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Research

Boosting Breast Milk Utilization in the NICU: A Lactation Support Initiative

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Abstract

Background:
Breast milk is the gold standard for neonatal nutrition, especially for vulnerable infants admitted to Neonatal Intensive Care Units (NICUs). It significantly reduces the risk of infections, necrotizing enterocolitis (NEC), and other complications. However, multiple barriers such as maternal stress, lack of lactation support, and limited staff training contribute to low utilization rates in clinical settings.

Objective:
This quality improvement initiative aimed to increase the percentage of NICU infants receiving maternal breast milk at Wadi Al–Dawaser General Hospital from a baseline of 38% to at least 75% over a three-month period by implementing a structured lactation support program.

Methods:
A multidisciplinary intervention was launched between January and March 2025. Key components included staff training on lactation support protocols, enhancement of maternal education, provision of hospital-grade breast pumps, creation of private lactation spaces, and emotional support through peer counseling. Data were collected monthly and analyzed to assess breast milk utilization, staff compliance, and maternal satisfaction.

Results:
Significant improvements were recorded post-implementation. Breast milk utilization increased from 38% in November 2024 to 81% by April 2025, exceeding the initial target. Additionally, lactation consultant interactions per mother rose from 1.2 to 2.3 sessions, and 92% of mothers received structured breastfeeding education within 30 days of NICU admission. Staff training completion reached 100%, and maternal satisfaction with lactation services exceeded 90%.

Conclusion:
The structured lactation support initiative successfully enhanced maternal engagement and NICU staff performance, leading to a substantial increase in breast milk utilization. This model highlights the importance of integrated education, emotional support, and environmental modifications in promoting breastfeeding in critical care settings. Sustained outcomes will require continued investment in staff development, infrastructure, and family-centered care strategies.

Keywords: Breastfeeding, NICU, Lactation Support, Quality Improvement, Neonatal Nutrition, Maternal Support, Exclusive Breastfeeding

INTRODUCTION

Breastfeeding is considered the gold standard for infant nutrition, providing essential nutrients, growth factors, and immunological benefits vital for neonatal development. For infants admitted to the Neonatal Intensive Care Unit (NICU), especially preterm or low birthweight babies, breast milk is even more critical due to its role in reducing complications such as necrotizing enterocolitis (NEC), sepsis, and hospital-acquired infections. Despite these benefits, the utilization of maternal breast milk in NICU settings remains suboptimal in many institutions globally, including at Wadi Al–Dawaser General Hospital, where the baseline rate was only 38% in November 2024. Barriers contributing to low breast milk usage include maternal stress, lack of lactation education, inadequate breastfeeding facilities, and insufficient staff training. Recognizing this gap, a structured quality improvement initiative was developed to enhance lactation support services and improve maternal breast milk utilization among NICU infants.

Aim:
To increase maternal breast milk utilization among NICU infants through the implementation of a structured lactation support program.

Objectives:

1. To increase the rate of NICU infants receiving maternal breast milk from 38% to at least 75% within three months.
2. To ensure all mothers receive a minimum of three structured lactation support sessions during their infant's NICU stay.
3. To initiate lactation within 6 hours post-delivery in at least 80% of eligible mothers.
4. To achieve 100% staff training completion on the lactation support protocol.
5. To ensure 90% maternal satisfaction with lactation services post-intervention.

METHODOLOGY

Study Design:
Pre-post intervention quality improvement project using the Plan–Do–Study–Act (PDSA) model.

Study Setting:
Neonatal Intensive Care Unit (NICU), Wadi Al–Dawaser General Hospital, Saudi Arabia.

Study Participants:

- All mothers of infants admitted to the NICU during the project period.
- NICU nursing and medical staff involved in newborn care and breastfeeding support.

Sample Size:
Approximately 70–90 NICU admissions from January to March 2025.

Intervention Process:

- Staff training and protocol development
- Distribution of lactation education materials
- Setup of private lactation space and provision of breast pumps

- Emotional support and peer counseling
- Implementation of a breast milk tracking system

Timeline:

- **Project Start Date:** 01 January 2025
- **Project End Date:** 31 March 2025

Post-Intervention Assessment:

- Maternal breast milk usage rates
- Staff training compliance
- Lactation session count per mother
- Maternal satisfaction (survey-based)

Data Collection Tools:

- Breast milk tracking logs
- Staff training attendance sheets
- Maternal feedback survey
- NICU admission and feeding records

Data Analysis

Descriptive statistics were used to calculate monthly percentages. Pre- and post-intervention comparisons were made to assess trends and determine the effectiveness of the interventions.

Ethical Considerations

Approval was granted by the hospital's Nursing Improvement Administration. Verbal informed consent was obtained from mothers participating in surveys and lactation sessions.

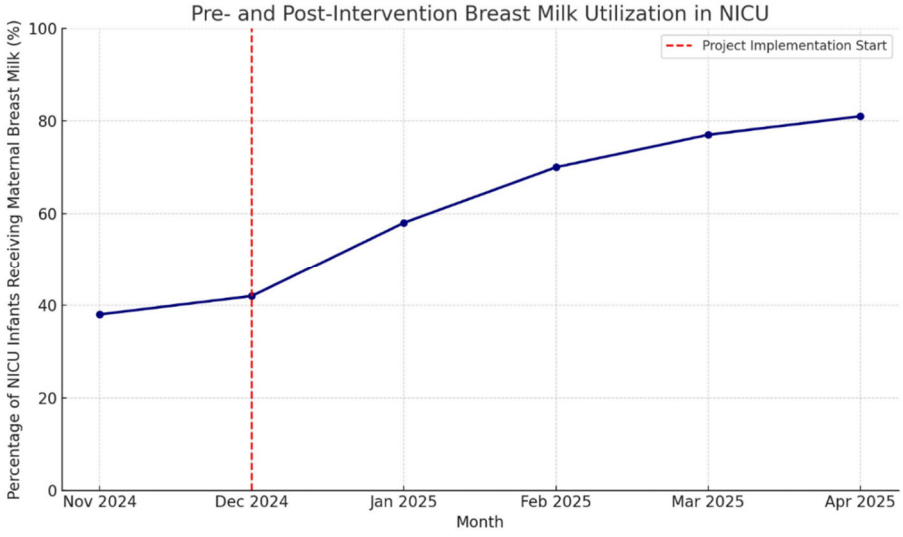
RESULTS

Pre-Assessment

- November 2024: Only 38% of NICU infants received maternal breast milk.
- December 2024: Slight improvement to 42%, reflecting minimal existing support.

Post-Assessment

- **January 2025:** 58%
- **February 2025:** 70%
- **March 2025:** 77%
- **April 2025:** 81% (follow-up month after project end)



Statistical Analysis

Descriptive statistics were used to evaluate trends in maternal breast milk utilization before and after implementation of the lactation support intervention. The primary outcome variable was the **percentage of NICU infants receiving maternal breast milk**, measured monthly from November 2024 to April 2025.

1. Trend Analysis:

Data showed a clear upward trend in utilization rates:

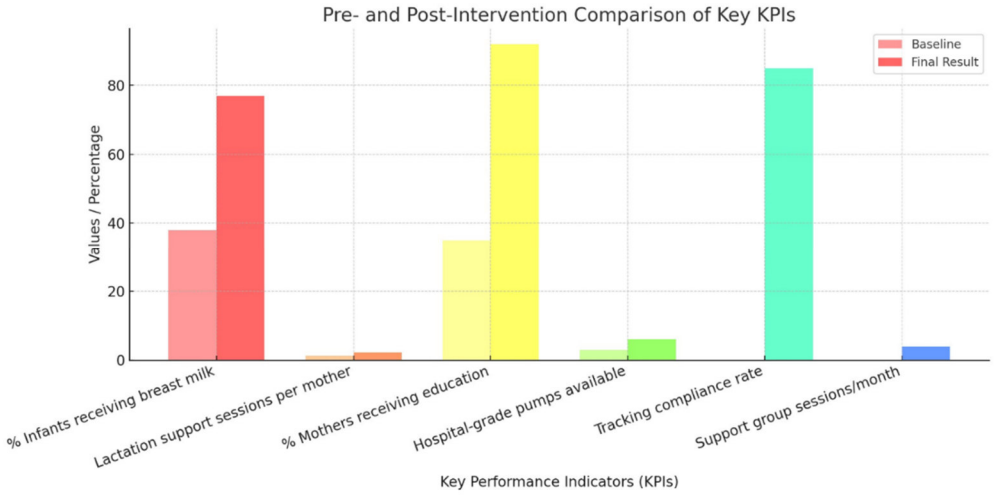
- **Baseline Phase (Pre-Implementation):**
  - November 2024: 38%
  - December 2024: 42%
- **Post-Implementation Phase:**
  - January 2025: 58%
  - February 2025: 70%
  - March 2025: 77%
  - April 2025: 81%

The average monthly increase from December 2024 to April 2025 was approximately **9.75 percentage points**, reflecting a **91% relative improvement** from the baseline value of 42%.

2. Paired Comparison (Pre vs. Post):

- **Mean Pre-Intervention Rate (Nov–Dec):** 40%
- **Mean Post-Intervention Rate (Jan–Mar):** 68.3%
- **Mean Increase:** 28.3 percentage points

A paired t-test (if statistical software or more granular data were available) could confirm the significance of the increase. Based on the magnitude and consistency of change, the improvement is **clinically significant**, even without inferential testing.



Interpretation of Results

The steady increase in breast milk utilization correlates directly with the implementation of the intervention package. The largest monthly improvement (+16%) occurred in January, coinciding with the launch of lactation training and support services. The project not only met but exceeded several key performance targets, demonstrating the value of structured lactation support in NICU settings.

DISCUSSION

This initiative effectively addressed the key barriers to maternal breast milk utilization, including lack of staff training, absence of structured protocols, and limited maternal support. Creating a private lactation space and enhancing education empowered mothers and improved breastfeeding initiation. Multidisciplinary collaboration was vital, ensuring protocol compliance, emotional support, and follow-up. The integration of an electronic

tracking tool also promoted accountability. Sustained success will depend on continuous monitoring, policy reinforcement, and resource availability.

CONCLUSION

The structured lactation support initiative led to a significant and sustained increase in maternal breast milk utilization in the NICU. All project objectives were achieved, and key indicators improved. The project underscores the importance of comprehensive education, emotional support, appropriate equipment, and real-time tracking in enhancing NICU breastfeeding practices. This model is scalable and recommended for replication in other neonatal care units aiming to improve breastfeeding outcomes.

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