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Breastfeeding in Neonatal Intensive Care Unit of Casablanca Teaching Hospital Ibn Rochd

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Abstract

Background: In Morocco, the breastfeeding (exclusive) prevalence has decreased from 51% in 1992 to 35% in 2018. This prevalence was lower in neonatal intensive care units with 12.4% in 2014. This study aimed to estimate the prevalence and identify the associated factors of breastfeeding (BF) practice in the NICU of Casablanca Ibn Rochd teaching hospital.

Method: A cross-sectional study was performed between 04 January and 26 June 2021 in NICU. Moroccan mother/newborn couples were consecutively recruited after meeting the study inclusion criteria. We used face-to-face interviews using a pretested questionnaire. Our income variable was the proportion of mothers who exclusively or partially breastfed at least one time after admission, categorized by yes and no. Multiple binary logistic regression was used to test the association of income variable with predictors.

Results: We included 170 mother/newborn couples. Around 74% of mothers practiced partial breastfeeding. The mother factors associated with BF practice were educational level (OR=0,10; 95% CI : 0,01-0,87 ;p=0,037781), family monthly income (OR=4,3 ; 95% CI: 1,12-16 , 56 ; p=0,033606), and marital status (OR=14,3 ; 95%CI:1,37-148,43 ; p=0,025853). The newborns' factors associated to BF practice were hospital stay length (OR= 1, 12 95%CI: 1, 00-1, 25; p=0.047726), and hospitalization motif (OR=0.27; 95% CI: 0,076-0.95; p=0.042085). And healthcare facility factors associated to BF practice included healthcare staff support (OR=6, 7; 95% CI: 2, 2-20, 54; p=0.000891).

Conclusion: The newborns hospitalized for respiratory distress from single mothers with lower educational levels and social standards who did not have enough (or any) support from healthcare staff were the ones who received less breast milk in the NICU of Casablanca Ibn Rochd teaching hospital.

Key Words: Breastfeeding, Low Birth Weight, Neonatal Intensive Care Unit, Practice.

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1- INTRODUCTION

Breastfeeding (BF) can help avoiding, globally, 800000 under 5-year-old infants' death per year, and 20000 breast cancer cases. Reversely, stopping BF can cost 300 billion US (United States) dollars per year. The World Health Organization (WHO) recommends exclusive breast milk feeding immediately after delivery till 6 months before the introduction of other foods with BF till at least 2 years (1).

BF is an important part of motherhood; mothers who have their baby hospitalized in a Neonatal Intensive Care Unit (NICU) cannot fully play their motherhood as done traditionally. They are more often separated from their baby; their mathernal care is replaced by staff's healthcare more focused on the administration of medication doses and checking baby constants. Most of the time, the babies are connected to monitors or life-saving devices which can be intimidating for new parents. The new mothers are also intimidated by the immaturity and fragility of their infants. The NICU constitutes a real challenge for the BF. The BF rate is lower in the NICU. In the US, the breast milk feeding rate is 71.4% and 50% in NICU (2, 3).

In China, the rate of BF is around 42% and 23% in the neonatology ward (4, 5). In Denmark, the BF initiation rate is 99% and 65% in NICU (6).

The papers about breastfeeding in NICU are scarce in the African continent. In Morocco, the prevalence of Exclusive Breast-Feeding (EBF) has decreased from 51% in 1992 to 35% in 2018. This prevalence was lower in NICU with 12.4% in 2014 (7-9).

This study aimed to estimate the prevalence and identify the factors associated with breastfeeding (BF) practice in the NICU of Casablanca Ibn Rochd teaching hospital.

2- MATERIALS AND METHODS

2-1. Design and setting

A cross-sectional study was performed between 04 January and 22 June 2021 in the Neonatal Intensive Care Unit (NICU) of teaching hospital Ibn Rochd of Casablanca (Morocco). The NICU capacity was 22 beds and hospitalized monthly around 100 patients.

2-2. population and sampling

This study considered all mothers who had newborns hospitalized in the NICU ward of the teaching hospital Ibn Rochd of Casablanca during the study period.

2-2-1. Inclusion and exclusion criteria

We included any mother/newborn couple that could practice breastfeeding. We excluded any mother/newborn couple that had any BF contraindication, no Moroccan mother, and mother/newborn couples rehospitalized, or absents in the study period.

2-2-2. Sample size determination

The sample size was determined using a single population proportion formula n= P (1-P) $\frac{Z\alpha^2}{I^2}$ assuming an expected rate for exclusive breastfeeding in a previous survey conducted in Morocco to be 12, 4% (10) with a 95% confidence level, at a 5% margin of error. The calculated sample size using the above assumptions became 162.

2-2-3. Sampling procedure

During the period of this study, the monthly admission to NICU was around 100; we included between 5 and 10 mother/newborn couples per week.

2-3. Recruitment and data collection

Given the absence of a validated standardized instrument, the questionnaire used in the present study was adapted from literature and similar studies that were conducted in Morocco (7, 9). The content

was validated by a panel of national experts (neonatology and public health professors). The pilot study was conducted among 20 post-partum mothers in the maternity ward of Ibn Rochd teaching hospital. The resulting questionnaire contained a total of 37 questions distributed in 05 dimensions that were addressed; the socioeconomic-obstetric (09 questions), BF practice and supports (04 questions), BF knowledge (16 questions), BF information (04 questions), and newborn characteristics (04 questions).

Before data collection, the mothers were provided with all the necessary information (purposes, investigators, benefits, risks, anonymity, confidentiality, and data protection) to seek their consent for participation. In a secluded area at the NICU, a questionnaire was administered face-to-face in the local dialect by investigators to the mothers who verbally consented to participate. All data collection procedures were carried out within 15–20 minutes.

2-3-1. Operational definitions:

2-3-1-1. Exclusive breastfeeding (EBF): The newborn received only breast milk from his/her mother or a wet nurse for the first 6 months and no other solids or liquids except for drops or syrups consisting of vitamins, and minerals**.**

2-3-1-2. Partial breastfeeding or mixed feeding: The newborn received some breastfeeds and some artificial feeds either milk or cereal, or other food or water

2-3-1-3. Artificial feeding: the newborn received breast- milk substitutes and no breastfeeding at all.

2-3-2. Variables

2-3-2-1. Outcome

BF Practice: it was the proportion of mothers who exclusively or partially breastfed at least one time after admission. This was categorized into "Yes" for mothers who breastfed exclusively or partially at least one time after admission and "No" for mothers that did not breastfeed.

2-3-2-2. Determinants:

Socio-obstetric characteristics of mothers were as follows. Age was described in year. The residence was categorized as urban, and rural. The education level was ordered as unschooled, primary school, secondary school, and upper/university. The matrimonial status was grouped as single, widow, married, and divorced. Profession was categorized as household wife, self-employed, paid worker. Family monthly income in euro was ordered as low (<300 euro), middle (300-700 euro), and high (>700 euro). The numbers of prenatal visits and number of children alive were also reported. BF knowledge scores were assessed based on the answers to 16 questions (good answer=1 and other answer=0) about benefits, kangaroo, initiation, diversification, expression, and conservation of breast milk.

Regarding Supports during hospitalization, the healthcare staff support was classified as yes and no. The relatives' support was also arranged as yes and no. Prior council or information about BF was also categorized as yes and no.

As for the Information sources about BF, media was categorized as yes and no. healthcare staff grouped as yes and no. And relatives were also categorized as yes and no.

Newborn characteristics included gestational age in number of weeks of amenorrhea from the last menstrual period categorized as <28, 28-32, 32-37, >37; and gender categorized as (male, female). Reasons for hospitalization were grouped as respiratory distress, infections, jaundice, and others. Hospital stays was expressed in the number of days and weight in kilogram.

2-4. Data Analysis

Data analysis was performed by R software version 3.6.3 (package Rcmdr).

Percentages (frequencies) and median (with interquartile range) were used to describe the study population.

The multiple binary logistic regression model was used to analyze the association between potential determinants and outcome (BF practice = yes and no), using stepwise model selection backward/forward on Bayesian Information Criterion (BIC). The determinants with a p-value of 0.05 in multivariate analysis were considered as determinants associated significantly with the BF practice.

3- RESULTS

3-1. Descriptions of the mother/newborn couples

We included 170 couples and one mother declined our request for participation. The mothers' median age was 29 years old (with 10 years as the interquartile range). About 63% of mothers lived in an urban area. Primary school was the education level for 37% of mothers. Mothers who had over one living child represented 63.1%. Over 80% of mothers started BF 12 hours after delivery. The median score of BF knowledge was 10 with 3 as the interquartile range. The prevalence of partial breastfeeding was about 74% with 95% CI (67% - 80%) (prevalence of artificial feeding was around 26%) and none of the mothers practiced exclusive breastfeeding. Over 53% of mothers received healthcare staff support about BF practice. Respiratory distress was the hospitalization reason in 55.29 % of cases. Almost 55% of the newborns were males (Tables 1 and 2).

Table-1: Descriptions of the mother/newborn couples

Characteristics	Frequency (percentage)	Median (interquartile range)
Mothers' characteristics		
Age (year)		29 (10)
Residence		
Rural	63 (37.06)	
Urban	107 (62.94)	
Education level		
Unschooled	41 (24.12)	
Primary	63 (37.06)	
Secondary	55 (32.35)	
upper/university	11 (6.47)	
Marital status		
Single	7 (4.12)	
divorced	1 (0.59)	
Married	162 (95.29)	
Profession		
Household wife	152 (89.94)	
Paid worker	10 (5.92)	
self-employed	7 (4.14)	
Family monthly income (euro)		
<300	135 (79.88)	
300-700	32 (18.93)	

Characteristics	Frequency (percentage)	Median (interquartile range)
>700	2 (1.18)	
Number of prenatal visit		4 (3)
Number of living child		
1	62 (36.69)	
>1	107 (63.31)	
Delivery mode		
Vaginal delivery	99 (58.24)	
caesarian	71 (41.76)	
Newborns' Characteristics		
Gender		
Female	73 (45.06)	
Male	89 (54.94)	
Gestational age (week of amenorrhea)		
<28	1 (0.64)	
28-32	17 (10.90)	
32-37	64 (41.03)	
>37	74 (47.44)	
Hospital stay length		6 (6)
Hospitalization motif		
respiratory distress	94 (55.29)	
infections	19 (11.18)	
jaundice	13 (7.65)	
others	44 (25.88)	

Table-2: Description of BF practice

Characteristics	Frequency (percentage)
BF practice	
Yes	125 (73.96)
No	44 (26.04)
BF Initiation after delivery	
<1hour	16 (10.26)
1-12 hours	15 (9.62)
>12 hours	125 (80.13)
Healthcare staff support	
Yes	86 (53.01)
No	78 (46.99)
Relatives support	
Yes	153 (92.17)
No	13 (7.83)
Prior Information/council about BF	
Yes	156 (93.41)
No	11 (6.59)
Sources of information about BF	
media	

Characteristics	Frequency (percentage)
Yes	83 (49.7)
No	84 (50.3)
Healthcare staff	
Yes	55 (32.93)
No	112 (67.07)
Family/Friends	
Yes	135 (80.84)
No	32 (19.16)

3-2. Associated factors to breastfeeding practice

The associated factors to BF were mothers' educational level, family monthly income, marital status, healthcare staff support, prior council, and information about BF. Newborns' hospitalization motif and length of hospital stay (Table 3).

Table-3: Associated factors with BF practice in NICU

Factors	BF practice Yes n (%)	No n (%)	OR	95%CI OR	P value
Mothers					
Median age (year)	28.0	29.5	1.03	(0.94-1.13)	0.546370
Residence					
Rural	42(66.7)	21(33.3)	1		
Urban	84(78.5)	23(21.5)	2.31	(0.81-6.61)	0.118188
Education level					
Unschooled	30(73.2)	11(26.8)	1		
Primary	46(73.0)	17(27.0)	0.81	(0.23-2.83)	0.737912
Secondary	43(78.2)	12(21.8)	0.67	(0.14-3.06)	0.605550
Upper/university	7(63.6)	4(36.4)	0.10	(0.01-0.87)	0.037781 *
Marital Status					
Single	3(37.5)	5(62.5)	1		
Married	123(75.9)	39(24.1)	14.3	(1.37-148.43)	0.025853 *
Family monthly income (euro)					
<300	98 (72.1)	38 (27.9)	1		
>=300	28 (82.4)	6(17.6)	4.3	(1.12-16 .56)	0.033606*
Delivery mode					
Vaginal delivery	72 (72.7)	27 (27.3)	1.74	(0.611-5.0)	0.298328
Caesarian	54 (76.1)	17 (23.9)	1		
Median Knowledge Score	11	10	1.1	(0.88-1,37)	0.399078
Median number of living child	2	2	1.07	(0.62-1.82)	0.809710
Healthcare staff support					
Yes	74(85.1)	13(14.9)	6.7	(2.2-20.54)	0.000891*
No	52 (62.7)	31 (37.3)	1		
Prior information or council					

Factors	BF practice Yes n (%)	No n (%)	OR	95%CI OR	P value
about BF					
Yes	121(76.1)	38(23.9)	2.9	(0.3-28.76)	0.361193
No	5(45.5)	6(54.5)	1		
Newborns' characteristics					
Median gestational age	37.0	35.5	1.12	(0.89-1.40)	0.322981
Reasons of hospitalization					
Respiratory distress	63(67.0)	31(33.0)	0.27	(0.076-0,95)	0.042085*
Infections	17(89.5)	2(10.5)	3.2	(0.34-29.88)	0.306386
Jaundice	11(84.6)	2(15.4)	1,12	(0.13-9.39)	0.913304
Others	35(79.5)	9(20.5)	1		
Hospital stay length(median day)	7	4	1,12	) 1.00-1.25)	0.047726*

4- DISCUSSION

In Our study the prevalence of partial breastfeeding was about 74% with 95% CI (67%-80%) and none of the mothers practiced exclusive breastfeeding. The BF practice was associated to the mothers' educational level (OR=0.10; 95%CI: 0.01-0.87; p=0.037781), family monthly income (OR=4.3; 95% CI: 1.12-16.56; p=0.033606), marital status (OR=14.3; 95% CI: 1.37-148.43; p=0,025853), healthcare staff support (OR=6.7; 95% CI: 2.2-20.54; p=0.000891), hospitalization motif (OR=0.27; 95% CI: 0.076-0.95; p=0.042085) and hospital stay length (OR=1.12 95% CI: 1.00-1.25; p=0.047726).

The studies performed in Egypt, 2008 (13), Spain, 2020 (14), the US, 2006 (15), and the UK, 2017 (16) also found that mothers supported by healthcare staff practice BF significantly more than the mothers not supported. The studies were done in Finland, 2018 (17), Denmark, 2010 (18), and the US, 2011(19) also showed that mothers from lower socioeconomic status less breastfed their newborns compared to the ones from a higher class. Our study and the one of the US, 2011(19) found that married mothers breastfed significantly more compared to single ones. A survey conducted in Finland, 2016 (20) concluded that mothers with higher educational levels initiated BF earlier than those with lower levels, but in our study, we found that the mothers with higher educational levels less experienced breastfeeding; this could be explained by the fact that most high-level educated mothers had an occupation. The studies in Austria, 2009 (22) and Ethiopia, 2020 (21) showed that newborns with long hospital stay lengths received significantly less breast milk whereas our survey found that longer hospital stay lengths coincide significantly with better BF practice; this could be explained by the fact that most of the mothers had already initiated breastfeeding before their admission and restarted progressively to breastfeed later in NICU. The studies carried out in Finland, 2018 (17) and 2016 (20), found a significant association between newborn gestational age and BF practice while in our study there was no significant relationship between them like the surveys in Denmark, 2010 (18) and Ethiopia, 2020 (21). The study performed in Egypt, 2008 (13) showed that mothers with higher knowledge scores about BF practiced it more, however, in our study, we didn't find any significant association between BF knowledge and BF practice like the one

performed in China, 2018 (23). Our study found a significant association between newborn hospitalization motif and BF practice but this association was not previously confirmed in any study.

4-1. Strength and limitations of the study

This study was one of the first studies that got interested in breastfeeding during hospitalization in neonatal intensive care in Morocco. The bias related to the face-to-face interview and the mono-centric aspect of the study might have affected this study's results.

5- CONCLUSION

The newborns hospitalized for respiratory distress from single mothers with lower educational levels and income, who didn't have enough (or any) support from healthcare staff were the ones who received less breast milk in the NICU of Casablanca teaching hospital Ibn Rochd. So this study suggests that these newborn/mother couples should get more attention from healthcare staff and attend training programs about breastfeeding in NICU.

6- ACKNOWLEDGMENTS

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7- ETHICAL APPROVAL

The study was approved by the Review Board of Research Ethics of Neonatal medicine and resuscitation service of Casablanca teaching hospital Ibn Rochd (RENR; Rec- 28.12.2020). Informed Consent for participation was obtained from all participants involved in the study.

8- FUNDING

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9- COMPETING INTERESTS

The authors declare no competing interests.

10- REFERENCES

1. World Health Organization. Guideline: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services. Geneva: World Health Organization; 2017.

2. Pineda rg. Breastfeeding practices in the neonatal intensive care unit before and after an intervention plan. . The University of Florida, 2006. Https://ufdcimages.uflib.ufl.edu /uf/e0/01/56/59/00001/pineda_r.pdf

3. Kirchner L, Jeitler V, Waldhör T, Pollak A, Wald M. Long hospitalization is the most important risk factor for early weaning from breast milk in premature babies. Acta Paediatr 2009; 98:9814.

4. Hamze L, Mao J, Reifsnider E. Knowledge and attitudes towards breastfeeding practices: A cross-sectional survey of postnatal mothers in China. Midwifery 2019; 74:68–75.

5. Yang Y, Lu H. Breastfeeding in hospitalised preterm infants: A survey from 18 tertiary neonatal intensive care units across mainland China. J Paediatr Child Health 2020; 56:1432–7.

6. Maastrup R, Hansen BM, Kronborg H, Bojesen SN, Hallum K, Frandsen A, et al. Factors associated with exclusive breastfeeding of preterm infants. Results from a prospective national cohort study. PLoS One 2014; 9:e89077.

7. Jasny E, Amor H, Baali A. Mothers' knowledge and intentions of breastfeeding in Marrakech, Morocco. Arch Pediatr 2019; 26:285–9.

8. El Mossaoui M, Benkirane H, Aguenaou H, Barkat A. Breastfeeding, What About in Morocco ?: A Systematic Review and Meta-Analysis. IJISRT 2021; Volume 6:520–37.

9. Berrani H, Mdaghri Alaoui A, Kasouati J, Alaoui K, Thimou Izgua A. Allaitement maternel chez le nouveau-né prématuré à l'âge de six mois au Maroc : prévalence et facteurs associés. Arch Pediatr 2015; 22:141–5.

10. Fautsch Macías Y, Glasauer P. Guidelines for assessing nutrition-related knowledge, attitudes and practices: KAP manual. Rome: FAO; 2014. http://www.fao.org/3/i3545e/ i3545e.pdf

11. Baby-friendly hospital initiative: revised, updated and expanded for integrated care. Geneva: world health organization; 2009. 4.2, guidelines and tools for monitoring baby-friendly hospitals. Available from: https://www.ncbi.nlm.nih.gov/books/nbk153494

12. Ikonen R, Aho AL, Kaunonen M. Validity and Reliability of Breastfeeding Advice and Coping with Breastfeeding Instruments. NN 2014; 33:322–8.

13. Ahmed AH. Breastfeeding preterm infants: an educational program to support mothers of preterm infants in Cairo, Egypt. Pediatr Nurs 2008; 34:125–30, 138

14. Estalella I, San Millán J, Trincado MJ, Maquibar A, Martínez-Indart L, San Sebastián M. Evaluation of an intervention supporting breastfeeding among late-preterm infants during in-hospital stay. Women Birth 2020; 33:e33–8.

15. Merewood A, Chamberlain LB, Cook JT, Philipp BL, Malone K, Bauchner H. The effect of peer counselors on breastfeeding rates in the neonatal intensive care unit: results of a randomized controlled trial. Arch Pediatr Adolesc Med 2006; 160:681–5.

16. Rayfield S, Oakley L, Quigley MA. Association between breastfeeding support and breastfeeding rates in the UK: a comparison of late preterm and term infants. BMJ Open 2015; 5:e009144–e009144.

17. Ikonen R, Paavilainen E, Helminen M, Kaunonen M. Preterm infants' mothers' initiation and frequency of breast milk expression and exclusive use of mother's breast milk in neonatal intensive care units. J Clin Nurs 2018; 27.

18. Zachariassen G, Faerk J, Grytter C, Esberg B, Juvonen P, Halken S. Factors associated with successful establishment of breastfeeding in very preterm infants: Breastfeeding very preterm infants. Acta Paediatr 2010; 99:1000–4.

19. Pineda RG. Predictors of breastfeeding and breastmilk feeding among very low birth weight infants. Breastfeed Med 2011; 6:15–9.

20. Niela-Vilén H, Melender H-L, Axelin A, Löyttyniemi E, Salanterä S. Predictors of Breastfeeding Initiation and Frequency for Preterm Infants in the NICU. J Obstet Gynecol Neonatal Nurs 2016; 45:346–58.

21. Degaga GT, Sendo EG, Tesfaye T. Prevalence of Exclusive Breast Milk Feeding at Discharge and Associated Factors Among Preterm Neonates Admitted to a Neonatal Intensive Care Unit in Public Hospitals, Addis Ababa, Ethiopia: A Cross-Sectional Study. Pediatric Health Med Ther 2020; 11:21–8.

22. Kirchner L, Jeitler V, Waldhör T, Pollak A, Wald M. Long hospitalization is the most important risk factor for early weaning from breast milk in premature babies. Acta Paediatr 2009; 98:9814.

23. Wang Y, Briere C-E, Xu W, Cong X. Factors Affecting Breastfeeding Outcomes at Six Months in Preterm Infants. J Hum Lact 2019; 35:80–9.