Individual QI projects from single institutions

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A Quality Improvement Initiative: Improving First-hour Breastfeeding Initiation Rate among Healthy Newborns

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Abstract

Introduction: "No matter where a newborn takes his or her first breath, the desire to give that baby the best start in life is universal." The best gift a mother can give her baby is the gift of health. The gift of health can be given to the baby through early and adequate breastfeeding. Globally, only 2 out of 5 newborns are put to the breast within the first hour of life. Therefore, initiating breastfeeding is an evidence-based intervention for improving neonatal survival. **Methods:** We aimed to improve the first-hour breastfeeding initiation rate from the existing 12%–80% over 3 months through a quality improvement (QI) process. The setting was antenatal, perinatal, and postnatal wards of the Maharishi Markandeshwar Institute of Medical Sciences And Research Hospital. The participants were postpartum mothers with stable newborns 35 weeks and older of gestation born by normal vaginal delivery. **Procedure for QI:** A team of nurses and obstetricians was formed; we analyzed possible reasons for delayed initiation of breastfeeding by process cycle matrix chart and Fishbone analysis. Various change ideas were tested through sequential Plan-Do-Study-Act cycles. The outcome measure is the proportion of eligible babies breastfed within 1 hour of delivery. **Results:** After 3 months, the first-hour initiation of breastfeeding increased from 12% to 80%, without additional resources. **Conclusions:** A QI approach achieved an improvement in first-hour breastfeeding rates after normal vaginal delivery. *(Pediatr Qual Saf 2021;6:e433; doi: 10.1097/pq9.0000000000000433; Published online June 23, 2021.)*

INTRODUCTION

"No matter where a newborn takes his or her first breath, the desire to give that baby the best start in life is universal." The first hours and days after birth are among the riskiest periods of a child's life—but receiving an early start to breastfeeding offers a critical line of defense.[1] The best gift a mother can give to her baby is the gift of health, and the gift of health can be given to the baby through proper and adequate breastfeeding. Various strategies have been employed globally to reduce neonatal mortality, one of which is early breastfeeding initiation. Author John Rinda reports that in 2005 only 37% of mothers in India exclusively breastfeed for 6 months, compared to other developing countries where the ratio is higher, like Bangladesh (46%) and Sri Lanka (84%). Globally, only 2 out of 5 newborns are put to the breast within the first hour of life.[2] Furthermore, early initiation of breastfeeding within 30 minutes of delivery is one of the steps initiated by WHO/UNICEF's Baby-Friendly Hospital Initiative to achieve successful breastfeeding and transfer of colostrum to the newborn baby. Colostrum is the yellowish, sticky breast milk formed immediately after delivery that conveys immunoprotective factors to the infant.

In India, exclusive breastfeeding increased from 46.4% in 2006 to 54.9% in 2016.[3] Early initiation of breastfeeding almost doubled from 23.4% to 41.6% during the same period. In 2018, only 44.6% of mothers initiated breastfeeding within 1 hour of birth. More than half (64.9%) of babies are exclusively breastfed during the first 6 months, and only 50.5% of babies between 6 and 8 months are given complementary feeding. India's goal is to increase the rate of early initiation of breastfeeding to 90% by 2025.[4]

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Exclusive breastfeeding for the first months of life is one such intervention, which has been recommended in view of established benefits of reducing the risks of morbidity and mortality in the first 6 months of life.[5] Countries can rapidly improve breastfeeding practices by scaling up known interventions, policies, and programs.[6] To reinforce breastfeeding promotion in 2016, a program was launched at the national level, attempting to focus on promoting breastfeeding and ongoing efforts through the health system called Mothers' Absolute Affection (MAA) Program. The MAA Program aims to revitalize efforts to promote, protect, and support breastfeeding practices through the health system to achieve higher breastfeeding rates.[7]

This quality improvement (QI) initiative aims to increase early breastfeeding rates from 12% to 80% among postpartum mothers with stable newborns 35 weeks and older of gestation born by normal vaginal delivery within three months. With this specific aim, we initiated a QI project involving a series of Plan-Do-Study-Act (PDSA) cycles to improve breastfeeding rates during the first hours after birth.

METHODS

The Maharishi Markandeshwar Institute of Medical Sciences and Research (MMIMS&R) is a tertiary care hospital. The MMIMS&R labor unit has 25 beds, 200 deliveries, and 90–100 NICU admissions per month. Two or 3 cesarean sections are conducted per day, which accounts for 40% of all births. A pediatrician, obstetrician, and nurses attend all deliveries and perform the initial assessment of the baby. We conducted the study over 3 months (November 2018 to January 2019). The target population is comprised of all newborns 35 weeks and older of gestation born by normal vaginal deliveries. We excluded newborns delivered by cesarean section, premature infants, hemodynamically unstable infants, and infants in respiratory distress.

As this project was based on widely accepted evidence-based practice, data collection was done directly by the faculty members and student nurses in the antenatal room, L&D unit, and the postnatal ward by direct observation. The study did not involve any alteration in investigations or treatment of any patient.

The study followed the model for improvement promoted by the Institute for Healthcare Improvement. Our QI team consisted of faculty members from the obstetrics nursing department, Bachelor of Science-level nursing intern students, the charge nurse, and staff nurses from the L&D unit and postnatal ward.

Broadly, the steps were as follows:

(1) Measuring baseline rates of first-hour breastfeeding in normal vaginal deliveries.
(2) Forming a team of obstetricians, nursing students, and staff nurses.
(3) Eliciting possible reasons for delayed initiation by cycle matrix chart and fishbone analysis, and developing a key driver diagram of outcome and process measures (Fig. 1).
(4) Conducting a series of PDSA cycles to test change ideas generated by the team on a small scale initially and then expanding to a larger scale (Table 1).

Group discussions were followed by fishbone analysis, which revealed reasons for not initiating early breastfeeding-related to policy, people, place, and processes (Fig. 2). Neither the L&D unit nor the Neonatal intensive care unit had designated staff available to promote breastfeeding. Staff nurses' lack of knowledge, healthcare providers' insensitivities, and a lack of support for the mothers were a few of the crucial reasons limiting early breastfeeding. After birth, all infants were immediately placed in a warmer to be dried, suctioned, and assessed. There is no policy to place the newborn on the mother's abdomen or provide skin-to-skin contact. At baseline, this practice was not known.

To ensure a smooth-running system, we oriented healthcare providers for early breastfeeding practices. The team members shared the results of interventions and gave continuous feedback to the project staff. Changes were made in our care pathways to implement early initiation of breastfeeding more effectively. Interventions included (1) sensitization of mother regarding early initiation of breastfeeding through a pamphlet; (2) engagement of nursing students; (3) encouragement of mothers to breastfeed early; (4) the provision of warm drinks to mothers after delivery; and (5) the restriction of men to the labor room and postnatal ward.

The QI team assessed the effect of change ideas by recording the proportion of eligible newborns breastfed during the first hour of life. Cycle matrix charts were used to display and interpret the serial measurement of early initiation of breastfeeding.

Suggested solutions were prioritized, and each proposed solution was considered a change idea. We applied 4 change ideas over three months (Table 2).

The data were collected weekly after each PDSA cycle to see the feasibility of each intervention. Mothers were given continuous education on early breastfeeding initiation during antenatal and postnatal periods. The team met for monthly meetings for three months, along with the nursing staff of the L&D unit.

RESULT

Faculty members and student nurses observed 25 mothers for 1 week (November 2018) to establish a baseline assessment of the prevailing breastfeeding practices. The baseline assessment result revealed that only 12% of mothers started early breastfeeding within one hour of birth, and 16% of mothers within 2 hours. Eight percent of mothers initiated breastfeeding within 3 hours of birth, 12% of mothers had started early breastfeeding within

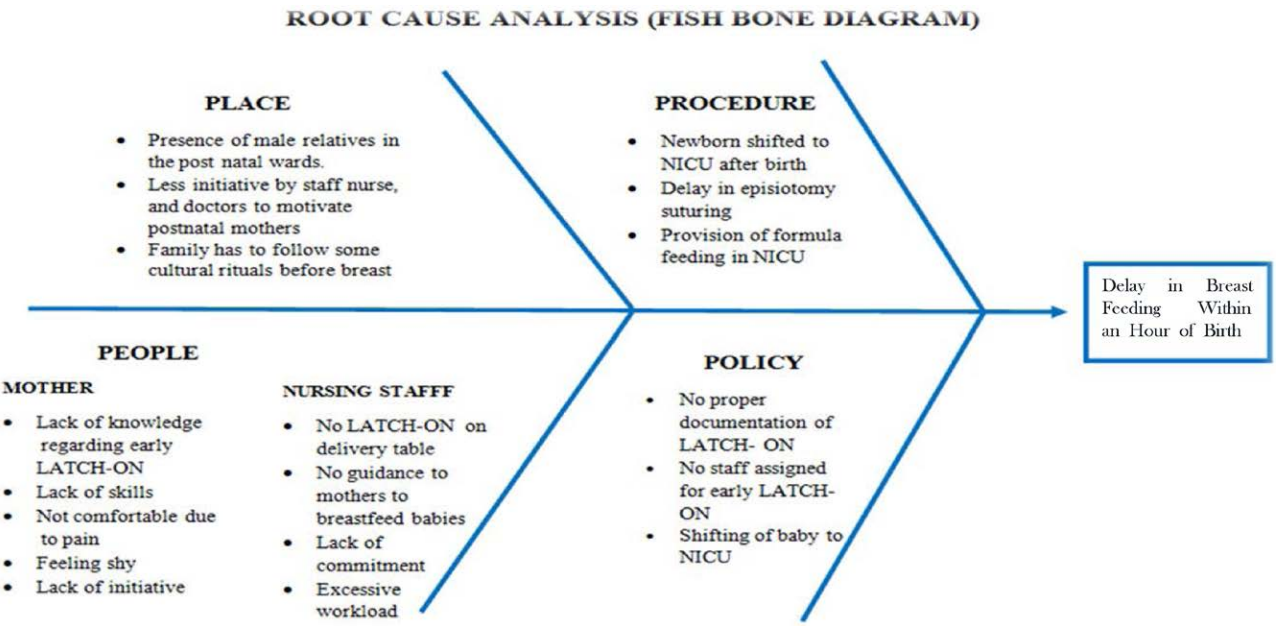

Fig. 1. Fishbone analysis of breast feeding practices.

Table 1. Details of all PDSA Cycles

PDSA	Plan	Do	Study	Act
Baseline (n = 25)	Assess feasibility of initiation of breast feeding in labor room	Baby put to breast in labor room	• Feasible and did not hamper the routine work	Try feeding inside labor room in PDSA cycles
1 (n = 18)	1. Assess the rate of early initiation of breast feeding 2. Increase the early initiation of breastfeeding 3. Formation of team 4. Setting labor suit 5. Observation for 3 wks	• Sensitization regarding early initiation of breastfeeding through pamphlet	Every healthy newborn should be breastfed within 1 hour • Rate of early initiation of breast feeding is 12% and 50% babies were put to breast after the first PDSA	• This idea can be implemented to more number of mothers • Sensitization of mother regarding early initiation of breastfeeding through pamphlet • Role allocation clarified to team • Engage nursing students
2 (n = 32)	1. Assess the rate of early initiation of breastfeeding 2. Increase the early initiation of breastfeeding 3. Formation of Team 4. Setting labor suit 5. Observation for 3 wks	• Sensitization regarding early initiation of breastfeeding through pamphlet • Encouragement of mothers and provision of warm drinks • Baby put on mothers breast by staff nurse at the time of episiotomy	40% of eligible babies were put it breast feeding after normal vaginal delivery, reason for noncompliance were excessive workload, no staff is assigned for breast feeding	• Sensitization of mother regarding early initiation of breastfeeding through pamphlet • Mothers were encouraged for early breastfeeding and warm drinks were provided • More reminders needed
3 (n = 28)	1. Assess the rate of early initiation of breast feeding 2. Increase the early initiation of breastfeeding 3. Formation of Team 4. Setting labor suit 5. Observation for 3 wks	• Sensitization regarding early initiation of breastfeeding through pamphlet • Encouragement of mothers and provision of warm drinks • Restricted entry of men in labor room and postnatal ward • Separate reminders on early breastfeeding in labor room after delivery	60% of newborn babies were put on breast feed after delivery, no written policy and documentation for early breast feeding in labor room	• Sensitization of mother regarding early initiation of breastfeeding through pamphlet • Mothers were encouraged for early breastfeeding and warm drinks were provided • Men's entry was restricted
4 (n = 30)	1. Assess the rate of early initiation of breast feeding 2. Increase the early initiation of breastfeeding 3. Formation of Team A quality improvement team consisted of faculty members from the obstetrics department, B.Sc. nursing interns students, the charge nurse, and staff nurses from LDR and postnatal ward 4. Setting labor suit 5. Observation for 3 wks	• Sensitization regarding early initiation of breastfeeding through pamphlet • Encouragement of mothers and provision of warm drinks • Restricted entry of men in labor room and postnatal ward • Training of staff and doctors • One-to-one group discussion with nurses doctors for clarification of role and responsibilities	80% compliance, mothers felt contented and confident	• Sensitization regarding early initiation of breastfeeding through pamphlet • Encouragement of mothers and provision of warm drinks • Restricted entry of men in labor room and postnatal ward • Training of staff and doctors

*n, number of participants assessed.

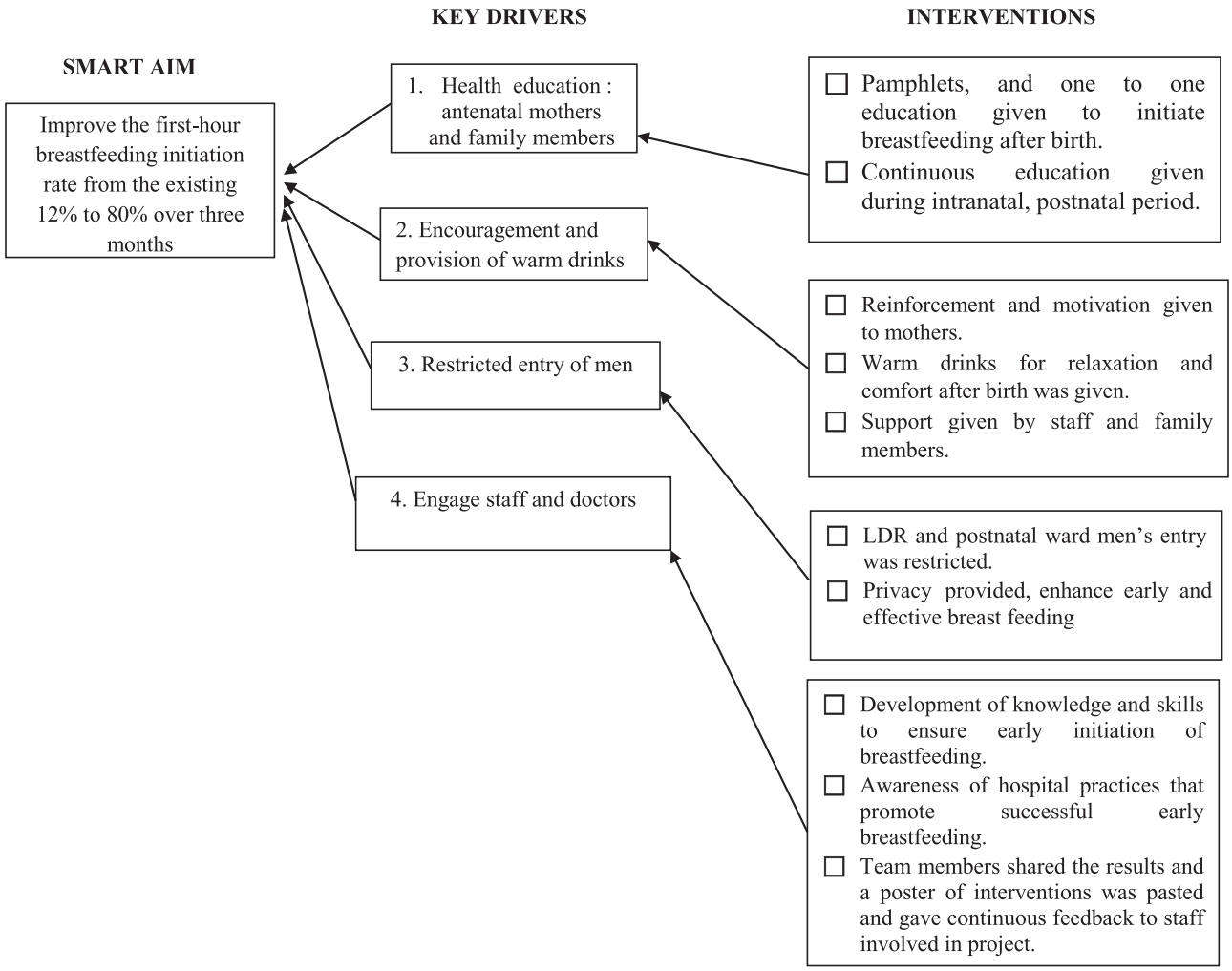

Fig. 2. Key driver diagram of QI change ideas and interventions.

4 hours of birth, and 52% of mothers did not initiate breastfeeding after delivery (Fig. 3). After 4 PDSA cycles, the proportion of neonates receiving early breastfeeding within 1 hour of birth increased from 12% to 80%.

DISCUSSION

Using a QI approach, we demonstrated a significant initial improvement in first-hour breastfeeding initiation rates in neonates born by normal vaginal delivery. As with any change in practice, it was initially difficult to adapt to this change due to staff reluctance. However, we clarified doubts through pamphlets, group discussions, and one-to-one discussions. Staff members gradually adapted to the change idea and provided continuous reinforcement to the mothers. Keys to successful breastfeeding include

Table 2. List of PDSA Cycles

Change Idea	Reason
1. Health education in the form of pamphlets	To initiate the breastfeeding and improve knowledge on benefits of early initiation of breast feeding
2. Encouragement of mothers and provision of warm drinks	To initiate the early breastfeeding and motivate the mother
3. Restricted entry of men in labor room and postnatal ward	Provide privacy, enhance early and effective breastfeeding
4. Training of staff and doctors	To develop knowledge and skills to ensure early initiation of breastfeeding

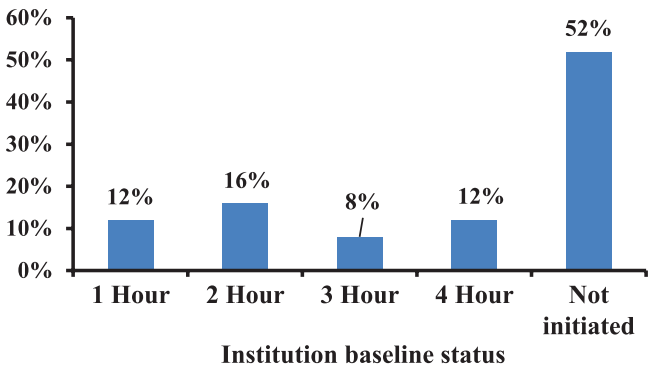

Fig. 3. Baseline status of early initiation of breastfeeding within 1 hour of birth.

maternal–infant skin-to-skin contact soon after birth, initiation within the first hour of birth, limiting maternal-infant separation, and frequent on-demand feeds. In this QI project, we achieved an early initiation breastfeeding rate of 80%. As per the latest national family health survey, the early initiation of breastfeeding in India remains nationally low (41.6%).[8]

National Family Health survey-4 (2015–2016) data for Haryana state from India has revealed that breastfeeding within 1 hour after birth was initiated by 16.1% of mothers in district Panipat, and 73% of mothers in district Mahendragarh. Globally, over 1 million newborn infants could be saved each year by initiating breastfeeding within the first hour of delivery.[8] Exclusive breastfeeding was initiated by 34.7% of mothers in the Gurgaon district and 73.1% of mothers in Rewari.[9]

However, attention has primarily focused on breastfeeding protective effects in the first 6 months of life. Early initiation provides an opportunity for a new mother to hold and feed her baby soon after birth. It gives her a sense of empowerment and control. Parenting skills are enhanced as the mother holds and feeds the baby herself.[10] Furthermore, the neurodevelopment of the baby is better. This finding suggests that mothers need further support and encouragement to initiate breastfeeding, as recommended by the Baby-Friendly Hospital Initiative.[11] The present study promotes its findings by educating the mothers through pamphlets and continuous encouragement to mothers.

Although the 2009 changes have brought us all more in line, international variation in baby-friendly standards do exist. Currently, not all nations enforce a 75% exclusivity rate for hospital certification, and although breastfeeding "within one-hour" is standard in some places, the WHO version of the Ten Steps still recommends infants go to breast "within one-half hour of birth."[12]

The present study corroborates other findings that show that putting a newborn on the mother's breast for skin-to-skin contact and feeding immediately after delivery is feasible. Several studies on the effect of QI projects to improve breastfeeding have shown positive results.[8] Our study also demonstrated benefits in a low-resource setting with no lactation specialist available in the units. We have faced specific problems and challenges during the implementation of the PDSA cycles. For instance, there is no policy to kept newborns with mothers immediately after birth. Staff members were reluctant to motivate mothers to breastfeed.

One of the factors impacting this project is a lack of designated staff in the postnatal ward for counseling and data collection. Notably, the QI team faced substantial organizational and structural challenges during the QI project. For instance, the team members' availability was limited for 2 weeks in early December due to completing mandatory examinations and accounted for a notable drop in performance during PDSA2 (Fig. 4).

Thus, we had to choose only some of the essential QI interventions, like continuous reinforcement, a pivotal step to improvement in initiating breastfeeding "within one-hour" of birth. It has proved effective in improving the early initiation of breastfeeding. We were able to integrate the change within the existing processes without increasing the workload. We believe this helped us achieve the initial improvement. After successfully attaining the goal, the project was handed over to regular staff nurses in the area. Due to the COVID-19 pandemic and a nationwide lockdown in 2020, face-to-face interaction and data collection were disrupted. We struggled to get support from mothers and QI members and also had numerous barriers. Therefore, the breastfeeding rate dropped to 40%.

The present study suggests that QI principles are feasible and improve early breastfeeding rates during the hospital stay. This single-center QI initiative involved faculty members and nursing students. We conducted the project without any additional human resource or financial

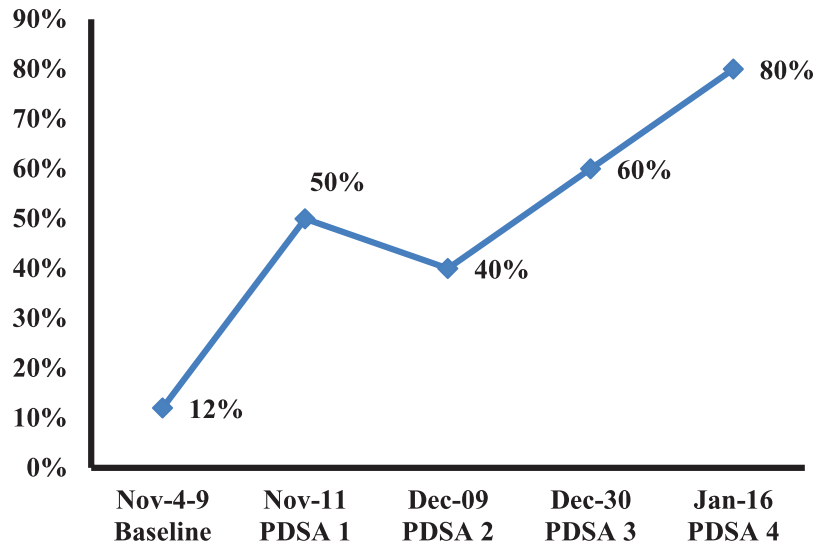

Fig. 4. Comparison of baseline and PDSA cycles.

assistance, suggesting the importance of simple and feasible QI principles using a team approach. This project's strength was in the interinstitutional trust built in which all involved participated in learning and teaching. This QI initiative has helped our institute to improve the early initiation of breastfeeding practices. Formation of guidelines putting a newborn on the mother's breast for skin-to-skin contact and feeding immediately after birth is the next step to sustain the practice. Such efforts could affect both initiation and duration of breastfeeding, with substantial, lasting benefits for maternal and child health. The Formation of a breastfeeding support group is the next change idea in the QI project.

CONCLUSION

We demonstrated a significant improvement in the first hour of breastfeeding by using sequential adapted PDSA cycles. Interventions included pamphlets, health education, group discussion, and one-to-one interaction with staff members. We have achieved our study aim. The study suggests that QI principles are feasible and lead to improved breastfeeding rates with 1 hour of birth.

DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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REFERENCES

1. UNICEF for Every Child. Capture the Moment. Early initiation of breastfeeding: The best start for every newborn. July 2018. Available at: https://data.unicef.org/resources/capture-the-moment. Accessed April 2020.
2. Rinda J. Knowledge, attitude and practice of employed mothers about breastfeeding. *Nurs J India*. 2005;96:85.
3. Dieterich CM, Felice JP, O'Sullivan E, et al. Breastfeeding and health outcomes for the mother-infant dyad. *Pediatr Clin North Am*. 2013;60:31–48.
4. World Health Organization, United Nations Children's Fund. *Global Strategy for Infant and Young Child Feeding*. World Health Organization; 2003. Available at: https://apps.who.int/iris/bitstream/handle/10665/42590/9241562218.pdf. Accessed March 7, 2018.
5. Edmond K, Newton S, Hurt L, et al. Timing of initiation, patterns of breastfeeding, and infant survival: prospective analysis of pooled data from three randomised trials. *Lancet Glob Health*. 2016;4:e266–e275.
6. Rollins NC, Bhandari N, Hajeebhoy N, et al; Lancet Breastfeeding Series Group. Why invest, and what it will take to improve breastfeeding practices? *Lancet*. 2016;387:491–504.
7. "MAA" (MOTHERS' ABSOLUTE AFFECTION) Programme for breastfeeding promotion through health system 2016. Available at: https://www.nhp.gov.in/maa-(mothers%E2%80%99-absolute-affection)-programme-for-infant-and-young-child-feeding_pg.
8. National Family Health Survey (NFHS-4) 2015-2016. Available at: http://rchiips.org/NFHS/pdf/NFHS4/HR_FactSheet.pdf.
9. Rapid survey on children, Ministry of Women and Child Development, Government of India/ 2013-2014. Available at: https://wcd.nic.in/sites/default/files/State%20RSOC.pdf.
10. Sharma S, Sharma C, Kumar D. Improving the breastfeeding practices in healthy neonates during hospital stay using quality improvement methodology. *Indian Pediatr.* 2018;55:757–760.
11. Mullany LC, Katz J, Li YM, et al. Breast-feeding patterns, time to initiation, and mortality risk among newborns in southern Nepal. *J Nutr.* 2008;138:599–603.
12. Merewood A. WHO/UNICEF's baby-friendly initiative: the big picture. *J Hum Lact*. 2012;28:271.