

The Impact of Breastfeeding Training on Nurses: An Educational Interventional Study

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ABSTRACT

Introduction: Research demonstrates the importance of acquisition of knowledge of breastfeeding by postnatal mothers as a key strategy to improve maternal and infant health. Of health care practitioners, nurses typically spend the most time with these mothers, and they must be knowledgeable in breastfeeding practices as well as recognizing early barriers. **Aims:** The purpose of this study is to assess the knowledge of nurses on breastfeeding and reassess their knowledge after a training program. **Methods:** This time-series design study included 32 nursing staff involved in taking care of postpartum mothers. The nurses underwent a one-day training on breastfeeding. They were then evaluated periodically on their knowledge on breastfeeding at four different time points. The retention of knowledge was calculated based on the change in scores, as per mean numeric scores, immediately after the training compared to 12 and 24 months after the training. **Results:** In the thematic area 'Early initiation, colostrum and knowledge on pre-lacteal feeds' and 'Scenario Based Questions', there was a significant change (<0.001) from baseline in the mean scores once the nurses underwent training. The KAP assessment revealed a low total score of 16.6 out of 35 prior to the one-day training. There was a significant change (<0.001) in the mean knowledge score after the training, 28.7 compared to 16.6, and the knowledge was retained 12 months after the training 19.2, whereas after 24 months post-training was 18.7. **Conclusion:** There is an urgent need to train and constantly re-train our nursing staff to ensure their ability of to accurately and efficiently part knowledge on breastfeeding and hence help initiate early breastfeeding and follow global recommendations.

Keywords: Breastfeeding; Continuing Education; Knowledge; Knowledge retention; Nepal; Nurses

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INTRODUCTION

Breastfeeding during the first six months of life is widely recognized as one of the most effective interventions for reducing infant morbidity and mortality.¹ It is also included among the key evidence-based strategies to combat childhood undernutrition.² Breast milk provides optimal nutrition for infants and plays a crucial role in supporting early growth and development.³ It confers protection against a range of childhood illnesses and has been associated with improved cognitive outcomes. In addition, breastfeeding fosters a strong emotional bond between mother and child.⁴ For mothers, longer durations of breastfeeding have been linked to a reduced risk of conditions such as coronary heart disease, breast cancer, type 2 diabetes, and postpartum depression.^{5,6} Global guidelines from the World Health Organization and UNICEF recommend exclusive breastfeeding for the first six months, followed by continued breastfeeding alongside appropriate complementary foods up to two years of age or beyond.⁷ Healthcare settings provide important opportunities for promoting optimal

breastfeeding practices, as health professionals can counsel and support mothers during antenatal care, immediately after delivery, and at postnatal follow-up visits. In this context, healthcare providers play a pivotal role in delivering accurate information and fostering a respectful, encouraging, and supportive environment for mothers. Of health care practitioners, nurses typically spend the most time with patients, and they must be knowledgeable in breastfeeding recommendations and practices recognizing early challenges while also being aware of the importance of prompt intervention. The assessment of good breastfeeding establishment immediately after delivery and during hospital stay is not solely the domain of the pediatrician, neonatologist or neonatal nurse. Improving outcomes in patients with breastfeeding challenges depends on every nurse involved in the mother's care. The aim of this study is to help identify and evaluate the impact of a multi-faceted training on breastfeeding on change and retention of knowledge in nurses.

METHODS

We conducted this study in Kathmandu Medical College and Teaching Hospital (KMCTH), Sinamangal, Kathmandu, Nepal from December 2022 to August 2025. The study received approval from the Nepal Health Research Center (NHRC). Using a convenience and purposive sampling method 32 nursing staff involved in taking care of postnatal mothers at the bedside, namely postnatal ward nurses, Neonatal Intensive Care Unit (NICU) nurses and gynaecology ward nurses were included in the study. Participants were briefed about the purpose of the study and participation was voluntary. Informed written consent was obtained from each nurse participating in the study.

We conducted a preliminary Knowledge, Attitude and Practice (KAP) survey on breastfeeding knowledge amongst these nursing staffs of KMCTH. For the KAP, a questionnaire with 35 multiple-choice questions, partially adapted from a tool developed to measure nurses' knowledge of breastfeeding, was used to assess the knowledge of nurses on the current breastfeeding recommendations. The questions focused on to help identify the factors that influence breastfeeding based on the knowledge of the nurse. The pediatricians involved in designing the tool included clinicians involved in newborn care, educators and researchers. This ensured provision of content and face validity to the study tool.

This time-series design study including 32 nurses were evaluated periodically on their knowledge on breastfeeding at four different time points (Table I). Participants completed an original questionnaire with questions that focused on their perceived attitude towards appropriate time to first breastfeed, importance of colostrum, knowledge on demand feeding and frequency of feeding along with common breastfeeding challenges and their remedies.

A one-day training was designed (Table II) and the nurses received training during the breastfeeding week (August 1-7, 2023). The nurses took the test pre-training, re-took it immediately after being trained and after 12 and 24 months of the training (August 2024, August 2025). We thus wanted to see the impact of breastfeeding training on the knowledge of nurses and the long-term retention of knowledge.

The collected data with the mean number of correct responses in the pretest and posttest were then analyzed with descriptive statistics, using t-tests for continuous variables and chi-square tests for categorical variables. The retention of knowledge was calculated based on the change in scores, as per mean numeric scores, immediately after the training compared to 12 and 24 months after the training.

Thematic Area	Tools	Evaluation Design
Early initiation, colostrum and knowledge on pre-lacteal feeds	10 multiple choice questions	Before training, immediately after training, 12 months and 24 months after training
Rooming in, demand feeding and frequency of breastfeeding	5 multiple choice questions	Before training, immediately after training and 12 months and 24 months after training
Use of feeding bottles and pacifiers	5 multiple choice questions	Before training, immediately after training and 12 months and 24 months after training
Complications of breastfeeding and its remedies	5 multiple choice questions	Before training, immediately after training and 12 months and 24 months after training
Scenario Based Questions	Problem Solving (10 multiple choice questions)	Before training, immediately after training and 12 months and 24 months after training

Table I: Evaluation of Breastfeeding Knowledge of Nurses

Topic	Training Methodology	Facilitator	Time Allotted (in minutes)
Breastfeeding: What we already know, what we don't know and what we should know.	Lecture & Discussion	Professor of Pediatrics	15
Promotion of Breastfeeding and World Breastfeeding Week theme	Lecture	Professor of Pediatrics	15
Anatomy and Physiology of Lactation	Lecture	Associate Professor, Pediatrics	15
Position and Attachment of Proper Breastfeeding	Lecture	Lecturer, Pediatrics	15
Management of Lactation Problems	Lecture	Associate Professor, Pediatrics	15
Breast Milk Storage	Lecture	Assistant Professor, Pediatrics	15
Benefits of Breastfeeding and its recent advances	Lecture	Lecturer, Pediatrics	15

Counseling a mother for the need of early appropriate breastfeeding	Lecture	Lecturer, Pediatrics	15
Example cases and their management (3 separate groups)	Group Work	Facilitators (3)	30
Bedside real case scenarios (3 separate groups)	Group Work	Facilitators (3)	60

Table II: One-Day Training Design

RESULTS

All 32 nurses included in this study participated in knowledge evaluation before the training, immediately after training and at 12 and 24 months after the training. 8 of the nursing staff had left the institution during the course of the study and completed the post-training survey via email. The respondents comprised of all females, and they varied widely in their number of years of experience. The median age of the nursing staff was 25.2 and the median years of job experience was 3.1. The majority (59.4%) listed Bachelor of Science (BSc) in Nursing as their highest degree

The characteristics of participants are presented in Table III.

Variables	Total (n) - 32
Age	21-30
	23
	31-40
	9
Education	Proficiency Certificate Level (PCL) in Nursing
	5
	Bachelor's (BSc) Nursing
	19
	PCL and BSc Nursing
Years of Job Experience	8
	0-2
	7
	3-5
	17
	6-10
	6
	>10
	2

Table III: Characteristics of Participants

The KAP assessment revealed a low total score of 16.6 out of 35 prior to the breastfeeding one-day training. There was a significant change (<0.001) in the mean knowledge score after the one-day training, 28.7 compared to 16.6, and the knowledge was retained 12 months after the training 19.2, whereas after 24 months post-training was 18.7 (Table IV). In the thematic area 'Early initiation, colostrum and knowledge on pre-lacteal feeds' and 'Scenario Based Questions', there was a significant change (<0.001) from baseline in the mean scores once the nurses underwent training.

In spite of an average of 3.1 years of job experience, there was a significant gap in knowledge in breastfeeding standard guidelines and rapid recognition of complications. 89% of the nurses were competent immediately after the training ($p < 0.001$); however they failed to remain so after a year, and more so after 2 years after the training.

Thematic Area	Mean Score before the Training (n=32)	Mean Score After the Training (n=32)	Mean Score 12 Months Post-Training (n=32)	Mean Score 24 Months Post-Training (n=32)	p-value
Early initiation, colostrum and knowledge on pre-lacteal feeds (10)	4.4±0.35	8.3±0.33	6.4±0.38	5.6±0.46	0.90
Rooming in, demand feeding and frequency of breastfeeding (5)	2.3±0.52	4.4±0.43	3.8±0.44	2.7±0.60	0.84
Use of feeding bottles and pacifiers (5)	2.7±0.40	3.9±0.40	2.1±0.33	2.9±0.54	0.68
Complications of breastfeeding and its remedies (5)	2.0±0.41	4.6±0.56	2.4±0.42	3.1±0.64	0.83
Scenario Based Questions (10)	5.2±0.90	7.5±0.48	4.5±0.47	4.4±0.54	0.76
Total (35)	16.6±0.59	28.7±0.46	19.2±0.55	18.7±0.57	0.81

Table IV: Changes in Breastfeeding Knowledge Acquired

Factor	Coefficient (95% CI) p value	Coefficient (95% CI) p value
Time in relation to intervention	0.02 (-0.07 – 0.11)	0.66
Site (intervention)	-0.27 (-0.36 – -0.18)	< 0.001
Years of Job Experience	-0.01 (-0.02 – -0.005)	0.002

Table V: Linear regression of scores

DISCUSSION

The acquisition of knowledge of breastfeeding by primiparous mothers is commonly viewed as a key strategy to improve maternal and infant health. As part of breastfeeding promotion, hospitals are expected to promote exclusive breastfeeding.

However, much of the information and reinforcement comes from primary healthcare providers, especially nurses in the hospital. There is a lack of studies in Nepal that have assessed how the nurses' knowledge and perceived attitudes influence the decision to start and continue breastfeeding in mothers. First time mothers are more vulnerable to this form of influence in the hospital. Early initiation of breastfeeding is among the worst in countries like Pakistan (29%), Indonesia (29%), India (41%), Nepal (45%) and Bangladesh (47%) when compared to Thailand (50%), Myanmar (76%) and Sri Lanka (80%) in the South Asian region.^{8,9} Furthermore, one of the main barriers to breastfeeding in South-Asia is found to be less support from hospital staff and cultural beliefs.¹⁰ Although a vast amount of information regarding breastfeeding and management of early initiation in newborn babies is available in medical literature, the ability of nurses to accurately and efficiently help postpartum mothers and recognize problems, especially in its earlier stages, remains relatively undetermined.¹¹ Counselling and support by postpartum nurses can increase the likelihood of successful breastfeeding, which may be attributable to the psychological factors of mothers. For example, babies who received timely breastfeeding initiation were also determined to have received support by her primary nurse, who were adequately knowledgeable and had received counselling about breastfeeding.¹² In addition, studies have found that maternal perceptions of their health care providers' infant-feeding recommendations interact with the opinions of family members to affect breastfeeding.¹³

We applied a one-day training to improve the knowledge and skills on breastfeeding knowledge and rapid recognition of problems in nurses caring for postpartum mothers of our hospital. Our study demonstrated lack of awareness of some of the major key indicators of successful breastfeeding such as early initiation, importance of colostrum, harmfulness of pre-lacteal feeds, awareness about demand feeding, use of pacifiers and early recognition of signs/symptoms of breastfeeding problems. There was a huge knowledge gap even in presumably universally accepted facts of use of feeding bottles. However, a short one-day training seems inadequate to sustain clinical competency over the years. Our study also emphasized how there is a need for constant re-inforcement of training of nurses, as their knowledge significantly wears off after a year or 2 of training. Refresher courses and review meetings are a must to help retention of this knowledge and their application on a daily basis in the support of breastfeeding in postnatal wards.

LIMITATIONS

This study was conducted in a single tertiary care hospital with a relatively small sample size, which may limit the generalizability of the findings to other healthcare settings. The use of convenience sampling may have introduced selection bias. Finally, although all participants completed follow-up assessments, some nurses had left the institution during the study period and completed surveys remotely, which may have influenced the consistency of data collection.

CONCLUSION

In spite of breastfeeding being a universally accepted norm, no evaluation has been undertaken to assess the competency of nurses in parting breastfeeding knowledge and addressing breastfeeding problems. There is an urgent need to train and constantly re-train our nursing staff to ensure their ability of accurately and efficiently counselling breastfeeding mothers and recognizing early challenges and hence help initiate early breastfeeding and follow global recommendations.

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