.int/iris/handle/10665/42794>.
10. Sampaio ARR, Bousquat A, Barros C. Contato pele a pele ao nascer: um desafio para a promoção do aleitamento materno em maternidade pública no Nordeste brasileiro com o título de Hospital Amigo da Criança. *Epidemiol Serv Saúde* [Internet]. 2016 [access at: Nov. 05, 2019];25(2):281-90. Available at: <http://www.scielo.br/pdf/ress/v25n2/2237-9622-ress-25-02-00281.pdf>. <https://doi.org/10.5123/S1679-49742016000200007>.
11. Maranhão TA, Gomes KRO, Nunes LB, Moura LNB. Fatores associados ao aleitamento materno exclusivo entre mães adolescentes. *Cad Saúde Colet* [Internet]. 2015 [access at: Feb. 16, 2019];23(2):132-9. Available at: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414462X2015000200132&lng=en. <http://dx.doi.org/10.1590/1414-462X201500020072>.
12. Sá NNB, Gubert MB, Santos W, Santos LMP. Fatores ligados aos serviços de saúde determinam o aleitamento materno na primeira hora de vida no Distrito Federal, Brasil, 2011. *Rev Bras Epidemiol* [Internet]. 2016 [access at: Nov. 04, 2019];19(3):509-24. Available at: <http://www.scielo.br/pdf/rbepid/v19n3/1980-5497-rbepid-19-03-00509.pdf>. <https://doi.org/10.1590/1980-5497201600030004>.

13. Rocha AF. Impacto da intenção de engravidar sobre a amamentação na primeira hora pós-parto [dissertação]. [Internet]. Teresina: Universidade Federal do Piauí; 2018. [access at: Fev. 21, 2019]. Available at: <http://repositorio.ufpi.br/xmlui/bitstream/handle/123456789/1542/IMPACTO%20DA%20INTEN%C3%87%C3%83O%20DE%20ENGRAVIDAR%20SOBRE%20A%20AMAMENTA%C3%87%C3%83O%20NA%20PRIMEIRA%20HORA%20P%C3%93S-PARTO.pdf?sequence=1>.
14. Vieira TO, Martins CC, Santana GS, Vieira GO, Silva LR. Intenção materna de amamentar: revisão sistemática. Ciênc Saúde Coletiva [Internet]. 2016 [access at: Nov. 05, 2019];21(12):3845-58. Available at: <http://www.scielo.br/pdf/csc/v21n12/1413-8123-csc-21-12-3845.pdf>. <https://doi.org/10.1590/1413-812320152112.17962015>.
15. Barbieri MC, Bercini LO, Brondani KJM, Ferrari RAP, Tacla MTGM, Sant'anna FL. Aleitamento materno: orientações recebidas no pré-natal, parto e puerpério. Semina: Ciências Biológicas e da Saúde [Internet]. 2015 [access at: Fev. 22, 2019];36(1):17-25. Available at: <http://www.uel.br/revistas/uel/index.php/seminario/article/view/16480/16920>. <https://doi.org/10.5433/1679-0367.2014v35n2p17>.
16. Alves JS, Oliveira MIC, Rito RVVF. Orientações sobre amamentação na atenção básica de saúde e associação com o aleitamento materno exclusivo. Ciênc Saúde Coletiva [Internet]. 2018 [access at: Nov. 06, 2019];23(4):1077-88. Available at: <http://www.scielo.br/pdf/csc/v23n4/1413-8123-csc-23-04-1077.pdf>. <https://doi.org/10.1590/1413-81232018234.10752016>.
17. Arruda GT, Barreto SC, Morin VL, Petter GN, Braz MM, Pivetta HMF. Existe relação da via de parto com a amamentação na primeira hora de vida? Revista Brasileira de Promoção da Saúde. [Internet]. 2018. [access at: Fev. 22, 2019];31(2):1-7. Available at: <https://periodicos.unifor.br/RBPS/article/view/7321>. <https://doi.org/10.5020/18061230.2018.7321>.
18. Hergessel NM, Lohmann PM. Aleitamento materno na primeira hora após o parto. Curso de Enfermagem, Universidade do Vale do Taquari [Internet]. [access at: Jan. 27, 2019]. Lajeado; 2018. Available at: <https://www.univates.br/bdu/bitstream/10737/1785/1/2017NadirMariaHergessel.pdf>.

