

Enhancing Breastfeeding Practices Through a Biopolymer-Based Educational Intervention

Charu Saini¹, Vandana Chauhan^{2,*}, Upma George³, Kanchan Bala⁴

Abstract

Background: Breastfeeding difficulties are common among new mothers, and knowledge gaps can contribute to these challenges. Educational interventions hold promise in improving breastfeeding practices. This study aimed to evaluate the effectiveness of a biopolymer-based educational intervention in enhancing mothers' knowledge and practices regarding breastfeeding problems and their prevention. **Methods:** A quantitative pre-post-test design was employed with a sample of 54 postnatal mothers in a multispecialty hospital. A biopolymer-based educational intervention was delivered, focusing on common breastfeeding issues and preventive measures. Data were collected on sociodemographic characteristics, breastfeeding experiences, and knowledge and practices related to breastfeeding challenges using LATCH assessment scale, structured questionnaires, and self-reported experience inventory. **Results:** The intervention significantly improved mothers' knowledge and practices regarding breastfeeding challenges. The mean LATCH score and knowledge scores increased significantly post-intervention, while reported breastfeeding problems like nipple pain and engorgement decreased. A weak correlation was observed between knowledge and practice scores. **Conclusion:** This biopolymer-based educational intervention proved effective in enhancing mothers' knowledge and practices related to breastfeeding challenges. Further research is warranted to explore the specific biopolymer used and its potential contribution to the intervention's effectiveness.

Keywords: Biopolymer-based intervention, breastfeeding, knowledge, practices, breastfeeding challenges, mother

INTRODUCTION

A baby's first priority is to receive breast milk, which provides the perfect blend of biological and emotional nutrients essential for a child's healthy development. The positive outcomes of breastfeeding are closely linked to both the commencement and duration of this practice. Various factors, such as geographic location, cultural influences, socioeconomic status, religious beliefs, educational attainment, and maternal employment, contribute to the diverse breastfeeding practices observed globally [1,2]. Recognizing the significance of breastfeeding, global public health guidelines and

recommendations from the WHO advocate for breastfeeding for a minimum of 6 months. This is attributed to the presence of antibodies and essential nutrients in breast milk, safeguarding the infant from infections while supporting their overall growth and development [3,4].

Despite the profound bonding experience that feeding provides between a mother and her child, it can pose challenges, particularly for new mothers. The act of breastfeeding may induce discomfort, with sensations such as pain, cracked nipples, redness, tenderness, and breast heaviness and swelling [5,6]. Additionally, mothers may

*Author for Correspondence

Vandana Chauhan

^{1,3,4} Obstetrical and Gynaecological Nursing Department, Himalayan College of Nursing, Swami Rama Himalayan University

²Child Health Nursing Department, Himalayan College of Nursing, Swami Rama Himalayan University

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experience discharge from the breasts. While these conditions can be distressing, they are preventable with adequate knowledge about the correct breastfeeding techniques. Ensuring a healthy relation of the baby to the breast, providing sufficient nourishment during each feeding session, and maintaining the appropriate position for the baby can alleviate the severity of these uncomfortable situations [7,8]. Evidence indicates that educating mothers about breastfeeding through effective teaching strategies enhances their knowledge and practices [9].

The primary aim of the present investigation is to evaluate mothers' understanding and familiarity with feeding issues, as well as the preventive measures aimed at mitigating such challenges [10,11].

Material and Methods

The study employed a quantitative approach utilizing a one-group pre-test-post-test design. It took place in a multispecialty hospital in Dehradun, Uttarakhand, and involved a sample of 54 postnatal mothers selected through purposive sampling techniques, adhering to the study's selection criteria. Exclusion criteria encompassed mothers on lactation suppressants and those with intrauterine devices (IUD). Prior to the study, ethical and administrative approvals were obtained, and the purpose of the research was explained to the participants who then provided written consent. Pre-test data were gathered from the mothers using tools such as socio-demographic variables, the LATCH assessment scale, structured educational questionnaire, and self-reported experience inventory. The intervention was administered on the same day as the pretest. On the third day, prior to discharge, a post-test was administered using the same set of instruments. Subsequently, the gathered data were encoded and analysed.

Analysis and Result

Socio-demographic characteristics

The data analysis revealed several key demographic and contextual findings among the study participants. A significant proportion of mothers (59%) fell within the 19-28 age group, with the majority (80%) identifying as Hindu. Educational background indicated that 67% of the mothers had graduated, and a considerable portion (63%) belonged to joint families. The majority (91%) of the mothers identified themselves as homemakers, and 50% reported a family income between 20,000 to 40,000 per month. Additionally, 46% of the mothers hailed from rural areas and demonstrated awareness regarding breastfeeding challenges.

In terms of obstetric profiles, the majority of mothers (57%) were primigravida, and a substantial portion (70%) opted for normal vaginal delivery. Turning to the baby's profile, the study found that a significant number of newborns (65%) had a gestational age between 39-41 weeks, with 54% being boys. A noteworthy 69% of the infants had a birth weight ranging between 2.1-3 kg. Importantly, all newborns exhibited strong reflexes and demonstrated a positive inclination towards accepting feed. These comprehensive findings provide a nuanced understanding of the demographic, obstetric, and neonatal characteristics within the study cohort.

Problems related to breastfeeding

Mothers underwent assessments on both the first and third days following delivery. Common challenges experienced by mothers included issues such as fullness, flat nipples, engorgement, redness, cracked nipples, and a combination of fullness and redness. It was observed that, on the third assessment, there was an increase specifically in engorgement and fullness accompanied by redness. Interestingly, the remaining issues showed a decrease in prevalence, highlighting a positive trend in the resolution of these challenges over the initial post-delivery period. (Figure1)

The average LATCH score on the first assessment day was 5.11 ± 0.64 and on the third day it increased to 6.50 ± 1.161 . The statistical analysis revealed a notable difference of 1.39% between the initial and final ratings, which was deemed statistically significant at the $p < 0.05$ level. The observed increase in the LATCH score suggests a notable improvement in breastfeeding practices over the specified period. (Table no 1-2)

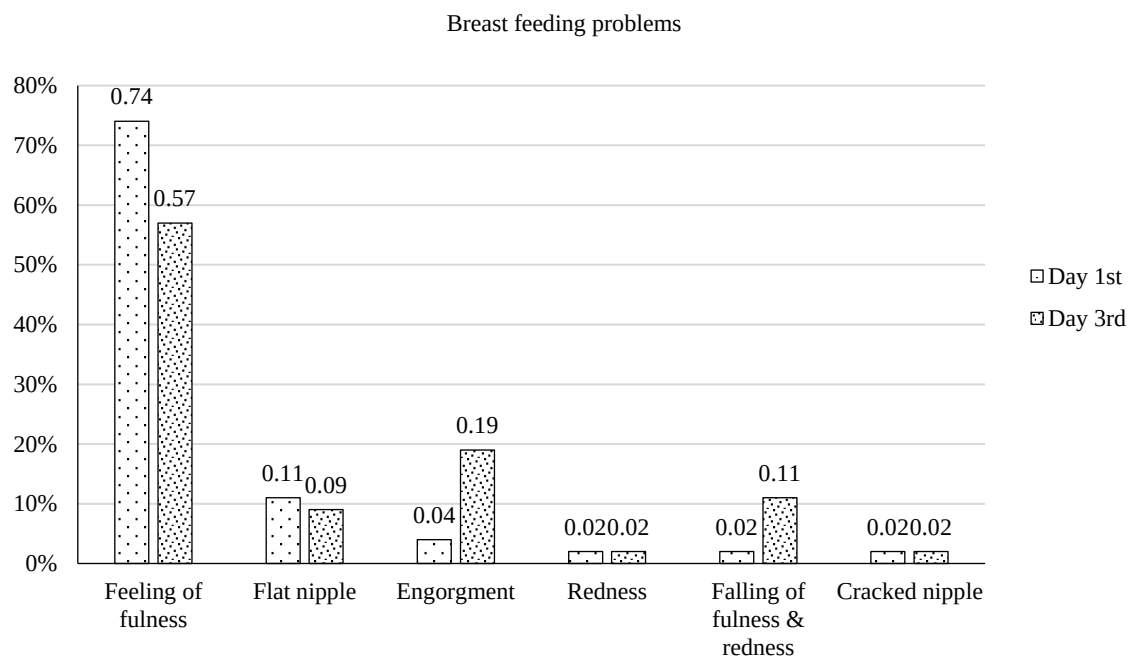


Figure 1. Breast problems reported by mothers.

Table 1. LATCH score of mothers (N=54).

Assessment	Mean $\pm$ SD	Mean Difference	't' value	'p'
1 st day	5.11 $\pm$ 0.64	1.39	9.08*	P<0.001*
3 rd day	6.50 $\pm$ 1.161			

Table 2. Assessment of pre and post knowledge of postnatal mothers (N=54)

Knowledge score	Range	(Mean $\pm$ SD)	Mean difference	T-value	P-value
Pre-test	15-28	21.4 $\pm$ 3.15	5.1	18.9*	p<0.001*
Post test	21-31	26.57 $\pm$ 2.5			

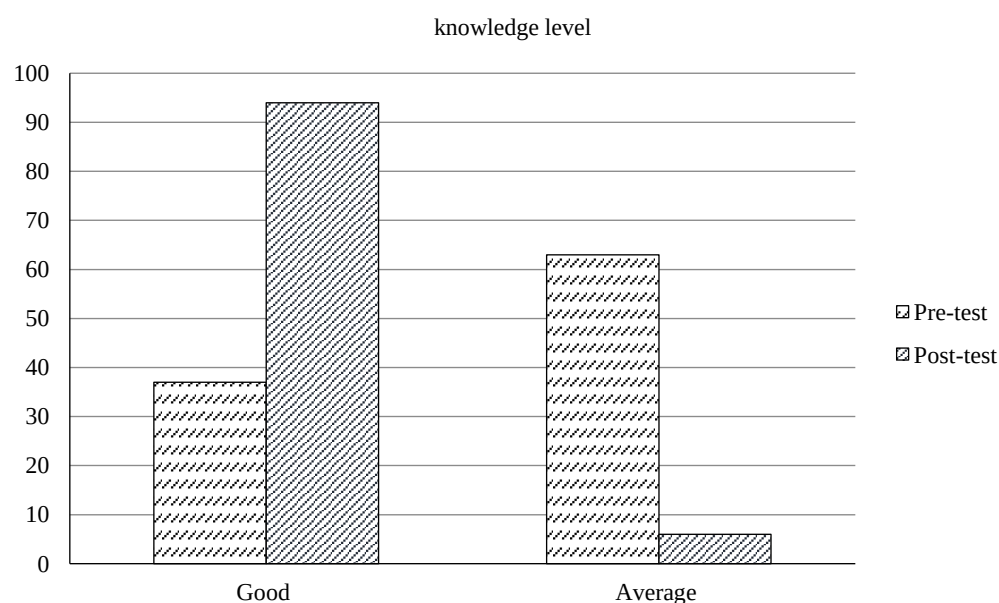


Figure 2. Level of mother's knowledge

The data indicated a noteworthy disparity in pre-test and post-test knowledge at the specified level. In the pre-test, most participants (63%) exhibited average knowledge, whereas in the post-test, 94% of participants demonstrated a good level of knowledge. This demonstrates that the teaching intervention effectively enhances the mothers' knowledge. (Table 3 and Figure 2)

Table 3. Analysing the pre-test and post- test practice score of mothers(N=54).

Practice score	Range	(Mean $\pm$ SD)	Mean difference	T-value	P-value
Pretest	15-26	20.6 $\pm$ 2.77	5.2	17.8*	p<0.001*
Post test	22-30	25.8 $\pm$ 2.1			

The mean variance between pre-test and post-test practices is statistically significant at the $p < 0.05$ level (17.8). In the pre-test, 20% of participants exhibited a good level of practice, a figure that increased substantially to 96% in the post-test. This highlights the effectiveness of the intervention in improving the practice of mothers. (Table 4 and Figure 3)

Table 4. Correlation between mothers' knowledge and practice scores(N=54).

Score	r	p
Knowledge	0.365	0.001
Practice		

A statistically weak correlation ($r = 0.365$) was determined between postpartum mothers' knowledge and breastfeeding experience.

- Correlation between knowledge and practice among mothers across selected demographic variables

Statistically, knowledge showed associations with educational status (14.4) and type of family (5.46). Practice exhibited associations with monthly income (5.14), parity (4.95), and mode of delivery (3.88) where significance level of $p < 0.05$.

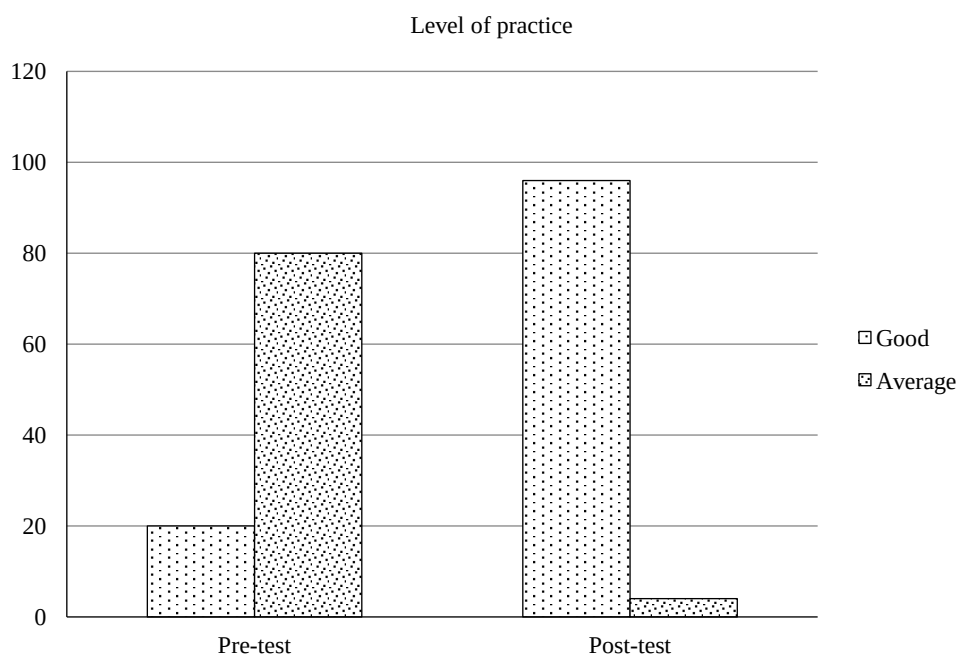


Figure 3. Level of mother's practice

DISCUSSION

The findings indicate that the average score on the post-test exceeds both the average score on education and the pre-test experience of the mothers, with a noticeable average difference noted. This intervention has proven effective in improving women's knowledge and practice regarding breastfeeding problems and their prevention. In a study conducted by W. Rose to assess knowledge and practice related to exclusive breastfeeding, showed that participants in the experimental group showed significant improvement in knowledge and practice. Similarly, Subbiah N reported an enhancement in the post-test scores of women regarding exclusive breastfeeding following an intervention. Notably, there was a weak correlation (0.36) between the understandings and application of mothers in the present study, a finding consistent with W. Rose's study, which also identified a weak correlation between variables (0.24).[12].

CONCLUSION

It is crucial for mothers to possess sufficient knowledge about breastfeeding and its associated minor issues, enabling them to navigate challenges with ease. In the context of the current study, the intervention proved effective in enhancing both the knowledge and practical skills of mothers concerning breastfeeding problems and their interventions.

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