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Original Research Article

FACTORS INFLUENCING THE DURATION OF EXCLUSIVE BREASTFEEDING IN PRETERM INFANTS WITH GESTATIONAL AGE ≤34 WEEKS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: To examine the factors that influence the duration of exclusive breastfeeding (EBF) in preterm infants (gestational age ≤34 weeks).
Materials and Methods: This study involved 106 preterm infants with a gestational age of ≤34 weeks who attended the well-baby clinic at a corrected age (CA) of six months. Birth details were extracted from hospital records, and feeding information was gathered through personal interviews.
Results: The mean duration of EBF was 3.59 months (SD: 2.1), with 36.7% of infants receiving EBF until they reached six months CA. Factors associated with a shorter duration of EBF included operative delivery [adjusted odds ratio (aOR) 3.7 (95% CI: 1.0, 12.7); P = 0.035], delays in initiating tube feeding [aOR 1.5 (95% CI: 1.0, 2.0); P = 0.016], and delays in establishing full oral feeds [aOR 1.0 (95% CI: 1.0, 1.07; P = 0.015].
Conclusion: The prevalence of EBF until six months CA among preterm infants born at or below 34 weeks was 36.7%. Prompt initiation and establishment of full oral feeds could contribute to improving the duration of exclusive breastfeeding.
Keywords: EBF, Paediatrics.

INTRODUCTION

The advantages of exclusive breastfeeding (EBF) for the first six months of an infant's life are widely recognized. In India, approximately 54.9% of infants are exclusively breastfed during this critical period.[1] Notably, preterm infants, who account for about 12% of all live births in the country, present a unique challenge in this context.[2] Despite the importance of breastfeeding for this vulnerable population, there is a significant lack of data regarding the duration of exclusive breastfeeding among preterm infants.

This study aims to assess the prevalence of exclusive breastfeeding until six months corrected age (CA) in preterm babies born at or before 34 weeks of gestational age. Additionally, the research seeks to identify various factors that may influence the duration of exclusive breastfeeding in this specific group. Understanding these factors is essential for developing targeted interventions that can promote and support breastfeeding practices among families with preterm infants. By focusing on this population, we can gain insights into the barriers and facilitators of exclusive breastfeeding, ultimately enhancing the health outcomes for these infants during their crucial early months.

MATERIALS AND METHODS

Study Type: Cross sectional study
Study Duration: February 2021- March 2023
Study Site: Department of Paediatrics Great Eastern Medical School and Hospital
Sample Size: 106 infants were enrolled consecutively for convenience, with a sample size determined at six months (+2 weeks) corrected age (CA) during routine visits to the high-risk follow-up clinic, as per standard protocol.
Exclusion Criteria: Infants with congenital malformations, chronic systemic illnesses and with

mothers who were employed outside the home or separated from the infant for any reason.

Methodology: Sociodemographic information, birth details, and neonatal intensive care unit (NICU) stay data were obtained from the discharge summaries. After delivery, mothers received lactation support throughout their hospital stay until discharge and were counseled to continue exclusive breastfeeding (EBF) after leaving the hospital. Information regarding the type of feeding and who made decisions about initiating complementary feeding (CF) was gathered through interviews conducted by a single researcher using a structured questionnaire. The modified Kuppusamy classification was employed to assess socioeconomic status (SES).

Preterm infants were categorized according to World Health Organization (WHO) definitions: extreme preterm (gestational age [GA] 24 weeks + 0 days to 27 weeks + 6 days), very preterm (GA 28 weeks + 0 days to 31 weeks + 6 days), and moderate preterm (GA 32 weeks + 0 days to 33 weeks + 6 days). EBF was defined as receiving only the mother's breast milk, with no other liquids, solids, or even water, except for oral rehydration solutions or vitamin/mineral drops or syrups. Corrected age (CA) was calculated as the chronological age from birth adjusted for the number of weeks born before 40 weeks of gestation. Small for gestational age (SGA) was defined as a birth weight below the 10th percentile for gestational age, according to the Intergrowth 21 chart. Complementary feeding was described as semisolid food offered in addition to milk to young infants.

Statistical Analysis: Data were analyzed using IBM SPSS, Version 23.0. To assess factors influencing the duration of exclusive breastfeeding (EBF), the duration was categorized into two groups: less than 4 months and 4 months or more corrected age (CA), as 4 months CA roughly corresponds to 6 months chronological age for preterm infants born at or below 34 weeks gestational age. The Pearson chi-square test was employed to determine the statistical significance of differences in categorical data, with a p-value of less than 0.05 considered significant. Initially, variables were analyzed in univariate models; those with a p-value of less than 0.5 were further examined using a multiple stepwise backward model. For multivariate analysis, logistic regression was conducted using the backward Wald method to calculate odds ratios.

RESULTS

During the study period, out of 150 eligible infants, 44 were excluded for various reasons: 31 infants had mothers who were employed outside the home, 7 had chronic systemic illnesses, and 6 were excluded due to parental refusal. This resulted in a total of 106 infants being enrolled in the study. Among these enrolled infants, 65 (63.1%) were male. The distribution of birth types revealed that 62 (58.4%) were singletons, while 44 (41.5%) were twins, comprising 22 pairs.

In terms of gestational age, the group included 10 infants (9.4%) classified as extreme preterms, 46 infants (41.5%) as very preterms, and 50 infants (47.1%) as moderate preterms. At the time of discharge following delivery, only 32 infants (30.1%) were exclusively breastfed. The average duration of exclusive breastfeeding reported in the study was 3.59 months, with a standard deviation of 2.1 months.

Concerning exclusive breastfeeding duration, only 39 infants (36.7%) were able to maintain exclusive breastfeeding until they reached six months corrected age (CA). Additionally, 50 infants (47.1%) received exclusive breastfeeding for less than four months CA.

The study also examined the socioeconomic status (SES) of the infants using the modified Kuppusamy classification. It was found that 75% of the infants belonged to the upper middle class, while 25% were categorized in the lower middle class. Among those in the upper middle class, 56% were able to maintain exclusive breastfeeding for four months or more. In comparison, 44% of infants from the lower middle class achieved the same duration of exclusive breastfeeding. However, this difference in breastfeeding duration between the two socioeconomic groups was not statistically significant.

These results underscore the ongoing challenges in promoting exclusive breastfeeding, particularly among preterm infants. The findings suggest that while socioeconomic status may influence breastfeeding practices, other factors likely contribute to the low rates of exclusive breastfeeding in this population. Further investigation is essential to identify these factors and develop targeted interventions aimed at improving breastfeeding outcomes for preterm infants, especially those from lower socioeconomic backgrounds.

Table I presents the risk factors associated with a shorter duration of exclusive breastfeeding (EBF). The decision to introduce complementary feeding (CF) varied among households, with parents, grandparents, and healthcare professionals influencing the decision in 18.5%, 20.5%, and 60% of cases, respectively. Notably, in 43 infants (38.7%), the recommendation to start complementary feeding before the age of six months was provided by a healthcare professional.

Through multivariate logistic regression analysis, several independent factors were identified as significantly associated with a duration of exclusive breastfeeding of less than four months. One notable factor was delivery via cesarean section, which was associated with an adjusted odds ratio (aOR) of 3.7 (95% confidence interval [CI]: 1.0–12.7; P = 0.035). This suggests that infants delivered by cesarean section were nearly four times more likely to have a shorter duration of exclusive breastfeeding.

Additionally, delays in initiating tube feeding also played a significant role, with an aOR of 1.5 (95% CI: 1.0–2.0; P = 0.016), indicating that longer delays in starting tube feeding were linked to reduced breastfeeding duration. Furthermore, the delay in achieving full oral feeds was another contributing factor, with an odds ratio (OR) of 1.0 (95% CI: 1.0–1.07; P = 0.015). This implies that even slight delays in reaching full oral feeding could negatively impact the duration of exclusive breastfeeding.

These findings highlight critical areas for intervention to improve breastfeeding outcomes, particularly for infants born preterm. By addressing the identified risk factors, such as promoting timely initiation of tube feeding and supporting mothers who have undergone cesarean deliveries, healthcare providers can help enhance the duration of exclusive breastfeeding in this vulnerable population.

Table 1

FACTORS	EBF <4 mo (n = 50)	EBF ≥4 mo (n = 56)	Unadjusted OR (95% CI)
Males	26 (40%)	39 (60%)	1.5 (0.6 – 3.6)
Gestational age<28 wk	7 (70%)	3 (30%)	3.4 (0.6 – 14.9)
Gestational age28 wk to <32 wk	25 (54.3%)	21 (45.6%)	1.7 (0.7 – 0.5)
First born	42 (53.1%)	37 (46.8%)	1.8 (1.0 – 3.6)
Birth order>1	8 (25%)	24 (75%)	(Reference)
Cesarean section	40 (51.9%)	37 (48.05%)	2.2 (0.8 – 5.5)
Small for gestational age	7 (53.8%)	6 (46.1%)	1.3 (0.3 – 4.0)
Maternal education			
≤Standard 8	1 (50%)	1 (50%)	1.2 (0.1 – 15.1)
9-12 standard	14 (38.8%)	22 (61.1%)	1.8 (0.09 – 21.4)
Graduate or higher	36 (48%)	39 (52%)	(Reference)
Previous abortions	14 (70%)	6 (30%)	2.9 (1.0 – 8.0)
Duration of NICU stay	25.12	16.25	1.0 (1.00 – 1.04)
Tube feed initiated	1.6 (1.4)	1.09 (1.03)	1.3 (1.0 – 1.8)
Direct breastfeed initiated	22.43 (25.7)	19.47 (17.5)	1.0 (0.9 – 1.01)
Full oral feeds achieved	16.23	8.16	1.0 (0.09 – 1.0)
Maternal age	30.0 (4.9)	26.52 (4.5)	1.0 (1.09 – 1.0)
Kangaroo mother care	16.11 (12.6)	13.09 (18.1)	1.01 (0.97 – 1.01)

DISCUSSIONS

In our study focusing on preterm infants born at or below 34 weeks of gestational age, we found that only 30.1% were exclusively breastfed (EBF) at the time of discharge. The rates of exclusive breastfeeding varied among different categories of preterm infants: 11.5% for extreme preterms, 13% for very preterms, and 45.9% for moderate preterms. These figures are notably lower than those reported in Sweden, where the rates of EBF were 55%, 41%, and 64%, respectively, for the same categories of preterm infants.[5]

In contrast, our findings align more closely with data from Brazil, where rates of exclusive breastfeeding among all preterm infants ranged from 15.3% to 29.2%.[6] Our study data is also similar with the study conducted by Apoorva Kutar et al in India.[7] The discrepancy in exclusive breastfeeding rates between Sweden and India may be attributed to several factors, including the availability of social support systems and the overall educational status of the population. Sweden boasts a remarkable overall exclusive breastfeeding rate of 78% until six months of age, compared to India's rate of only 54.9%.[8]

This stark contrast underscores the importance of addressing the barriers to exclusive breastfeeding in India, particularly for preterm infants who are already at a heightened risk for health complications. Enhancing social support, promoting maternal education, and implementing effective breastfeeding programs could help improve EBF rates among preterm infants, thereby contributing to better health outcomes for this vulnerable population.

The prevalence of exclusive breastfeeding (EBF) until six months corrected age (CA) observed in this study aligns with rates reported in previous research on preterm infants.[9,10] However, it is lower than the prevalence noted for term infants in the National Family Health Survey-4 (NFHS-4). 1Prior studies have identified several maternal factors that can hinder the duration of EBF in term infants, such as insufficient milk production and maternal anxiety, as well as medical challenges faced by the baby, including difficulties with suckling and swallowing. In preterm infants, these factors are often more pronounced.[11]

Interestingly, we found that EBF rates improved among very preterm infants after discharge, while rates for extreme and moderate preterm infants remained stable. This change may be attributed to the neurological maturation of the infant, alongside various maternal psychosocial factors that can influence breastfeeding practices. Other research has indicated that the prevalence of EBF until six months is only 9.9%,[12] among very preterm infants and 48.5%,[13] among late preterms. These findings highlight the need for targeted support and interventions to promote exclusive breastfeeding, particularly for the most vulnerable preterm populations.

In our study, 44 infants (38.9%) received advice from healthcare professionals to start

complementary feeding (CF) before six months corrected age (CA). While this recommendation might stem from legitimate concerns regarding the infants' weight, it highlights a gap in clear guidelines regarding the optimal duration of exclusive breastfeeding for preterm infants. Current guidelines for term infants are often applied to preterms without clarity on whether the six-month recommendation refers to corrected age or chronological age.

The study had several limitations. The rate of exclusive breastfeeding at discharge was notably low, at only 30.1%. Additionally, we did not investigate the specific reasons behind healthcare professionals recommending early initiation of complementary feeding. Mothers were interviewed only when their infants reached six months CA, which introduces the potential for recall bias. Nevertheless, all mothers appeared to accurately remember the timing of when complementary feeding began.

Another factor to consider is that this study was conducted in a private-sector hospital, primarily involving subjects from middle-class backgrounds, with mothers possessing at least an eighth-grade education. Consequently, the influencing factors on breastfeeding practices may differ in other socioeconomic groups.

There is a pressing need for clear guidelines regarding the recommended duration of exclusive breastfeeding for preterm infants. This guidance should address whether the duration should be based on corrected age, chronological age, or other criteria such as growth rate and developmental readiness. Establishing such guidelines would help healthcare providers offer better support to mothers of preterm infants and promote optimal breastfeeding practices, ultimately improving health outcomes for this vulnerable population.

CONCLUSION

The prevalence of EBF until six months CA among preterm infants born at or below 34 weeks was 36.7%. Prompt initiation and establishment of full oral feeds could contribute to improving the duration of exclusive breastfeeding.

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