

Toward Baby-Friendly care: implementing standardized breastfeeding counseling through a quality improvement initiative at a tertiary care center in Lebanon

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Abstract

Background

The Baby-Friendly Hospital Initiative (BFHI) identifies maternity facilities as a critical platform for protecting, promoting, and supporting breastfeeding. In Lebanon, however, progress toward Baby-Friendly care remains uneven, with suboptimal exclusive breastfeeding (EBF) rates, inconsistent breastfeeding counseling, and limited post-discharge support.

Objective

To implement a multi-component quality improvement (QI) initiative to standardize breastfeeding counseling and support in a normal nursery at a tertiary care center in Lebanon, as a step toward Baby-Friendly care, and evaluate its impact on breastfeeding outcomes.

Methods

We conducted a quasi-experimental QI initiative using iterative Plan–Do–Study–Act cycles, aligned with Baby-Friendly Hospital Initiative principles and reported according to SQUIRE 2.0, between April 2023 and December 2025. Interventions targeted healthcare providers and parents and included structured staff education, standardized bedside counseling and competency assessment (including latch scoring), integration of breastfeeding indicators into the electronic health record, revision of supplementation and discharge workflows, and post-discharge follow-up calls at 1 week and 1 month. Outcome measures included in-hospital and post-discharge EBF rates. Process, feasibility, and balancing measures were also assessed.

Results

In-hospital EBF rates fluctuated without sustained improvement, remaining overall between approximately 45% and 55% despite intermittent increases. Post-discharge EBF rates demonstrated variability, with no consistent trend. Process measures showed substantial improvement, including increased implementation of follow-up calls, high adoption of latch scoring and improved documentation practices. Parental knowledge scores remained relatively high among respondents; however, response rates declined significantly over time. Analysis of in-hospital barriers revealed that non-medical factors, particularly maternal preference and fatigue, accounted for most mixed feeding practices. Post-discharge challenges included nipple pain, perceived low milk supply, and latching difficulties.

Conclusion

A structured, nursery-based QI approach successfully implemented several practical elements of Baby-Friendly care, including the standardization and delivery of breastfeeding counseling but did not achieve sustained increases in EBF rates. These findings highlight the limited impact of in-hospital interventions alone in settings with short postpartum stays. In Lebanon and similar settings, stronger BFHI-oriented integration through earlier prenatal counseling and continuous post-discharge support is needed to improve breastfeeding outcomes.

INTRODUCTION

The first days of life represent a delicate and time-sensitive window for establishing breastfeeding and strengthening the mother infant bond. Breastfeeding has well-established benefits for infant growth, immune protection, neurodevelopment, and maternal health ^{1, 2}. However, this period is also a time of heightened vulnerability for many mother-infant dyads, as challenges related to latch, maternal fatigue, fear of insufficient milk supply, and inconsistent healthcare provider guidance may arise soon after delivery. If not addressed promptly, these early difficulties can undermine maternal confidence and compromise exclusive breastfeeding before it is fully established ³.

Globally, exclusive breastfeeding has improved markedly, with 48% of infants younger than six months exclusively breastfed in 2024, bringing the world close to the 2025 World Health Assembly target of 50% ⁴. However, progress remains uneven across countries, particularly in the Middle East and North Africa (MENA) region ^{5, 6}. In Lebanon, nationally representative data collected in 2011–2012 reported exclusive breastfeeding rates of 41.5% at 40 days, dropping to only 12.3% by six months ⁷. Although more recent national studies have reported modest improvements, with rates of approximately 23% in 2021, exclusive breastfeeding remains well below international recommendations, reflecting persistent gaps in breastfeeding support ⁸.

Multiple maternal, social, and health-system barriers contribute to these suboptimal outcomes, including misconceptions regarding insufficient milk supply, inadequate professional breastfeeding support, inconsistent breastfeeding counseling, limited prenatal education, and formula promotion ^{6, 8–10}. These challenges highlight the need for consistent, evidence-based breastfeeding support beginning in the maternity ward and continuing after discharge, in line with the principles of the Baby-Friendly Hospital Initiative (BFHI)

Within this framework, maternity facilities play a central role in establishing breastfeeding through standardized counseling, breastfeeding assessment, appropriate supplementation practices, and continuity of support after discharge ^{2, 3}. However, in busy clinical settings, counseling practices may vary among nurses, residents, physicians, and other healthcare providers. At the American University of Beirut Medical Center in Lebanon, inconsistency in breastfeeding counseling was identified in the normal nursery and postpartum units, with insufficient standardization of educational content, bedside assessment, documentation, and post-discharge follow-up.

Quality improvement methodology offers a structured approach to addressing these care gaps by combining local barrier identification, multidisciplinary engagement, and iterative refinement of clinical processes¹¹. The present initiative was designed to transform breastfeeding support in the normal nursery from an inconsistent, provider-dependent practice into a more reliable and system-based model of care as a pragmatic institutional step toward Baby-Friendly care.

Purpose of the quality improvement project

The purpose of this quality improvement (QI) initiative was to standardize breastfeeding counseling practices through the implementation of a structured, multi-component educational and counseling approach targeting both healthcare providers and parents. Specifically, the project aimed: (1) to increase exclusive breastfeeding rates prior to discharge from 52% to 90%, and at one month of age by 50% from baseline within one year; (2) to improve parental knowledge and self-efficacy scores from 50% to 90%; and (3) to increase healthcare provider knowledge and standardized bedside counseling performance from 50% to 90% within one year.

METHODS

Project design

This quality improvement project followed a quasi-experimental design using iterative Plan–Do–Study–Act (PDSA) cycles. A baseline assessment was conducted in April 2023, followed by four sequential PDSA cycles implemented between January 2024 and December 2025. The study was aligned with Baby-Friendly Hospital Initiative (BFHI) principles and reported in accordance with the Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0) guidelines, which emphasize the importance of context, intervention description, and iterative learning in healthcare improvement initiatives^{12, 11}.

Setting

This quality improvement project was conducted at the American University of Beirut Medical Center, a tertiary care academic medical center in Beirut, Lebanon, which serves as a major referral center for patients across the country and the region. The center conducts approximately **1000 deliveries per year** and provides comprehensive maternal and neonatal care. The project was implemented in the normal nursery and postpartum inpatient units, where healthy mother–infant dyads receive routine newborn care and discharge counseling.

Prior to the intervention, breastfeeding counseling practices were variable and largely dependent on individual providers, with no standardized educational approach or structured assessment of breastfeeding technique. Staff had received general education on breastfeeding through routine clinical training; however, the delivery of counseling was inconsistent, and documentation of breastfeeding practices was not systematically performed.

Participants and QI team

The intervention targeted two interrelated groups. **(1) Healthcare providers:** normal nursery and postpartum unit nurses, as well as rotating pediatric residents involved in newborn care, discharge counseling, and breastfeeding support. **(2) Parents:** caregivers of healthy newborns receiving breastfeeding support, routine newborn care and discharge instructions.

The quality improvement initiative was supported by the medical and nursing leadership and led by a multidisciplinary team comprising neonatologists, pediatric residents, developmental care specialist, nurse educators, and senior nursing staff, and was aligned with existing institutional breastfeeding education initiatives and, when available, national breastfeeding training programs.

Measures

Measures were categorized as outcome, process, feasibility, and balancing measures.

Outcome measures included exclusive breastfeeding (EBF) rates in hospital, tracked as a monthly time series and summarized by quarter, and EBF rates post-discharge at 1 week and 1 month, obtained through follow-up phone calls. Parent-reported breastfeeding difficulties and newborn-care concerns at one week and one month were also collected and categorized to allow prioritization of common issues using a Pareto-style approach.

Process measures included completion of standardized breastfeeding and newborn-care counseling sessions and refresher trainings for healthcare providers, implementation of bedside competency assessments, and adoption of structured discharge checklists. Additional process measures included the implementation of documentation supports within the electronic health record, such as breastfeeding indicators and structured latch and feeding assessments.

Feasibility measures included response rates to parental knowledge and self-efficacy questionnaires, collected both in hospital and post-discharge. These were used primarily to assess feasibility and data completeness rather than to infer population-level knowledge trends.

Balancing measures focused on the potential impact on workflow and parent satisfaction. Staff workload and operational constraints were monitored through regular multidisciplinary meetings, including assessment of staffing capacity, unit workload, and feasibility of follow-up calls and survey distribution.

Data collection

Data were collected from multiple sources across the project period. In-hospital EBF rates were recorded monthly and aggregated by quarter for analysis. Post-discharge EBF rates were collected through standardized follow-up phone calls conducted at 1 week and 1 month after discharge. Parental knowledge and self-efficacy were assessed using structured questionnaires administered in hospital

and, when feasible, after discharge; data collection initially relied on paper forms and later transitioned to electronic formats. Participation in follow-up phone calls and questionnaires was voluntary.

Parent-reported breastfeeding challenges and newborn-care concerns were documented during follow-up calls and categorized into thematic groups. These were periodically reviewed using a Pareto-style approach to identify the most frequent barriers and inform subsequent PDSA cycles.

Project implementation

A baseline assessment phase was conducted in April 2023 to evaluate existing breastfeeding practices, parental knowledge, and staff counseling approaches in the normal nursery and postpartum units. During this phase, data on exclusive breastfeeding (EBF) rates and parental feedback were reviewed, revealing variability in counseling practices, gaps in parental knowledge, and the absence of standardized educational and documentation processes.

Following baseline assessment, the multidisciplinary quality improvement (QI) team conducted planning sessions to identify key barriers and define priority areas for intervention. A structured root cause analysis was performed using a fishbone diagram (Figure 1), which identified major contributors to suboptimal breastfeeding outcomes. Through iterative discussions, the team further defined key drivers of improvement (Figure 2), including inconsistent counseling, limited structured education for parents, and lack of standardized assessment and follow-up processes. Based on these findings, a series of interventions targeting healthcare providers and parents were developed and implemented through sequential PDSA cycles (Table 1).

Table 1. Timeline of PDSA cycles and interventions

PDSA Cycle	Time period	Quarter(s)	Key interventions implemented	Barriers addressed
Baseline	April 2023	Baseline	- Assessment of baseline EBF rates (~52%) - No structured breastfeeding education - No standardized documentation	Identified major gaps: • low parental knowledge • inconsistent staff practices • lack of structured counseling
Cycle 1	Jan 2024 – Mar 2024	Q1 2024	- Introduction of structured breastfeeding education sessions - Initial standardization of in-hospital counseling practices - Early attempts at follow-up (phone calls)	Barriers identified: • variable participation in educational sessions • inconsistent counseling practices across providers • lack of structured follow-up processes
Cycle 2	Apr 2024 – Dec 2024	Q2–Q4 2024	- Reinforcement of structured education sessions - Increased parental engagement - Implementation of structured follow-up calls (1 week and 1 month) - Introduction of breastfeeding position documentation in the HER - Time-specific formula orders with mandatory indication documentation - Update of newborn discharge checklist to include breastfeeding-related elements - Workshops and targeted educational activities for residents and attending physicians	Persistent issues: • variability in staff adherence • documentation gaps
Cycle 3	Jan 2025 – Jun 2025	Q1–Q2 2025	- Introduction of latch score assessment - Structured evaluation of breastfeeding technique at bedside - Continued education sessions and reinforcement - Monitoring of knowledge scores	Barriers: • sustainability challenges • variability in technique assessment • workflow integration constraints

			- Further integration of documentation into routine EHR workflow - Provision of breastfeeding support resources (hotlines, lactation consultants) - Initiation of prenatal education sessions (April 2025)	
Cycle 4	Jul 2025 – Dec 2025	Q3–Q4 2025	- Optimization phase - Continued education and reinforcement - Improved tracking (EBF, latch score, positions) - Maintenance of follow-up processes - Expansion of interventions to prenatal education and delivery suite practices (OB and delivery suite involvement)	New challenges: • plateau in EBF improvement • staff workload concerns • need for long-term sustainability strategies such as ongoing refresher education sessions

PDSA Cycle 1 (January–March 2024)

The first PDSA cycle focused on introducing structured breastfeeding and newborn-care education and standardizing in-hospital counseling practices. Educational sessions were developed for healthcare providers to align the content and delivery of breastfeeding counseling, with participation from **25 pediatric residents, 11 nurses from the normal nursery, and 12 nurses from the postpartum unit**, followed by bedside counseling activities.

Follow-up phone calls were introduced to assess breastfeeding practices and identify common concerns, though their implementation was not yet consistent during this phase.

Feedback from healthcare providers and parents during this cycle revealed variability in participation in educational activities and inconsistencies in counseling delivery across providers. These findings highlighted the need for more structured education, improved engagement strategies, and standardized follow-up processes, which informed the design of subsequent cycles.

PDSA Cycle 2 (April–December 2024)

In the second PDSA cycle, interventions were expanded and implemented more systematically, with a focus on improving consistency in counseling practices and strengthening follow-up processes. Structured education sessions for the nursing staff were reinforced, with greater emphasis on parental engagement and active participation during in-hospital counseling. A standardized follow-up system

using phone calls at one week and one month after discharge was implemented and progressively scaled up.

During this phase, documentation processes were introduced and strengthened within the electronic health record (EHR), including structured recording of breastfeeding positions, latch score and feeding-related indicators. Additional system-level modifications were implemented to support breastfeeding practices, including transitioning formula orders from as-needed prescriptions to **time-specific orders with mandatory documentation of the indication for supplementation** and updating the newborn discharge checklist to incorporate breastfeeding-related elements.

Targeted educational activities were conducted for healthcare providers, including pediatric residents and attending physicians, through workshops and dedicated training sessions aimed at improving consistency in breastfeeding counseling.

Despite these interventions, variability in staff adherence to documentation and follow-up processes persisted, and challenges related to workflow integration and consistent implementation were identified. These findings informed further refinement and the introduction of more structured assessment tools in subsequent cycles.

PDSA Cycle 3 (January–June 2025)

The third PDSA cycle focused on improving the quality and consistency of breastfeeding assessment and addressing barriers identified in earlier phases. An objective evaluation of breastfeeding technique was introduced through formal implementation of **latch scoring as a standardized assessment tool**, enabling healthcare providers to systematically assess breastfeeding effectiveness at the bedside.

Educational efforts were reinforced through repeated training sessions, and documentation practices were further integrated into routine workflow within the electronic health record. In addition, support resources for mothers were enhanced, including sharing breastfeeding support information such as national hotlines and access to lactation consultants when available.

During this phase, parental knowledge and self-efficacy were formally evaluated using structured questionnaires administered in hospital and post-discharge. However, response rates remained low, prompting iterative adjustments including simplifying the questionnaire and facilitating completion during hospital stay.

Importantly, the team recognized that the **short postpartum length of stay limited the ability to achieve meaningful behavioral change through in-hospital interventions alone**. This led to the initiation of structured **prenatal education sessions**, reflecting an expansion of the intervention beyond the immediate postpartum period and toward earlier **awareness and understanding of breastfeeding practices among mothers**.

Despite these improvements, variability in technique assessment and engagement persisted, highlighting the need for continued reinforcement and system integration in subsequent phases.

PDSA Cycle 4 (July–December 2025)

The final PDSA cycle focused on sustaining previously implemented interventions and evaluating their feasibility within routine clinical practice. Ongoing refresher education sessions were incorporated into orientation programs for new residents and nursing staff, with plans for periodic multidisciplinary training sessions. Continued monitoring of breastfeeding-related indicators, including exclusive breastfeeding rates, latch scores, and documentation practices, was maintained, alongside reinforcement of post-discharge follow-up processes.

During this phase, efforts were made to further embed the intervention within routine workflows by standardizing counseling practices and maintaining structured documentation in the electronic health record. In addition, the scope of the intervention was expanded beyond the inpatient setting to focus on prenatal education sessions and to promote earlier breastfeeding support at the level of the delivery suite, with involvement of both pediatric and obstetric teams to facilitate early initiation of breastfeeding.

Data analysis

Descriptive analysis was used to summarize all measures. Continuous monitoring of outcome and process measures over time was performed using run charts, which were used to display temporal trends and assess variation across PDSA cycles.

Outcome measures, including exclusive breastfeeding (EBF) rates in hospital and post-discharge, as well as process measures such as latch score distribution, breastfeeding positions and parental knowledge response rates, were computed using proportions and percentages over time. Comparisons between subgroups, including primigravida and multigravida mothers, were presented descriptively.

Qualitative data from parent-reported feedback collected during follow-up phone calls were analyzed using thematic grouping. Responses to open-ended questions were clustered into common categories representing breastfeeding difficulties and newborn-care concerns, and their frequencies were calculated. A Pareto-style approach was used to identify the most frequent barriers and prioritize targets for improvement. The analysis was computed using SPSS version 29.

Ethical considerations

This project was conducted as a quality improvement initiative and was approved by the Quality Advisory Council at the American University of Beirut Medical Center. In accordance with institutional policy, the project was deemed **exempt from review by the American University of Beirut Institutional Review Board (IRB)**. All collected data were anonymized, and confidentiality of both patients and healthcare providers was maintained throughout the study. Parents were informed about the quality improvement project, and participation in follow-up phone calls and questionnaires was voluntary.

RESULTS

1. Study population and data completeness

Data were collected on a monthly basis from April 2023 through December 2025 across all PDSA cycles. The number of newborn admissions ranged from approximately 45 to 87 per month. Data completeness varied across measures, with higher completeness for in-hospital outcomes and lower response rates for post-discharge questionnaires.

2. Exclusive breastfeeding rates (primary aim)

Exclusive breastfeeding (EBF) rates in hospital were tracked over time using run charts. Baseline EBF rate was approximately 44%. During the intervention period, EBF rates fluctuated between approximately 40% and 65%, with intermittent increases observed during Cycle 1 and Cycle 2. However, no sustained upward shift was observed, and rates remained overall around 42–56% across the study period (Figure 3).

Post-discharge EBF rates, assessed through follow-up phone calls at one week and one month, also demonstrated variability over time. At one week, EBF rates ranged approximately between 25% and 83%, with peak values observed during cycle 1 -3. One-month EBF rates showed wider variability, ranging from approximately 35% to 90%, reflecting differences in follow-up response rates and breastfeeding continuation (Figure 4).

3. Process measures

a. Follow-up phone calls

Implementation of follow-up phone calls increased substantially over time. The number of calls conducted at one week increased from minimal levels during Cycle 1 to consistent implementation beginning in Cycle 2 and was sustained throughout Cycles 3 and 4, reaching over 50 calls per month at peak periods. One-month follow-up calls showed a similar overall upward trend, with implementation improving after Cycle 2 and continuing throughout the subsequent cycles, although they remained more variable and generally less consistent than one-week follow-up calls (Figure 4).

b. Documentation of breastfeeding practices

Documentation of breastfeeding positions and feeding practices was introduced in Cycle 2 and further integrated during Cycle 3. Cradle position was the most commonly documented position (approximately 70–90%), followed by cross-cradle and football positions, with increasing diversity of positions over time (Supplementary Figure S1).

c. Breastfeeding assessment (latch score)

Following implementation in Cycle 3, latch score assessment demonstrated high compliance, with the majority of recorded scores ≥ 7 across the study period. The proportion of adequate latch scores remained consistently above 90%, indicating widespread adoption of standardized breastfeeding assessment (Supplementary Figure S2).

4. Parental knowledge and response rates

Parental knowledge and self-efficacy were assessed using structured questionnaires administered in hospital and post-discharge. Among respondents, knowledge and self-efficacy scores remained consistently high over time, with in-hospital knowledge scores ranging approximately between 70% and 85%, and post-discharge scores generally between 75% and 90% (Supplementary Figures S3–S4).

However, response rates were low and declined over time. In-hospital response rates decreased from approximately 50–52% during early phases (Q2 2024) to around 20–25% in later cycles, with a further drop to approximately 7–16% in some periods. Post-discharge response rates were consistently lower, generally ranging between 0% and 26%, and often remaining below 15% across most time points. Notably, a marked decline in response rates was observed during periods of regional instability in Lebanon, which likely affected follow-up feasibility and parental engagement (Supplementary Figures S5).

5. Subgroup analysis (primigravida vs multigravida)

The proportion of exclusive breastfeeding among primigravida and multigravida mothers varied across the study period without a consistent pattern between groups. Exclusive breastfeeding rates among primigravida mothers ranged approximately between 30% and 70%, while rates among multigravida mothers ranged between 50% and 75% (Supplementary Figures S6).

In several time points, multigravida mothers demonstrated higher exclusive breastfeeding rates compared to primigravida mothers; however, this difference was not consistent across all cycles, and fluctuations were observed in both groups over time.

6. Barriers to breastfeeding

a. In-hospital barriers to exclusive breastfeeding

Analysis of in-hospital reasons for mixed feeding using a Pareto approach identified a limited number of dominant contributors. The most frequently reported reason was maternal preference (214 instances), followed by maternal fatigue (214) and flat nipple (44). Additional contributors included twin delivery (38), infant weight loss (25), and hypoglycemia (19), followed by other less frequent maternal and clinical factors (Figure 5). The cumulative distribution demonstrated that a small number of key factors accounted for the majority of mixed feeding practices, with most being related to maternal preference and non-medical factors rather than clear clinical indications.

b. Post-discharge breastfeeding difficulties

Parent-reported breastfeeding experiences collected during one-week follow-up phone calls (N = 1,028) showed that *Positive Breastfeeding Experiences and Confidence* (27.3%) and *Milk Supply and Feeding Management* (26.6%) were the most frequently reported themes. Other themes included *Breastfeeding-Related Physical Challenges* (20.2%), *Maternal Physical and Psychosocial Burden* (11.5%), *Infant-Related Feeding Challenges and Medical Issues* (9.8%), and *Maternal Support, Education, and Adaptation* (4.6%). Parent-reported newborn-care concerns were predominantly related to *Positive Experience and Parenting* (79.2%), followed by *Family Support* (6.5%), *Parental Challenges and Difficulties* (5.3%), *Infant Feeding Challenges* (4.3%), and *Infant Health and Care Challenges* (4.2%) (Supplementary Figures S7–S8).

7. Balancing measures

No formal adverse effects or unintended consequences were identified during the study period, although staff workload and feasibility constraints were noted during team discussions. Overall parent satisfaction remained consistently high throughout the project, increasing slightly from 93.6% during the early implementation period to 96.4% by the end of the study.

DISCUSSION

This quality improvement initiative demonstrated that practical elements of Baby-Friendly care can be successfully integrated into routine newborn nursery practice through standardization of counseling, increased follow-up, and high adoption of objective breastfeeding assessment tools such as latch scoring. However, despite these system-level improvements, exclusive breastfeeding rates did not show a sustained increase over time, highlighting important limitations of in-hospital interventions alone.

These findings are particularly relevant in Lebanon, where breastfeeding is influenced by multiple maternal, sociocultural, and health-system barriers, including inconsistent breastfeeding counseling, limited access to trained lactation consultants, aggressive marketing of breast-milk substitutes, and the absence of a nationally standardized Baby-Friendly implementation framework^{8,9}. Furthermore, breastfeeding counseling is often delivered by healthcare providers with variable training and approaches, reflecting the absence of standardized breastfeeding education and consistent implementation of evidence-based practices across healthcare settings^{10,12}. Unlike many high-income settings with more established breastfeeding support systems, continuity of breastfeeding support in Lebanon remains fragmented, with limited post-discharge follow-up and variable access to specialized lactation services, likely reducing the ability of hospital-based interventions alone to influence longer-term breastfeeding outcomes^{3,8,9,12}. One of the key findings of this study is that short postpartum length of stay significantly limits the impact of hospital-based counseling on breastfeeding outcomes. In our setting, healthy mother–infant dyads are typically discharged within 24–48 hours, leaving limited time to establish effective breastfeeding practices or address emerging challenges. This likely

contributed to the observed variability and lack of sustained improvement in exclusive breastfeeding rates, despite improvements in staff training, documentation, and assessment.

Our results also highlight that most in-hospital barriers to exclusive breastfeeding were driven by non-medical factors, particularly maternal preference, fatigue, and perceived difficulties, rather than clear clinical indications. This finding is consistent with previous literature demonstrating that maternal perceptions, confidence, and early experiences play a central role in breastfeeding success^{6, 9, 13}. While hospital-based counseling can address some of these factors, our data suggest that interventions initiated only after delivery may be insufficient to modify established beliefs and expectations. This supports previous evidence that effective breastfeeding promotion should begin during pregnancy and continue throughout the early postpartum period, rather than relying solely on counseling during the brief maternity stay^{3, 14}.

Importantly, this project demonstrated that process improvements can be successfully achieved within the hospital setting, even when outcome measures remain stable. The high uptake of latch scoring and the integration of structured documentation into the electronic health record reflect successful implementation of standardized care processes. Similar QI initiatives have shown that improving provider practices and system organization is a critical first step toward long-term outcome improvement^{13, 15}.

A major implication of our findings is the need to shift the timing of breastfeeding interventions earlier in the continuum of care. Recognizing the limitations of in-hospital counseling, our team expanded the intervention to include prenatal education and involvement of the obstetrics team in the delivery suite. Early skin-to-skin contact and initiation of breastfeeding within the first hour of life are well-established determinants of breastfeeding success and are strongly recommended by global guidelines^{8–10, 12}. For example, a quality improvement initiative in India improved first-hour breastfeeding rates from 12% to 80% within three months through coordinated efforts involving obstetric and nursing teams across antenatal, perinatal, and postnatal settings¹⁶. Integrating obstetric providers, maternity nurses, lactation support services, and delivery room staff into breastfeeding promotion efforts is therefore essential to provide continuous, coordinated support throughout the perinatal period, consistent with BFHI principles.

Furthermore, the variability observed in post-discharge breastfeeding outcomes and the low response rates to follow-up assessments underscore the challenges of maintaining engagement after hospital discharge. These findings highlight the importance of continuity of care beyond the hospital setting, including structured follow-up, community support, improved access to trained lactation consultants, and stronger coordination between maternity hospitals and primary healthcare services. Previous studies have shown that ongoing support, particularly in the early postpartum period, significantly improves breastfeeding duration and exclusivity³.

This study also identified several operational challenges, including staff workload constraints and feasibility issues, particularly in the context of high patient volumes and external factors such as regional instability. These challenges emphasize the need for sustainable interventions, including integration into routine workflows, ongoing staff training, and institutional support to maintain improvements over time.

Strengths and limitations

This study has several strengths. It represents a real-world quality improvement initiative conducted in a tertiary care center, with implementation across multiple PDSA cycles allowing iterative refinement of interventions. The project successfully integrated standardized counseling, objective assessment tools such as latch scoring, and electronic documentation into routine clinical practice. Additionally, the use of multiple data sources, including run charts, follow-up calls, and qualitative analysis, provided a comprehensive evaluation of both process and outcome measures.

However, several limitations should be considered. First, as a single-center study, findings may not be generalizable to other settings. Second, the absence of sustained improvement in exclusive breastfeeding rates may reflect both intervention limitations and contextual factors, including short postpartum length of stay. Third, response rates to post-discharge questionnaires were low, introducing potential response bias. Furthermore, external factors, including periods of regional instability, may have affected follow-up feasibility and parental engagement. Finally, balancing measures were assessed qualitatively rather than through formal quantitative metrics, which may limit the assessment of unintended consequences.

CONCLUSION

In conclusion, while structured in-hospital breastfeeding counseling improves staff knowledge and standardizes care, it may be insufficient to significantly impact breastfeeding outcomes in settings with short postpartum stays. Expanding interventions to include prenatal education and early postpartum support in the delivery suite, with active involvement of obstetric and multidisciplinary teams, is essential to improve breastfeeding initiation and continuation. Future efforts should focus on strengthening the continuum of care from pregnancy through the post-discharge period by integrating Baby-Friendly maternity practices with community-based breastfeeding support and accessible lactation services to achieve sustained improvements in breastfeeding outcomes.

Declarations

Availability of data and materials

All data generated or analyzed during this study are included in this published article and its additional files.

Ethics approval and consent to participate

This study was conducted as a quality improvement initiative. The project was reviewed and approved

by the Quality Advisory Council at the American University of Beirut Medical Center and was deemed exempt from review by the American University of Beirut Institutional Review Board (IRB) in accordance with institutional policy. Parents were informed about the quality improvement initiative, and participation in follow-up phone calls and questionnaires was voluntary. As this was an exempt quality improvement project, written informed consent to participate was not required.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

LC conceived and supervised the quality improvement initiative. DK and SM contributed to the design and implementation of the project, data collection, and interpretation of the findings under the supervision of LC. NZ contributed to the data collection. SM performed the statistical analyses. DK and NZ drafted the initial manuscript. LC critically revised the manuscript for important intellectual content. All authors reviewed, approved the final version of the manuscript.

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Figures

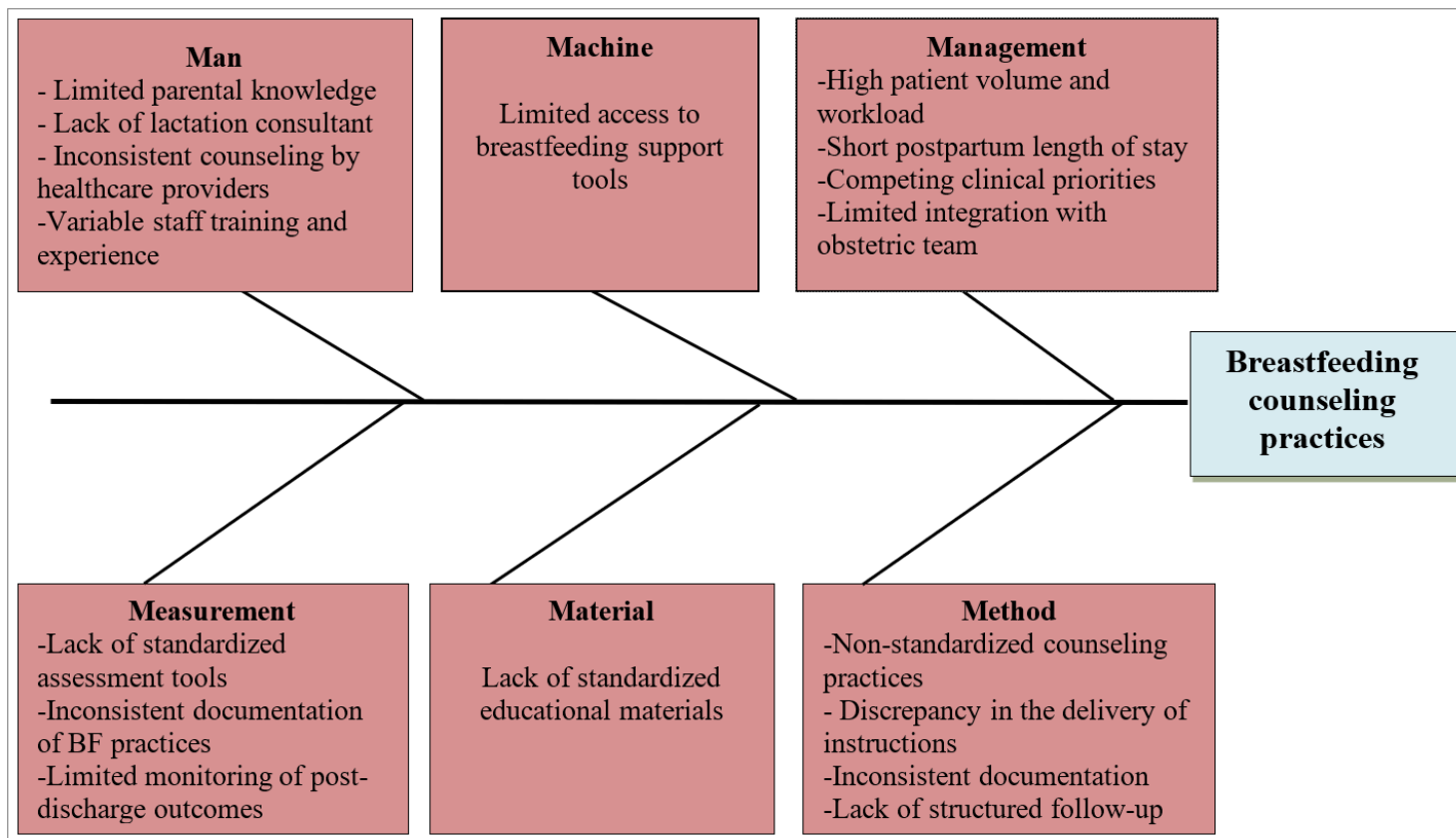


Figure 1

Fishbone analysis

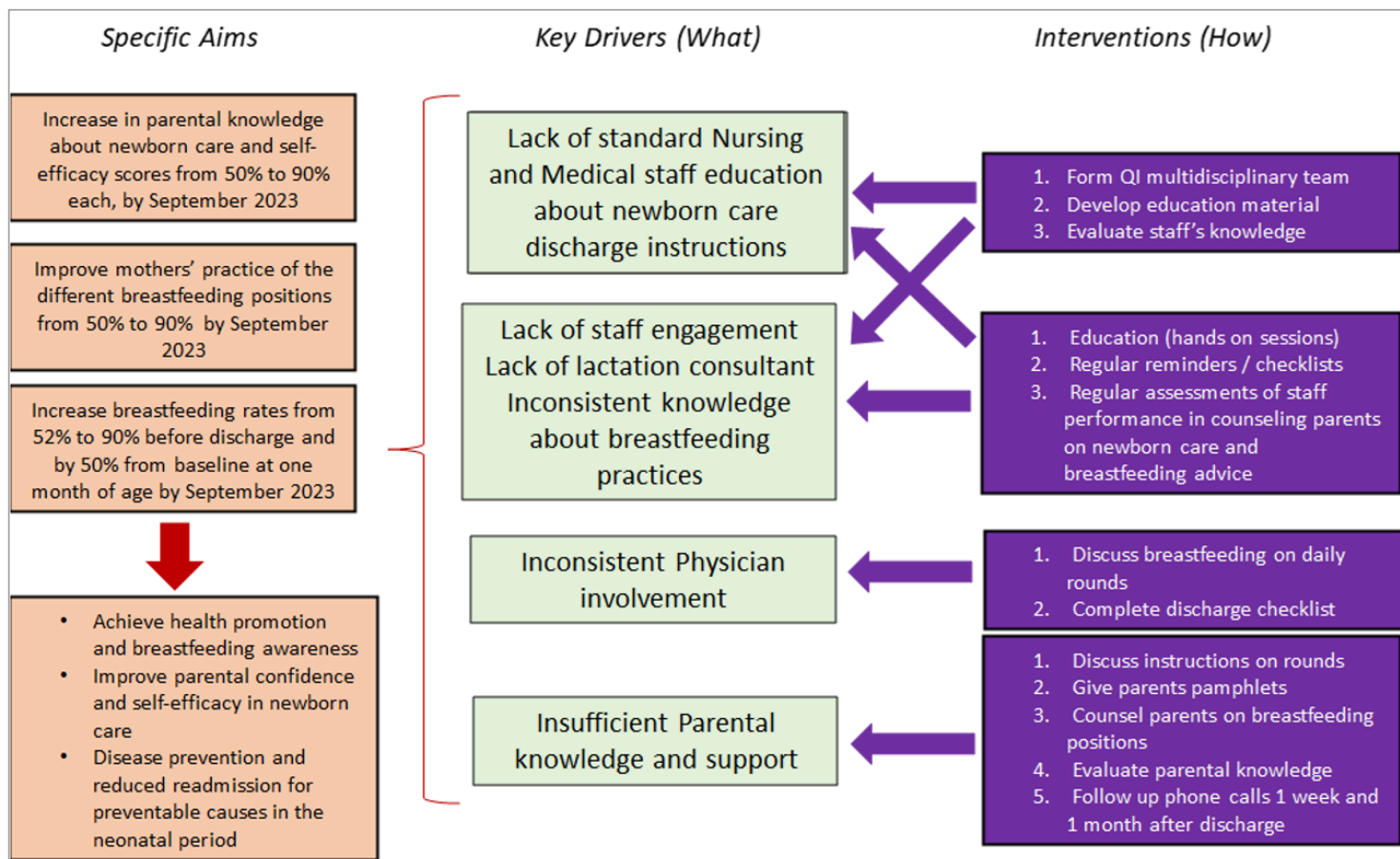


Figure 2

Key driver diagram

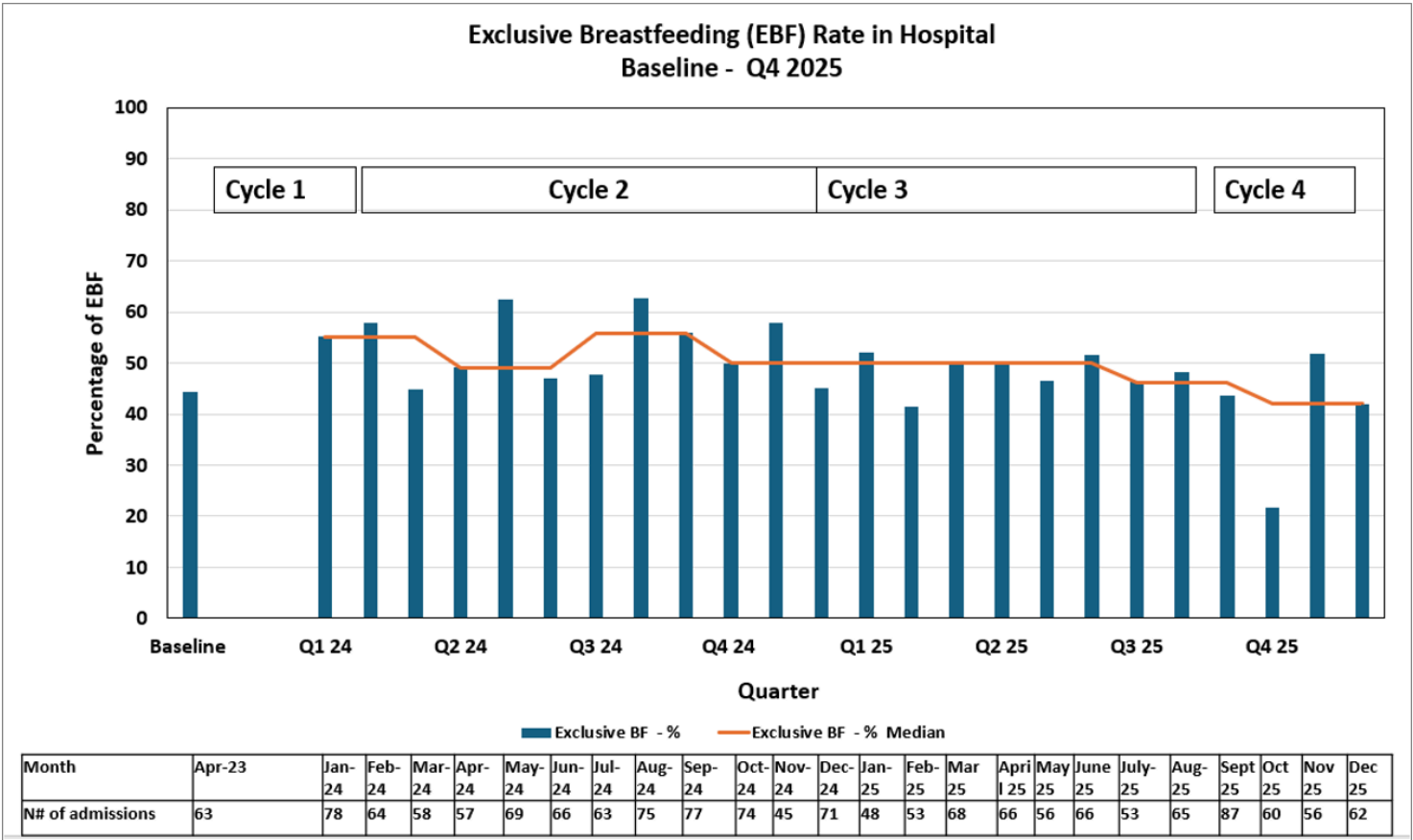
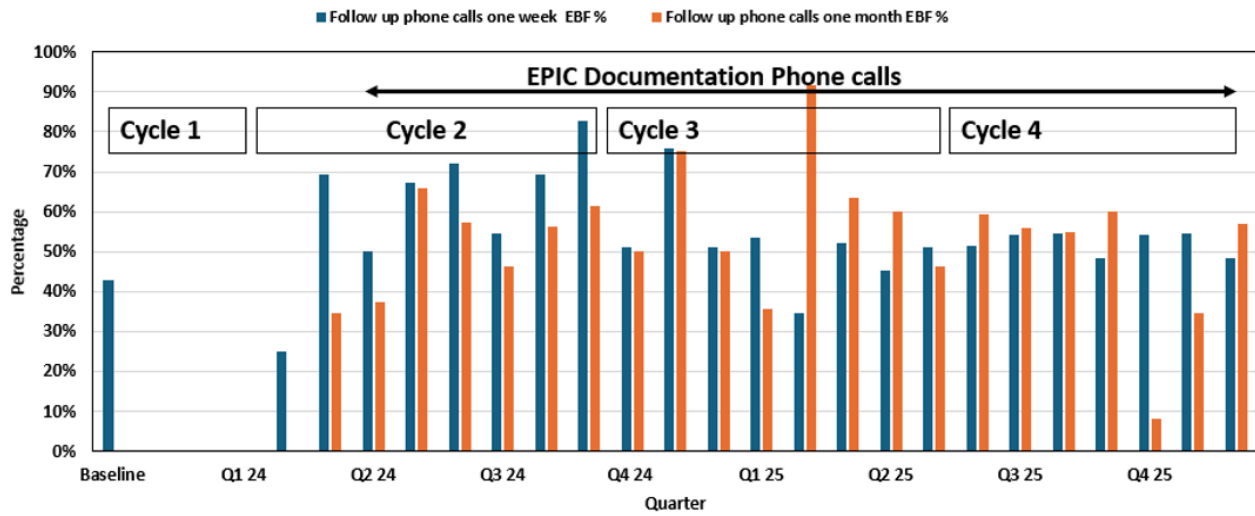


Figure 3

Run chart of exclusive breastfeeding rates in hospital across PDSA cycles (April 2023–December 2025)

Follow up Phone Calls - % of Mothers Exclusively Breastfed After Discharge At 1 Week – 1 Month Baseline – Q4 2025



Month	Baseline	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	July-25	August-25	Sept-25	Oct-25	Nov-25	Dec-25
Follow up phone calls one week n	29	2	8	26	52	58	61	53	56	29	49	29	49	41	23	48	53	39	33	81	33	31	81	33	31
Follow up phone calls one month n	0	0	0	26	48	47	54	41	39	44	2	12	17	31	12	22	29	23	nd	34	20	15	12	23	44

Figure 4

Exclusive breastfeeding rates at 1 week and 1month post-discharge based on follow-up phone calls across PDSA cycles

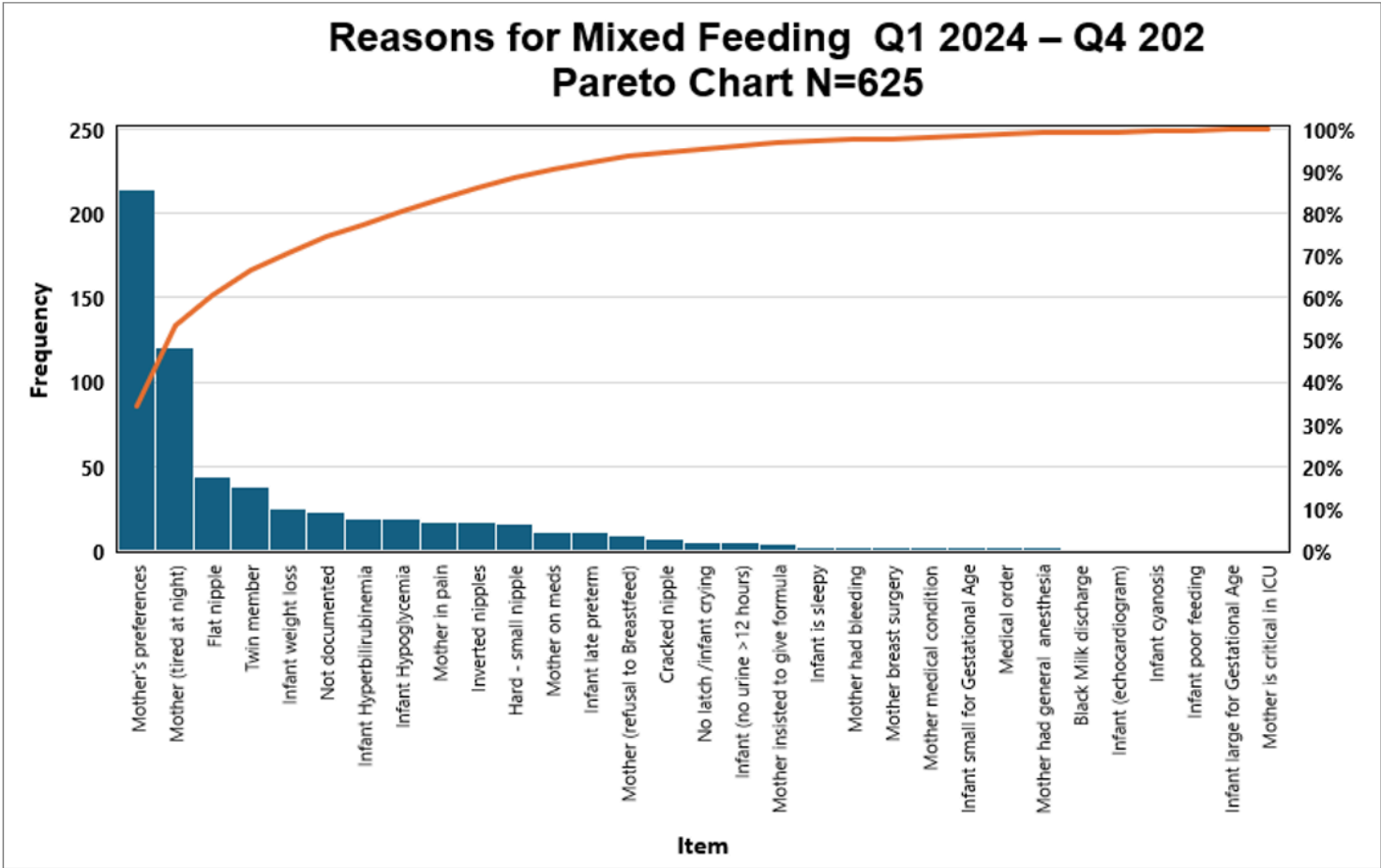


Figure 5

Pareto analysis of reasons for mixed feeding during hospital stay

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [SupplementaryMaterials.docx](#)