



Breastfeeding Initiation Time and the Factors Affecting It: A Hospital-Based Cross-Sectional Study from a Tertiary Care Centre in Meghalaya, India

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Abstract

Background: Early initiation of breastfeeding (EIBF) within the first hour of birth reduces neonatal morbidity and mortality and supports successful lactation. Despite high institutional delivery rates, EIBF remains sub-optimal in many settings. This study assessed the mean breastfeeding initiation time and the maternal, obstetric and socio-demographic factors influencing it in a tertiary care hospital.

Methods: A hospital-based, descriptive cross-sectional study was conducted in the maternity wards of Nazareth Hospital, Shillong, from 1 July 2022 to 30 June 2023. All live newborns delivered at the hospital whose mothers gave informed consent were enrolled by consecutive sampling (N = 471). Initiation time and 18 study variables were recorded on a structured proforma. Chi-square test, independent-samples t-test and one-way ANOVA were applied; $p < 0.05$ was considered significant.

Results: The mean initiation time was 118.3 minutes (median 125; IQR 50–164), nearly double the WHO-recommended 60 minutes. Only 27.4% (n = 129) of neonates were breastfed within the first hour, below the national (41.8%) and state (78.8%) NFHS-5 averages. Mode of delivery was the strongest determinant: EIBF occurred in 79.4% of vaginal deliveries versus 0.9% of cesarean sections ($p < 0.001$), with mean times of 45.79 versus 154.90 minutes ($p < 0.0001$). Birth order ($p = 0.026$), maternal occupation ($p < 0.0001$) and religion ($p = 0.015$) were also significantly associated with initiation time, whereas maternal age, education, socioeconomic status and prior breastfeeding knowledge were not.

Conclusion: Breastfeeding initiation was substantially delayed, driven largely by a high cesarean rate and absence of intra-operative breastfeeding support. Targeted interventions for cesarean deliveries, quality antenatal counselling and baby-friendly institutional practices are needed to align local practice with WHO guidelines.

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Keywords: early initiation of breastfeeding, colostrum, mode of delivery, cesarean section, antenatal care, Meghalaya

1. Introduction

Breastfeeding is the natural and optimal source of infant nutrition, providing tailored nutrients, immunological protection and a unique maternal–infant bond. The World Health Organization (WHO) recommends that breastfeeding be initiated within the first hour of birth — a practice termed early initiation of breastfeeding (EIBF) — followed by exclusive breastfeeding for six months. Early suckling stimulates milk secretion, promotes uterine involution through oxytocin release, and delivers colostrum rich in immunoglobulins (IgA, IgM) that lowers the risk of neonatal infection and mortality.

Newborns denied timely colostrum face a two- to four-fold higher risk of mortality, and appropriate breastfeeding practices can prevent an estimated 19% of under-five deaths. Consequently, EIBF was adopted as the first core indicator of the WHO Infant and Young Child Feeding (IYCF) framework. Despite this, global rates remain low, with only about 44% of newborns worldwide put to the breast within the first hour.

In India, NFHS-5 reports EIBF of 41.8%, a negligible rise over NFHS-4 despite a 9.7% increase in institutional deliveries, suggesting that institutional delivery alone does not guarantee timely initiation. Meghalaya records a comparatively high state average of 78.8%. Against this background, the present study was undertaken to quantify the mean breastfeeding initiation time and identify the demographic, clinical and socio-cultural determinants affecting it among mother–newborn dyads at a tertiary care hospital in the East Khasi Hills district of Meghalaya.

1.1. Objectives

To assess the time taken by mothers to initiate breastfeeding in the newborn; and (2) to assess the factors responsible for the timing of breastfeeding initiation in hospital deliveries.

2. Materials and Methods

2.1. Study Design and Setting

A descriptive, cross-sectional, hospital-based study was carried out in the maternity wards of Nazareth Hospital, Shillong — a tertiary care and referral centre in the East Khasi Hills district of Meghalaya — over a one-year period from 1 July 2022 to 30 June 2023.

2.2. Participants

All live newborns delivered at the hospital were eligible. Newborns or mothers with any condition contraindicating early breastfeeding, and dyads for whom informed parental consent was not obtained, were excluded. Recruitment used consecutive sampling until the target was reached.

2.3. Sample Size

Using the standard cross-sectional formula $n = Z^2(1-\alpha/2) \cdot P(1-P)/d^2$, with $Z = 1.96$, expected proportion $P = 0.364$ (based on an observational study from AIIMS Bhubaneswar) and absolute error $d = 0.05$, the minimum required sample was 356. Owing to a high birth rate during the study period, enrolment continued to 471 dyads; no mother refused participation.

2.4. Data Collection

For every dyad, the mandatory recorded time of initiation was retrieved and, after informed consent, the principal investigator with a nurse completed a structured 18-item proforma capturing time of birth and initiation, place and person initiating feeding, type and mode of delivery (and anaesthesia for cesarean), gestation type, maternal age, chronic illness, education, occupation, birth order, tribe, socioeconomic status, family size, number of antenatal care (ANC) visits, religion and prior breastfeeding knowledge.

2.5. Statistical Analysis

Data were entered in MS Excel 2019. Categorical variables were summarised as counts and percentages; initiation time as mean $\pm$ standard deviation and median (IQR). Associations were tested with the chi-square test, independent-samples t-test and one-way ANOVA, with $p < 0.05$ taken as statistically significant. Ethical approval was obtained from the Institutional Ethics Committee of Nazareth Hospital (DHR-registered; IEC/COMMUNICATION/2022-14).

3. Results

3.1. Baseline Characteristics

Of 471 mother–newborn dyads, most mothers (91.9%) were aged 20–39 years. The population was predominantly Khasi (84.3%) and Christian (85.8%). Gestational diabetes, hypertension and hypothyroidism were present in 7.9%, 6.2% and 8.1% of mothers, respectively. First-time (primigravida) mothers accounted for 37.8%, and 81.7% had more than four ANC visits (Table 1).

Table 1: Baseline characteristics of the enrolled dyads (N = 471).

Characteristic	n (%)	Characteristic	n (%)
Age <20 y	23 (4.9)	Khasi tribe	397 (84.3)
Age 20–29 y	244 (51.8)	Christian	404 (85.8)
Age 30–39 y	189 (40.1)	Primigravida (1st birth)	178 (37.8)
Age 40–49 y	15 (3.2)	Birth order 2nd–5th	258 (54.8)
Vaginal delivery	158 (33.5)	ANC >4 visits	385 (81.7)
Cesarean (LSCS)	313 (66.5)	Lower socioeconomic	270 (57.3)
Singleton gestation	456 (96.8)	Unemployed mothers	336 (71.3)
Prior BF knowledge	356 (75.6)	Graduate mothers	114 (24.2)

3.2. Timing of Initiation

The mean initiation time was 118.3 minutes (median 125; IQR 50–164) — nearly double the WHO-recommended 60 minutes ($p < 0.001$). Only 27.4% ($n = 129$) of neonates were breastfed within the first hour; the remaining 72.6%

experienced a delay, initiated at 1–2 h (19.3%), 2–3 h (36.7%), 3–4 h (13.6%) or beyond 4 h (3.0%) (Figure 1). This EIBF rate was well below the national (41.8%) and Meghalaya state (78.8%) NFHS-5 averages.

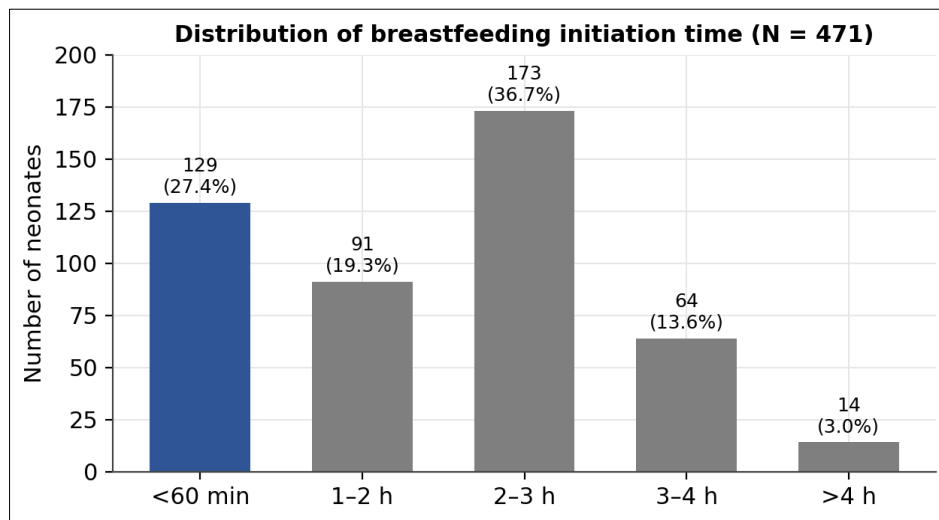


Fig 1: Distribution of breastfeeding initiation time among 471 neonates.

3.3. Mode of Delivery

Mode of delivery was the strongest determinant. Mean initiation time was 45.79 minutes for vaginal deliveries versus 154.90 minutes for cesarean sections ($p < 0.0001$).

EIBF within one hour was achieved in 79.4% (126/158) of vaginal deliveries but only 0.9% (3/313) of cesarean deliveries ($p < 0.001$) (Figure 2).

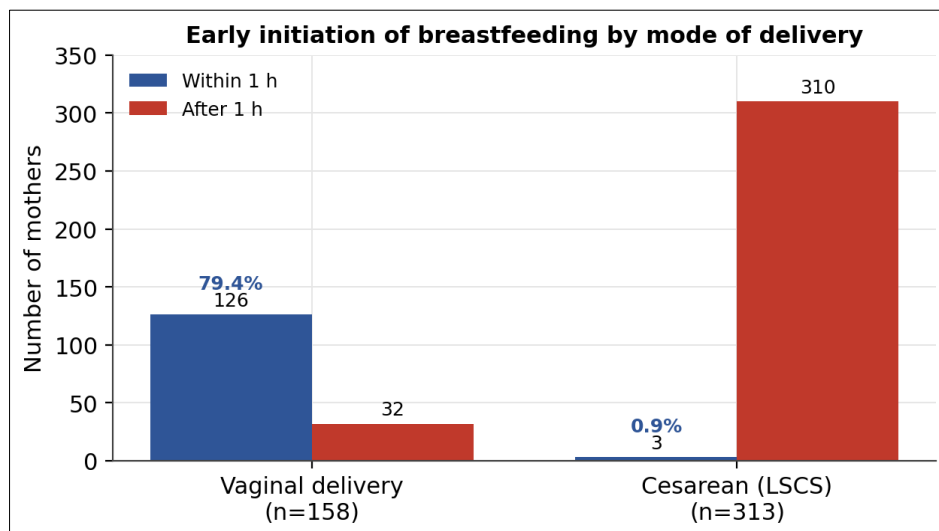


Fig 2: Early initiation of breastfeeding within one hour by mode of delivery.

3.4. Other Factors

Maternal occupation was significantly associated with timing ($p < 0.0001$): skilled workers initiated earliest (83.11 min) and unskilled workers latest (135.73 min) (Figure 3). Grand-multiparous mothers (>5 children) initiated earlier (93.77 min; EIBF 51.4%) than primigravidae, and birth order was significant (mean $p = 0.026$; EIBF $p = 0.004$). Religion also

reached significance ($p = 0.015$), Muslim mothers initiating latest (149.0 min). In contrast, maternal age ($p = 0.39$), education ($p = 0.57$), socioeconomic status ($p = 0.07$) and prior breastfeeding knowledge ($p = 0.84$) showed no significant association with mean initiation time. A summary of associations is given in Table 2.

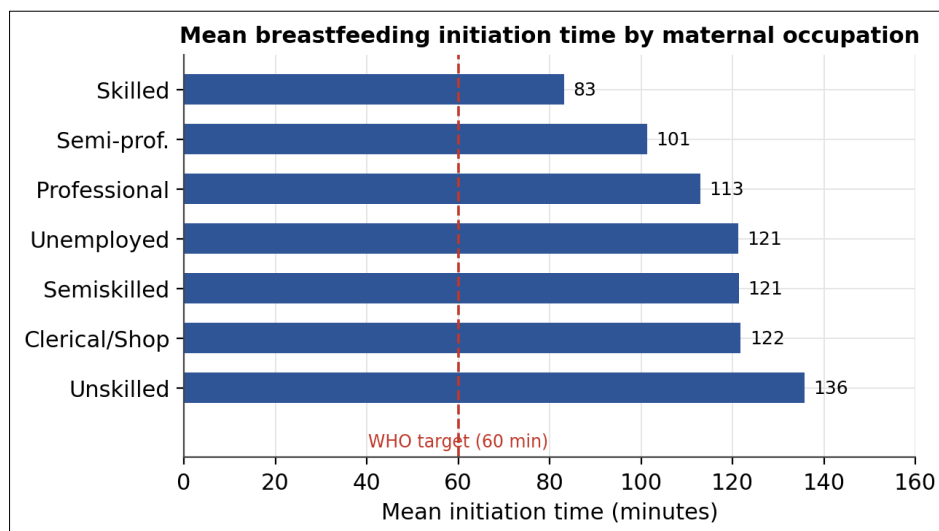


Fig 3: Mean breastfeeding initiation time by maternal occupation (dashed line = WHO 60-minute target).

Table 2: Association of study factors with mean breastfeeding initiation time (*range or group means).

Factor	Mean time (min)*	p-value	Significance
Mode of delivery (VD vs LSCS)	45.79 vs 154.90	<0.0001	Significant
Maternal occupation	83.11–135.73	<0.0001	Significant
Number of ANC visits	41.12–140.88	<0.0001	Significant
Birth order	93.77–122.03	0.026	Significant
Religion	102.39–149.00	0.015	Significant
Type of gestation	118.47 vs 124.20	0.559	Not significant
Maternal age	104.04–121.29	0.395	Not significant
Maternal education	102.00–129.92	0.567	Not significant
Socioeconomic status	107.47–130.44	0.068	Not significant
Prior BF knowledge	118.71 vs 117.00	0.837	Not significant

4. Discussion

This study found a markedly delayed mean breastfeeding initiation time of 118.3 minutes, with only 27.4% of neonates breastfed within the first hour — far below both the national NFHS-5 figure of 41.8% and the Meghalaya state average of 78.8%. The EIBF rate is comparable to the 33.7% reported by Yadav *et al.* in South India and 36.4% by Kuchi *et al.* in Odisha, but lower than the 51% reported by Karim *et al.* in Bangladesh.

Mode of delivery was the dominant driver of delay. With EIBF of only 0.9% after cesarean versus 79.4% after vaginal delivery, and a cesarean rate of 66.5%, the high surgical burden — attributable partly to the hospital's role as a referral centre for high-risk pregnancies — largely explains the overall delay. Longer post-operative recovery, restricted maternal mobility and the effect of anaesthesia on neonatal alertness contribute, consistent with reports by Patel *et al.* and Sharma *et al.* Critically, the centre had not yet adopted the practice of initiating breastfeeding on the operating table, an omission that represents a directly modifiable target.

Antenatal care attendance was high (81.7% with >4 visits, exceeding the state average), yet mean initiation still exceeded 60 minutes, and prior breastfeeding knowledge showed no significant effect ($p = 0.84$). This dissociation between the quantity of ANC contact and timely initiation suggests that the quality of breastfeeding counselling, rather than the number of visits, is the limiting factor — echoing Tiwari *et al.* Birth order was significant, with grand-

multiparous mothers initiating earliest, likely reflecting experience and a higher proportion of vaginal deliveries in this group. Occupational and religious differences point to the need for workplace-supportive and culturally sensitive interventions.

Maternal age, education and socioeconomic status did not significantly affect initiation timing, reinforcing that institutional and obstetric practices — not maternal attributes alone — govern EIBF in this setting. Chronic maternal conditions (gestational diabetes, hypertension, hypothyroidism) showed no direct correlation with delay, again implicating hospital practice and postnatal care.

4.1. Limitations

The single-centre, cross-sectional design limits generalisability and causal inference, and the high proportion of referred high-risk pregnancies may overstate the local cesarean burden. Exclusive-breastfeeding continuation beyond the immediate postnatal period was not assessed.

5. Conclusion

Breastfeeding initiation was substantially delayed in this tertiary care setting, with the high cesarean rate and the absence of intra-operative breastfeeding support emerging as the principal, and modifiable, barriers. Priority interventions include initiating breastfeeding and skin-to-skin contact in the operating theatre, deploying lactation support in the recovery room, strengthening the quality (not merely the

frequency) of antenatal breastfeeding counselling, and adopting culturally sensitive, baby-friendly institutional policies. Implementing these measures can help align local practice with WHO guidelines and improve neonatal and maternal outcomes.

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