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Evaluation of Medical Factors Responsible for Failure of Exclusive Breastfeeding: A Cross-Sectional Study at Outpatient Clinic in a Tertiary Care Hospital in Tamil Nadu.

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ABSTRACT

Exclusive breastfeeding (EBF) for the first six months of life is a cornerstone of infant survival and maternal well-being. Despite national and international recommendations, rates of early initiation and sustained EBF remain suboptimal in India, with wide variation across states. Identifying medical factors that hinder early initiation and continuation of breastfeeding is vital to improve child health outcomes and reduce preventable mortality. To assess the medical causes for delayed initiation of breastfeeding beyond one hour of birth and to evaluate medical reasons contributing to failure of exclusive breastfeeding until six months of age. This hospital-based cross-sectional study was conducted among 1010 mothers attending the outpatient clinic at the Institute of Child Health & Research Centre, Government Rajaji Hospital, Madurai, between August 2023 and August 2024. Eligible mothers with children below two years were enrolled after informed consent. Data were collected using a semi-structured proforma in the local language. Statistical analysis was performed using SPSS version 21, with Chi-square and Fisher's exact tests applied; $p < 0.05$ was considered significant. Only 27.7% of mothers initiated breastfeeding within one hour of delivery. The prevalence of exclusive breastfeeding up to six months was 34.3%. Delayed initiation was significantly associated with caesarean section, NICU admission of neonates, and maternal complications. Major medical factors for failure of EBF included perceived insufficient milk supply (30.4%), central nervous system impairment in infants (17.9%), prolonged hospitalization/ventilation (12.8%), and congenital heart disease (7.8%).Exclusive breastfeeding rates in the study population were suboptimal, with delayed initiation linked to caesarean delivery, maternal complications, and NICU admissions. Perceived insufficient milk supply and infant medical conditions were the major contributors to early cessation. Focused maternal counseling, early lactation support, and comprehensive care for high-risk neonates are crucial to improve exclusive breastfeeding practices.

Keywords: exclusive breastfeeding, initiation, caesarean section, neonatal morbidity, lactation failure.

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INTRODUCTION

India carries a significant share of the world's child population, and with that comes an equally large responsibility for infant survival. Nutrition in the earliest months of life is decisive for growth and long-term health. Among all available interventions, breastfeeding stands out as the most powerful tool to reduce neonatal deaths and to protect children from infections that remain common in low- and middle-income countries [1].

Breast milk is not only food but also a source of immunity. Colostrum, the thick yellow milk produced in the first days, functions almost like a natural vaccine, supplying antibodies and growth factors that shield the newborn from early infections. Infants who are put to the breast within the first hour are more likely to survive the neonatal period, and exclusive breastfeeding for six months has been shown to avert thousands of under-five deaths every year [2]. Yet, in practice, these benefits are often lost because of delayed initiation, early supplementation, or discontinuation.

Patterns across the globe vary widely. In poorer countries, only about four percent of babies are never breastfed, while in high-income settings nearly one in five misses breast milk altogether [3]. Cultural and economic differences shape these outcomes. In India, improvements are visible but incomplete. According to NFHS-5 (2019–21), only 42 percent of mothers nationally started breastfeeding within an hour of delivery, and the share of infants under six months receiving exclusive breastfeeding was 55 percent. Tamil Nadu performed slightly better than the national average, with 60.2 percent reporting timely initiation, but still below global nutrition targets [4].

Several barriers explain these gaps. The rising proportion of caesarean deliveries often leads to delayed mother–infant contact. Neonatal admissions for observation, maternal complications such as postpartum hemorrhage, and misconceptions about milk quantity all contribute to interruption of feeding [5,6]. Prelacteal practices, like offering sugar water or honey, continue in some communities despite repeated health education messages. These delays weaken the reflexes needed to establish adequate milk flow.

Recognizing these challenges, India has invested in dedicated programmes. The Baby Friendly Hospital Initiative set standards for health facilities to counsel and support new mothers, while the Mothers' Absolute Affection (MAA) programme, launched in 2016, expanded the focus through mass media campaigns, training of frontline health workers, and peer-support groups [7,8]. However, data show that policies alone cannot overcome structural and medical obstacles. The persistence of low exclusive breastfeeding rates highlights the need for local studies that examine both clinical and social determinants. The present study was conducted in children attending Out patient Clinic in a tertiary hospital in Madurai, Tamil Nadu, to evaluate medical factors responsible for delayed initiation of breastfeeding and to explore clinical causes for failure of exclusive breastfeeding during the first six months of life.

MATERIALS AND METHODS

Study Design and Setting

The present investigation was a hospital-based, cross-sectional study. It was carried out in the Department of Pediatrics, Institute of Child Health and Research Centre, Government Rajaji Hospital, Madurai, Tamil Nadu. As one of the busiest tertiary centres in the state, this hospital caters to children from both urban households and rural villages, offering a broad picture of breastfeeding practices across social strata.

Study Period and Duration

Data collection was undertaken over a one-year period, from August 2023 to August 2024. This timeframe allowed adequate enrolment and covered seasonal variations in patient flow.

Participants

The study population comprised mothers attending the pediatric outpatient clinic with children less than two years of age. Women who were critically ill, unable to provide reliable responses, or who declined consent were excluded.

Sample Size and Sampling

The required sample was estimated at 1010, based on prevalence figures from prior breastfeeding studies, with a 95% confidence level and 5% allowable error. Systematic random sampling was used. Eligible mothers were selected from outpatient registers in a way that avoided clustering and gave each an equal chance of inclusion.

Data Collection

Information was obtained using a semi-structured proforma, translated into Tamil and pretested in a pilot group. The tool recorded socio-demographic details, obstetric history, breastfeeding initiation time, exclusivity up to six months, and medical causes of failure. Mothers were interviewed face-to-face in a private setting, and details were cross-checked with discharge notes or neonatal intensive care records whenever available.

Statistical Analysis

Data were entered into Microsoft Excel before being processed with **SPSS version 21** (IBM Corp., Armonk, NY, USA). Descriptive statistics (frequencies, percentages) were used for baseline variables. Associations between categorical variables such as caesarean section, NICU admission, or maternal complications and breastfeeding outcomes were tested with Chi-square or Fisher's exact test. Significance was set at $p < 0.05$.

RESULTS

A total of 1010 mothers with children less than two years of age were enrolled. Their baseline profile is summarised in **Table 1**. Nearly half of the participants were between 21 and 25 years, with the mean maternal age being 24.8 years (SD ± 4.3). More than one-third had only completed secondary school, and the majority belonged to lower socio-economic classes. Figure 1 depicts the age distribution as a simple bar chart.

Table 1: Socio-demographic profile of study participants (n = 1010)

Characteristic	Category	n (%)
Maternal age (years)	≤20	212 (21.0)
	21–25	487 (48.2)
	26–30	229 (22.7)
	≥31	82 (8.1)
Education	No formal schooling	168 (16.6)
	Up to secondary	375 (37.1)
	Higher secondary & above	467 (46.2)
Socio-economic class*	Class II–III	289 (28.6)
	Class IV–V	721 (71.4)

*Modified BG Prasad classification.

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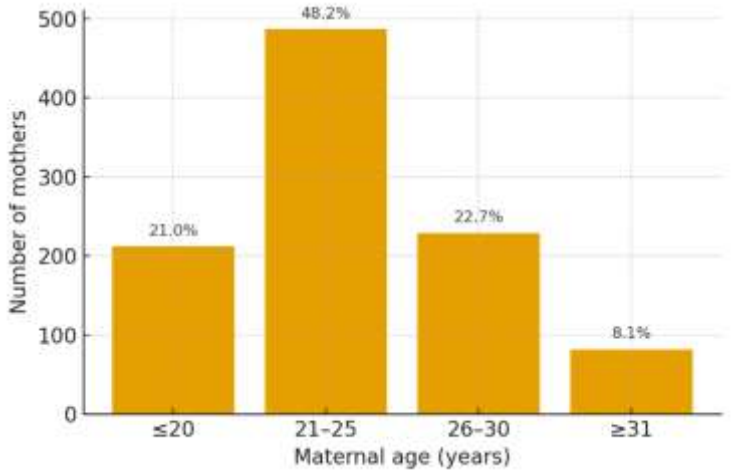
Figure 1: Maternal age distribution (bar chart)



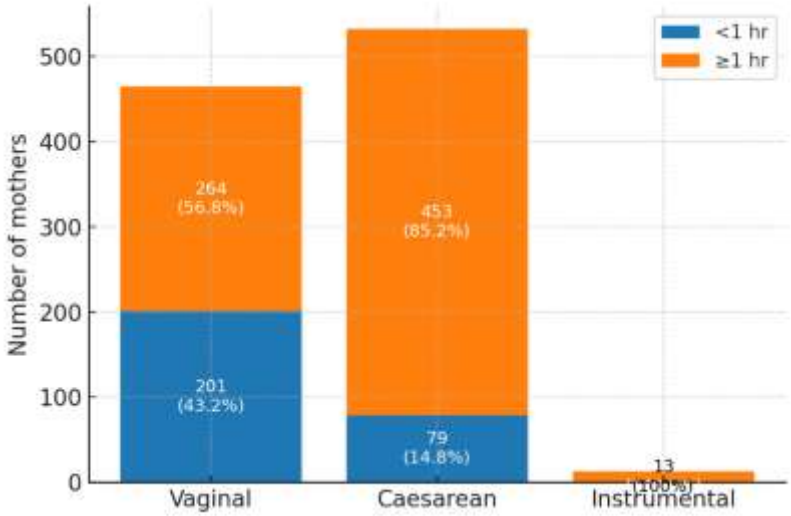
With respect to breastfeeding initiation, only 280 mothers (27.7%) reported putting their child to the breast within one hour of birth (**Table 2**). Timely initiation was significantly higher following normal vaginal delivery compared to caesarean section (Chi-square = 41.2, $p < 0.001$). Delayed initiation was often linked to operative delivery, neonatal admission, or maternal complications.

Table 2: Timing of initiation of breastfeeding and delivery type

Delivery type	Initiated <1 hour	Initiated ≥1 hour	Total
Vaginal	201 (43.2%)	264 (56.8%)	465
Caesarean	79 (14.9%)	453 (85.1%)	532
Instrumental	0 (0.0%)	13 (100.0%)	13
Total	**280 (27.7%)**	**730 (72.3%)**	1010

Chi-square test = 41.2, df = 2, $p < 0.001$.

Figure 2: Timing of breastfeeding initiation by delivery type (stacked bar chart)



Exclusive breastfeeding until six months was achieved by only 347 mothers (34.3%). The rest had introduced top feeds, often due to perceived insufficient milk. Current status is summarised in **Figure 3** as a pie chart.

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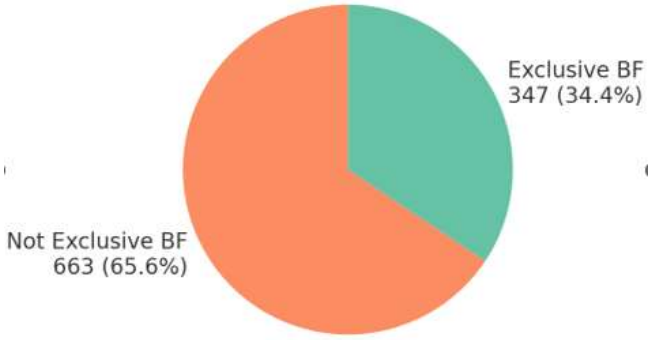
Figure 3. Exclusive breastfeeding status at six months (pie chart)

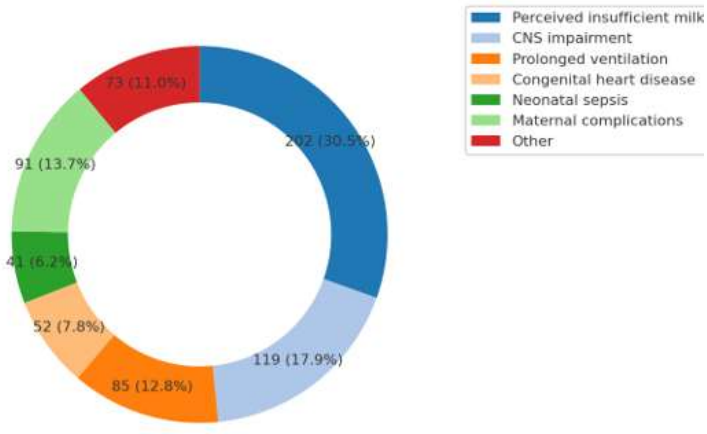


Medical causes for failure of exclusive breastfeeding are outlined in **Table 3**. The leading reason was maternal perception of insufficient milk supply (30.4%). Neonatal factors such as central nervous system impairment (17.9%), prolonged ventilation (12.8%), and congenital heart disease (7.8%) were also important. A distribution of causes is visualised in **Figure 4** using a donut chart.

Table 3: Medical causes for failure of exclusive breastfeeding (n = 663)

Cause	n (%)
Perceived insufficient milk	202 (30.4)
CNS impairment in infant	119 (17.9)
Prolonged hospitalisation/ventilation	85 (12.8)
Congenital heart disease	52 (7.8)
Neonatal sepsis	41 (6.2)
Maternal postnatal complications	91 (13.7)
Other causes	73 (11.0)

Figure 4: Causes for failure of exclusive breastfeeding (donut chart)



Key Observations

- Only one in four mothers initiated breastfeeding within the first hour.
- Exclusive breastfeeding up to six months was achieved by roughly one in three infants.
- Caesarean section had a strong negative association with timely initiation.
- Perceived milk insufficiency was the leading barrier, followed by neonatal morbidities.

DISCUSSION

This hospital-based study highlights persistent gaps in breastfeeding practices in the community setting. Barely one in four mothers initiated breastfeeding within the first hour after delivery, and only one-third continued exclusive breastfeeding until six months. Caesarean section emerged as the single strongest factor delaying initiation, while maternal perception of insufficient milk was the leading cause of discontinuation. Neonatal morbidities, including central nervous system impairment and prolonged ventilation, also contributed.

The proportion of timely initiation observed here (27.7%) is lower than the national average of 42% reported in NFHS-5 [9]. Even within Tamil Nadu, where 60.2% of mothers are documented to initiate within an hour, the rates at our centre were far below [9]. Similar gaps have been reported in other hospital-based studies across India, where operative deliveries and newborn admissions frequently separate the dyad and hinder early feeding [10,11].

Exclusive breastfeeding prevalence (34.3%) in our cohort is also below both the national figure of 55% and the global nutrition target of 70% [9,12]. Perceived milk insufficiency was the dominant reason for failure, echoing findings from systematic reviews that identify maternal confidence and counselling quality as decisive [13]. Neonatal morbidities, such as sepsis or congenital heart disease, further complicated continuation. These clinical scenarios often require NICU care, where opportunities for early latch and skin-to-skin contact are limited [14].

The negative association between caesarean delivery and breastfeeding initiation is well established. A multi-country analysis showed that caesarean birth halves the likelihood of early initiation, largely because of operative recovery, anaesthetic effects, and institutional routines [15]. In our study, 85% of mothers who underwent caesarean section initiated after one hour, underscoring the structural barriers. Addressing these will require system-level changes such as promoting immediate skin-to-skin contact even in operation theatres and enhancing lactation support postoperatively.

From a programmatic perspective, India has invested heavily through the Baby Friendly Hospital Initiative and the Mothers' Absolute Affection programme. However, implementation fidelity remains uneven [16]. Aggressive formula marketing, poor staff training, and shortage of lactation counsellors continue to erode progress [17]. The present findings suggest that tertiary hospitals, where caesarean rates and NICU admissions are higher, may need tailored strategies: bedside counselling, structured follow-up, and targeted support for high-risk infants.

Limitations of this study should be acknowledged. Study was conducted only in mothers attending Outpatient clinic . Place of residence and also delivery whether Governmet or private, Primary health centre or Teritiary care hospital were not included in the study. Being a single-centre, hospital-based cross-sectional design, the findings may not be generalisable to the community. Recall bias is possible when mothers reported past breastfeeding practices, although efforts were made to cross-check with records. Despite these, the large sample and systematic sampling add robustness to the observations.This study has certain limitations that should be acknowledged. It was conducted only among mothers attending the outpatient clinic, and factors such as place of residence and type of delivery facility (government hospital or private hospital, primary health centre, or secondary / tertiary care centre) were not considered. As a single-centre, hospital-based cross-sectional study, the findings may not be fully generalisable to the community. Recall bias is also possible, since mothers reported past breastfeeding practices; however, efforts were made to cross-check these reports with available records. Despite these limitations, the large sample size and use of systematic sampling add robustness to the observations.Future research may focus on longitudinal follow-up of mother–infant dyads to evaluate continuation rates, impact of postnatal counselling, and the role of fathers and extended family in sustaining exclusive breastfeeding. Comparative studies across public and private facilities in Tamil Nadu would also help identify system-level differences.

CONCLUSION

This study demonstrates that both early initiation of breastfeeding and exclusive breastfeeding rates among children attending the outpatient clinic of a tertiary care hospital were suboptimal. Caesarean delivery, maternal complications and neonatal morbidities were identified as major factors delaying initiation, while the predominant cause for discontinuation of exclusive breastfeeding was the perception

of insufficient milk supply. These findings emphasize the importance of strengthening lactation support immediately after birth, with particular focus on mothers undergoing caesarean delivery or experiencing complications. Consistent counselling and follow-up for high-risk mothers and neonates are crucial to sustaining breastfeeding practices. In addition, reinforcing accountability and monitoring mechanisms at both institutional and community levels will help ensure improved breastfeeding outcomes.

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