

ENHANCING EARLY INITIATION OF BREASTFEEDING THROUGH QUALITY IMPROVEMENT INTERVENTIONS IN NEWBORNS DELIVERED AT A TERTIARY CARE CENTRE

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Received : 02/05/2026
Received in revised form : 27/06/2026
Accepted : 10/07/2026

Keywords:

Early initiation of breastfeeding, skin-to-skin contact, quality improvement, PDSA, neonatal care.

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DOI: 10.47009/jamp.2026.8.4.229

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2026; 8 (4); 1368-1372



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ABSTRACT

Background: Early initiation of breastfeeding (EIBF) and skin-to-skin contact (SSC) are essential newborn care practices but remain inadequately implemented in many hospitals. This study evaluated the impact of a quality improvement (QI) initiative on EIBF and SSC rates. **Materials and Methods:** A prospective QI study was conducted in a tertiary care hospital from May 2024 to November 2025. Baseline assessment of 285 eligible mother–neonate dyads identified barriers to EIBF. Four sequential PDSA cycles involving staff training, role allocation, SOPs, counselling, and inclusion of caesarean deliveries were implemented, followed by a sustenance phase. **Result:** Baseline EIBF and SSC rates were 12.6% and 20%, respectively. Major barriers included poor awareness, inadequate counselling, lack of protocols, and staffing constraints. EIBF improved progressively to 72% and SSC to 82% by the fourth PDSA cycle. During the sustenance phase, rates declined to 56% and 62.1%, respectively. **Conclusion:** Structured PDSA-based QI interventions substantially improved EIBF and SSC. Sustained improvement requires continuous supervision and institutional support.

INTRODUCTION

Breastfeeding is one of the most effective interventions for improving neonatal survival, growth, and development.^[1] Human breast milk provides optimal nutrition and offers significant immunological, neurodevelopmental, and long-term health benefits for infants while promoting maternal recovery and reducing the risk of chronic diseases.^[2,3]

Early initiation of breastfeeding (EIBF), defined as initiating breastfeeding within one hour of birth, is a key component of essential newborn care recommended by the World Health Organization (WHO) and UNICEF.^[4] EIBF supports exclusive breastfeeding, improves neonatal outcomes, and serves as an indicator of quality intrapartum and postnatal care, particularly in low- and middle-income countries.^[5]

The benefits of EIBF are largely attributed to colostrum, which is rich in immunoglobulins, leukocytes, growth factors, and antimicrobial

substances that protect against neonatal infections such as sepsis, pneumonia, and diarrhoea.^[6,7] Early breastfeeding, together with skin-to-skin contact, also promotes thermal regulation, cardiorespiratory stability, maintenance of blood glucose levels, and healthy microbial colonization.^[8,9] For mothers, early suckling stimulates oxytocin release, enhancing uterine contraction and reducing postpartum blood loss.^[10]

Strong evidence links EIBF with improved neonatal survival. Studies from India, Ghana, and Tanzania have shown that delayed initiation of breastfeeding significantly increases neonatal mortality, particularly when initiation occurs beyond 24 hours after birth.^[11] Improvements in EIBF practices have been associated with substantial reductions in neonatal mortality, and it is estimated that over one million neonatal deaths could be prevented annually through universal EIBF.^[6,12,13] Despite its proven benefits, EIBF remains suboptimal globally, with prevalence ranging from 17% to 58%.^[14] In India, only about 41–43% of newborns are breastfed

within the first hour of life.^[15] Major barriers include inadequate maternal awareness, pain and fatigue, insufficient counselling, staffing constraints, and lack of standardized hospital protocols.^[16,17] Quality Improvement (QI) approaches such as the Point-of-Care Quality Improvement (POCQI) framework and Plan–Do–Study–Act (PDSA) cycles offer practical strategies to address these barriers. Therefore, the present study aimed to improve early initiation of breastfeeding among newborns in a tertiary care centre through structured QI interventions using the POCQI framework.

MATERIALS AND METHODS

This quality improvement (QI) study was conducted at Santosh Hospital, a tertiary care teaching hospital, from May 2024 to November 2025 in the Departments of Paediatrics and Obstetrics & Gynaecology. The study aimed to improve early initiation of breastfeeding (EIBF) among eligible newborns using the Point-of-Care Quality Improvement (POCQI) framework and Plan–Do–Study–Act (PDSA) cycles.

Eligible participants were clinically stable inborn neonates with birth weight >1.8 kg, gestational age ≥ 35 weeks, and no contraindication to breastfeeding. Neonates requiring NICU admission, those with major congenital anomalies or surgical conditions, and babies separated from clinically unstable mothers were excluded. A sample size of 384 neonates was considered adequate. Immediate skin-to-skin contact (SSC) was defined as uninterrupted mother–baby contact for at least 60 minutes after birth, while EIBF was defined as breastfeeding initiation within one hour of delivery. The QI process was implemented in two phases. Phase I (May–November 2024) involved baseline assessment of EIBF and SSC practices using delivery records, labour room registers, and postnatal documentation. Data on breastfeeding timing, counselling practices, staffing, and workflow barriers were collected. A root cause analysis was subsequently conducted in January 2025 using a fishbone (Ishikawa) diagram to identify barriers related to policy, people, procedures, and place.

Phase II consisted of four sequential PDSA cycles (February–September 2025) followed by a sustenance phase (October–November 2025). Interventions included allocation of dedicated staff for SSC and EIBF supervision, structured training programs, simulation-based skill development, implementation of standard operating procedures (SOPs) and checklists, antenatal and postnatal counselling, preoperative counselling for caesarean deliveries, and use of educational posters and audiovisual aids. During the sustenance phase, continuous monitoring, reminder messages through a WhatsApp group, and incorporation of SSC and

EIBF practices into departmental policies were undertaken.

As the study was based on recommended standard care, no additional interventions were introduced. Patient confidentiality was maintained throughout. Statistical analysis was performed using SPSS version 25. Categorical variables were expressed as frequencies and percentages and analysed using Chi-square and McNemar's tests, while continuous variables were compared using paired t-tests. A p-value <0.05 was considered statistically significant.

RESULTS

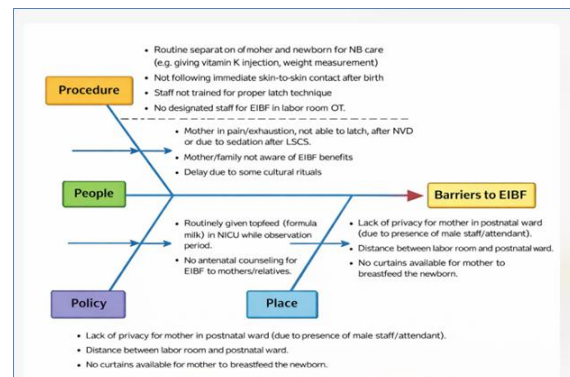


Figure 1: fishbone diagram of possible reasons for delayed initiation of breastfeeding after baseline data analysis

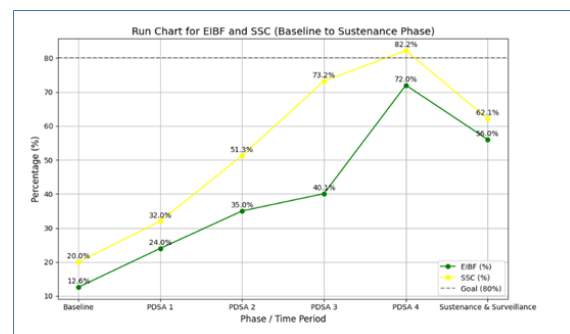


Figure 2: Run Chart showing improvement of EIBF and SSC rates from baseline to all 4 pdsa cycle and during the sustainability phase.

Baseline assessment included 285 eligible mother–neonate dyads. Nearly half of the neonates (46.7%) had a birth weight of 2.5–3.0 kg, 28.7% weighed >3.0 kg, and 24.6% weighed 1.8–2.4 kg. Most deliveries occurred at 37–38 weeks of gestation (41.8%), followed by 39–40 weeks (33.3%) and 35–36 weeks (24.9%). Normal vaginal deliveries accounted for 64.6% of births, while 35.4% were delivered by caesarean section. Most mothers were aged 25–30 years (45.3%), belonged to lower or lower-middle socioeconomic groups (79.0%), and were multiparous (55.1%). At baseline, only 37 neonates (13.0%) initiated breastfeeding within the first hour of birth, whereas 87.0% experienced delayed initiation. Root cause analysis identified multiple barriers to EIBF. The commonest factors were lack of awareness regarding EIBF benefits

(26.7%), inadequate antenatal counselling (20.4%), maternal anatomical difficulties such as retracted nipples (20.0%), absence of written SOPs (14.7%), cultural practices and taboos (12.6%), maternal discomfort or effects of anaesthesia (11.9%), non-adherence to immediate skin-to-skin contact (10.9%), lack of privacy (10.2%), mother–baby separation for routine procedures (9.5%), inadequate staff support (9.1%), and absence of designated personnel for EIBF (8.4%). Following implementation of sequential PDSA cycles, progressive improvement in EIBF and SSC rates was observed. During PDSA cycle I (n=48), introduction of designated supervisory teams increased EIBF from 12.6% to 24.0% and SSC from 20% to 32%. In PDSA cycle II (n=50), staff

training, SOPs, checklists, and educational materials further improved EIBF to 35.0% and SSC to 51.3%. PDSA cycle III (n=62), emphasizing simulation-based training and maternal education, increased EIBF to 40.1% and SSC to 73.2%. During PDSA cycle IV (n=62), targeted interventions for caesarean deliveries resulted in a substantial rise in EIBF to 72.0% and SSC to 82.0%. During the sustenance phase (n=64), EIBF and SSC rates declined to 56.0% and 62.1%, respectively, coinciding with reduced direct supervision. To sustain gains, departmental policies on EIBF and SSC were formalized, and designated staff responsibilities were instituted in labour rooms and operation theatres.

Table 1: ?

PDSA Cycle	Plan	Do	Study	Act
PDSA – I (Feb – March '25) n= 48	- Assign a designated team of 2 interns for immediate SSC to all eligible NVD. - Assign LR nurses / 2 pediatric PGs for supervising early latch-on in LR / postnatal ward. - Routine newborn care delayed in all stable newborns for 1 hour or after SSC / EIBF.	- Immediate SSC to all eligible NVD in morning shift only on 3 days per week (Tue, Wed, Thursday). - Make a roster to assign interns and LR staff in morning shift on these 3 days.	- A new practice was introduced in LR without interference in the work of gynae / OBS dept. - Some mothers found the experience good. - Rate of EIBF increased from 12.6% to 24.0% and baseline rate of ssc 20% and increased to 32%.	- Establishing SSC in LR improved BF initiation rate. - Can be implemented efficiently after following proper roster for given days.
PDSA – II (April – May '25) n= 50	- Training sessions for LR nursing staff / interns to use the checklist every week for 2 months. - Make clear written SOPs for EIBF benefits and display them in LR / antenatal ward.	- Sessions on technique of latching and benefits of EIBF held in LR in the 1st week. - In the 2nd week, sessions held in antenatal / postnatal ward with the help of PGs / interns. - Posters and written SOPs displayed and pasted in antenatal, LR, and postnatal wards.	- Rate of EIBF improved from 24% to 35% and rate of ssc increased to 51.3% over 2 months. - Displayed posters enhanced and motivated the staff and mothers for EIBF.	- New SOPs and eligibility criteria for SSC & EIBF need to be clarified and circulated in a proper manner. - Role allocation needs to be specified.
PDSA – III (June – July '25) n = 62	- Increase the number of days for supervised SSC & EIBF with an assigned team. - Conduct simulation-based training using dummy & baby models for staff / interns / PGs for proper latching. - Use nukkad natak / educational videos for benefits of EIBF in antenatal ward, postnatal ward, OT & gynae OPD.	- Mothers enrolled every week from Monday to Friday. - Simulation-based training was implemented in the skill lab. - Training sessions / nukkad natak held in antenatal and postnatal wards, including gynae OPD.	- Rate of EIBF increased from 12.6% to 40.1% and rate of ssc increased to 73.2% after 3 PDSA cycles. - More training sessions prepared the staff / PGs to work efficiently.	- This change idea needs to be implemented on a continuous basis. - Include OT staff for training sessions.
PDSA – IV (Aug – Sept '25) n = 62	- Improvement of deliveries including elective caesarean in morning shift only. - Counseling of mothers before OT and post-OT, with extra caution for EIBF.	- Counseling was done by OT PGs for eligible elective caesarean mothers. - OT nursing staff waited for suturing to be completed, and then assisted the mother in breastfeeding the baby in OT.	- EIBF rate increased from 40% to 72% and ssc rate increased to 82% during the 4th PDSA cycle, including caesarean deliveries.	- Data collection continues. - Personalized WhatsApp reminders and group messages made for NVD / elective caesarean eligible deliveries.
Sustenance Phase (Oct – Nov '25) n = 64	- Make a WhatsApp group of pediatric JRs / NICU staff / OT staff / interns to facilitate communication. - Daily 1 reminder message to be posted on the group for eligible	- Data collection continued over the WhatsApp group and maternal records. - Schedule followed every week for 2	- Rate of EIBF declined from 72% to 56% and ssc rate also declined to 62.1% as there was no supervision of early latch-on / SSC by	- Departmental written policy was made and a designated staff in LR / OT for EIBF was assigned. - This helped in

	deliveries.	months.	pediatric team.	maintaining the sustainability of achieved results.
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DISCUSSION

The present study demonstrated that a structured Quality Improvement (QI) approach using iterative Plan–Do–Study–Act (PDSA) cycles effectively improved early initiation of breastfeeding (EIBF) and immediate skin-to-skin contact (SSC) in a tertiary care hospital. Baseline EIBF (12.6%) and SSC (20%) rates were considerably lower than recommended standards, reflecting significant gaps in routine newborn care practices. Root cause analysis identified multiple barriers, including inadequate maternal awareness, insufficient counselling, lack of standardized protocols, unclear staff responsibilities, limited training, and operational challenges within labour rooms and operation theatres. Similar barriers have been reported by Sharma et al and Rahmawati et al.^[18,19]

The first PDSA cycle focused on assigning dedicated personnel for supervision of SSC and breastfeeding initiation, resulting in an increase in EIBF from 12.6% to 24% and SSC from 20% to 32%. These findings support reports by Patyal et al,^[20] and Sisodia et al,^[21] who demonstrated that role allocation and accountability can significantly improve breastfeeding outcomes. The second cycle emphasized staff training, written standard operating procedures, checklists, and educational materials, leading to further improvements in EIBF (35%) and SSC (51.3%). Similar benefits of structured education and standardized practices have been documented by Surabhi et al.^[22]

During the third PDSA cycle, simulation-based training and enhanced maternal education through audiovisual tools strengthened staff confidence and breastfeeding support skills, resulting in EIBF and SSC rates of 40.1% and 73.2%, respectively. These observations are consistent with findings by Yadav et al,^[23] and Kaur et al,^[24] who highlighted the importance of repeated training and staff engagement in achieving sustained quality improvement.

A major breakthrough occurred during the fourth PDSA cycle, when interventions were extended to elective caesarean deliveries. Targeted counselling and active involvement of operation theatre staff increased EIBF to 72% and SSC to 82%. These findings align with studies by Kalita et al,^[25] Stany et al,^[26] and Dudeja et al,^[27] demonstrating that caesarean delivery need not be a barrier to timely breastfeeding when supported by coordinated multidisciplinary care.

The overall improvement achieved through successive PDSA cycles is supported by broader evidence. Rifat et al,^[28] reported that health-system strengthening interventions are among the most effective strategies for improving EIBF, while Habte et al,^[29] emphasized the effectiveness of Baby-

Friendly Hospital Initiative principles. Although formal BFHI accreditation was not implemented, key components such as SSC promotion, staff training, counselling, and reduction of unnecessary mother–baby separation were incorporated and yielded comparable benefits.

During the sustenance phase, a decline in EIBF and SSC rates was observed following reduced direct supervision, highlighting the importance of continuous monitoring, leadership support, and institutional ownership. Similar observations have been reported by Kaur et al.^[24] The findings underscore that sustained improvements require integration of EIBF and SSC practices into routine hospital policies and accountability systems.

CONCLUSION

A structured QI approach using iterative PDSA cycles significantly improved early initiation of breastfeeding and immediate skin-to-skin contact among eligible newborns. Low-cost interventions focusing on staff role allocation, training, standardized protocols, counselling, and inclusion of caesarean deliveries increased EIBF from 12.6% to 72% and SSC from 20% to 82%. The decline during the sustenance phase highlighted the need for ongoing supervision and institutional support. These findings demonstrate that context-specific, multidisciplinary QI interventions can successfully bridge the gap between evidence and routine newborn care practices.

Limitations: It is a single-centre study, Staff turnover, variable compliance, and post-caesarean challenges may have influenced outcomes. Long-term sustainability and post-discharge breastfeeding practices were not evaluated.

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