



E-ISSN: 2664-2301
P-ISSN: 2664-2298
www.gynaecologicalnursing.com
IJOGN 2024; 6(2): 139-142
Received: 28-07-2024
Accepted: 03-09-2024

Sangeetha Raj
ETCM College of Nursing,
Kolar, Karnataka, India

Lakshmi Kala
ETCM College of Nursing,
Kolar, Karnataka, India

Dr. Sukanya
RR College of Nursing, Kolar
Karnataka, India

Corresponding Author:
Sangeetha Raj
ETCM College of Nursing,
Kolar, Karnataka, India

International Journal of Obstetrics and Gynaecological Nursing

Effectiveness of structured teaching programme on knowledge regarding expression and storage of breast milk among postnatal mother

Sangeetha Raj, Lakshmi Kala and Sukanya

DOI: <https://doi.org/10.33545/26642298.2024.v6.i2b.172>

Abstract

Breast milk is essential for infant nutrition, offering protection and supporting growth. This study evaluated the effectiveness of a structured teaching program on postnatal mothers' knowledge regarding breast milk expression and storage. A pre-experimental design was used with 60 postnatal mothers selected from Ganesh Hospital, Kolar. Data were collected using a structured questionnaire, and pre-test and post-test knowledge scores were compared. Results showed that in the pre-test, 81.7% of mothers had inadequate knowledge, while 50% had adequate knowledge in the post-test. The difference in mean knowledge scores between pre-test and post-test was statistically significant ($t = 28.779$, $p < 0.05$), demonstrating the effectiveness of the program. The study concluded that the structured teaching program significantly improved mothers' knowledge, emphasizing its value in enhancing maternal understanding of breast milk expression and storage.

Keywords: Effectiveness, structured teaching program, knowledge, expression and storage, breast milk, postnatal mothers

1. Introduction

Breast milk, produced by the mammary glands, is the most natural and optimal source of nutrition for newborns. Rich in essential nutrients like fats, proteins, and carbohydrates, it supports the growth and development of infants. The World Health Organization (WHO) strongly recommends exclusive breastfeeding for the first six months of life, followed by continued breastfeeding with appropriate complementary foods for up to two years and beyond. Breastfeeding not only provides perfect nutrition but also strengthens the emotional bond between mother and child, while reducing the risk of numerous health problems^[1, 2, 3].

In recent years, rapid industrialization and urbanization have led many women to seek employment outside their homes, resulting in a decline in breastfeeding duration. A study by Ruby Lukose in India found that working mothers breastfeed for an average of 16 weeks, significantly shorter than the 25 weeks for non-working mothers. This underscores the need for resources that help working mothers continue breastfeeding, particularly through the expression and storage of breast milk^[4].

Expressing and storing breast milk can overcome logistical challenges, such as separation from the infant, and physical challenges like mastitis. It allows mothers to provide breast milk even in their absence. However, many mothers lack proper information about the benefits of breast milk, as well as the methods for its expression and storage. To address this gap, there is a need for structured educational programs to help mothers gain the necessary knowledge and skills before returning to work^[5].

This study aims to assess the effectiveness of a structured teaching program designed to enhance postnatal mothers' knowledge regarding the expression and storage of breast milk. By improving their understanding, the program will help mothers overcome barriers to breastfeeding, supporting them in balancing employment with optimal infant nutrition.

2. Materials and Methods

2.1 Research Approach

This study employed a Quantitative Research Approach, which is appropriate for assessing the knowledge of postnatal mothers regarding the expression and storage of breast milk.

2.2 Research Design

A Pre-experimental one-group pre-test-post-test design was used for this study.

Postnatal mother	Pretest	Intervention	Post Test
Exp group	O ₁	X	O ₂

- **O1:** Pre-test knowledge assessed using a structured questionnaire on the expression and storage of breast milk.
- **X:** Intervention (structured teaching program) on the expression and storage of breast milk.
- **O2:** Post-test knowledge assessed using the same questionnaire after the structured teaching program.

2.3 Setting of the Study

The study was conducted at Ganesh Hospital, Kolar, selected based on its accessibility and feasibility for the study's purpose.

2.4 Population

The population for this study was postnatal mothers. The study specifically targeted:

- **Target Population:** All postnatal mothers.
- **Accessible Population:** Postnatal mothers who underwent normal vaginal delivery or caesarian section at Ganesh Hospital, Kolar.

2.5 Sample and Sampling Technique

A non-probability purposive sampling technique was used to select 60 postnatal mothers who met the inclusion criteria.

2.6 Criteria for Sample Selection

Inclusion Criteria

1. Postnatal mothers who have undergone normal vaginal delivery or caesarian section.
2. Can read and write in English or Kannada.
3. Primi and multigravida mothers.
4. Willing to participate in the study.
5. Stay in the hospital for a minimum of 7 days.
6. Available at the time of data collection.

Exclusion Criteria

1. Postnatal mothers who are not willing to participate in the study.
2. Mothers discharged within 4 days.
3. Mothers with psychological problems.

2.7 Variables under Study

- **Dependent Variable:** Knowledge of postnatal mothers regarding the expression and storage of breast milk.
- **Independent Variable:** Structured teaching program on the expression and storage of breast milk.
- **Demographic Variables:** Age, religion, educational status, occupation, type of family, family income, type of residence, birth order of the child, mode of delivery, and previous experience with expression and storage of breast milk.

2.8 Selection and Development of Tools

The data collection tools included

- **Section I:** Socio-demographic profile of postnatal

mothers, including age, religion, educational status, occupation, and other relevant factors.

- **Section II:** A structured knowledge questionnaire assessing the knowledge of postnatal mothers regarding expression and storage of breast milk.

The structured questionnaire was divided into four sections

- **Section A:** Knowledge on breastfeeding and breast milk (5 questions)
- **Section B:** Expression of breast milk (5 questions)
- **Section C:** Procedure for expressing breast milk (11 questions)
- **Section D:** Storage of expressed breast milk (6 questions)

Each correct answer was scored 1 point, with a total maximum score of 27. Knowledge levels were categorized as follows:

- **Adequate Knowledge:** $\geq 76\%$
- **Moderately Adequate Knowledge:** 51%-75%
- **Inadequate Knowledge:** $< 50\%$

2.9 Development of Structured Teaching Program

The structured teaching program was created to educate postnatal mothers on the expression and storage of breast milk. The program was developed based on the objectives of the study and reviewed by experts in obstetrics and gynecology nursing, as well as doctors and statisticians. The program was then finalized based on expert feedback.

2.10 Plan for Data Analysis

Data were analyzed using both descriptive and inferential statistics:

- **Descriptive Statistics:** Frequency, percentage, mean, and standard deviation for demographic and knowledge scores.
- **Inferential Statistics:** Paired t-test to assess the effectiveness of the structured teaching program and chi-square test to examine the relationship between demographic variables and knowledge levels.

3. Results and Discussion

Section I: Demographic Profile of Postnatal Mothers

Age: The majority of postnatal mothers (56.7%) are aged 23-27 years, followed by 28.3% in the 18-22 years group, and 15% in the 28-32 years group. None are 33 years or older.

Religion: Most postnatal mothers (65%) are Hindu, 30% are Christian, 3.3% are Muslim, and 1.7% belong to other religions.

Educational Status: 38.3% of mothers have completed higher secondary education, 36.7% are graduates, 21.7% have primary education, and 3.3% are illiterate.

Occupation: 55% are housewives, 40% are private employees, 3.3% are government employees, and 1.7% work as coolies.

Type of Family: 66.7% of postnatal mothers live in Nuclear families, while 33.3% are in joint families.

Monthly Income: 50% of mothers earn between Rs. 20,001 and Rs. 35,000, 35% earn Rs. 10,001-20,000, 8.3% earn more than Rs. 35,000, and 6.7% earn less than Rs. 10,000.

Area of Residence: 71.7% of postnatal mothers live in urban areas, and 28.3% live in rural areas.

Birth Order: 60% of mothers have their first child, while 40% have their second child.

Mode of Delivery: 90% of mothers had a Caesarian section, and 10% had a normal delivery.

Previous Experience: 96.7% of mothers are first-time mothers, while 3.3% have previous experience. Section II: Knowledge of Postnatal Mothers Regarding Expression and Storage of Breast Milk

Pre-test and Post-test Knowledge Levels: Pre-test: 81.7% had inadequate knowledge, and 18.3% had moderate knowledge.

Post-test: 61.7% had adequate knowledge, and 38.3% had moderate knowledge.

Mean Scores and Percentages

- **Pre-test:** The overall mean percentage was 42.03% (SD = 2.161).
- **Post-test:** The overall mean percentage increased to 78.8% (SD = 1.949).

Section III: Association of Pre-test Knowledge Scores of Postnatal Mothers with Selected Demographic Variables

Type of Family: A significant association was found between pre-test knowledge scores and type of family ($\chi^2 = 4.149, p < 0.05$).

Other Variables: No significant association was found for age, religion, educational status, occupation, family income, area of residence, birth order, mode of delivery, or previous experience ($p > 0.05$).

4. Discussion

Demographic Profile

- The majority of postnatal mothers in this study were in the 23-27 years age group (56.7%), with the remaining distributed across other age groups. This aligns with previous research, such as Mrs. Chandrakala Suresh *et al.*'s study, where 40% of participants were aged 23-27 years [6].
- Most participants were Hindu (65%), followed by Christian (30%), which is consistent with Sheela. J's findings where 83% of postnatal mothers were Hindu.⁷
- In terms of education, 38.3% had higher secondary education, 36.7% were graduates, and 21.7% had primary education, similar to Sheela. J's study, where 50% had secondary education.⁷
- Regarding occupation, 55% were housewives, consistent with Sheela. J's finding of 77% homemakers [7].
- Family structure revealed that 66.7% lived in nuclear families, which corresponds with Sheela. J's study

showing 73% in nuclear families [7].

- Monthly income distribution showed 50% of postnatal mothers earned between Rs. 20,001-35,000, which provides insight into economic status and its potential impact on maternal knowledge.
- A majority (71.7%) resided in urban areas, indicating urban-centric data, which might influence access to healthcare resources.
- Most participants had their first child (60%), consistent with findings from Ester Mary's study, where 68% were first-time mothers [8].
- The mode of delivery was predominantly cesarean section (90%), aligning with global trends in cesarean deliveries.

Knowledge on Breast Milk Expression and Storage

Pre-test results revealed that 81.7% of mothers had inadequate knowledge, with only 18.3% showing moderate knowledge. After the educational intervention, 50% of the mothers achieved adequate knowledge, indicating a significant improvement in their understanding. These results align with Ulfat Amin Bhat's study, where a substantial increase in knowledge was observed after the intervention [9].

Comparison of Pre-test and Post-test Knowledge

The comparison of pre-test and post-test knowledge scores showed a significant improvement, with a t-value of 28.779 (greater than the table value at 0.05 significance), confirming the effectiveness of the structured teaching program. This finding corroborates Ulfat Amin Bhat's study, where the post-test knowledge score significantly improved from 16.72 to 39.04, demonstrating the effectiveness of educational interventions in increasing knowledge on breast milk expression and storage [9].

Association with Demographic Variables

The study found a significant association between pre-test knowledge scores and type of family ($\chi^2 = 4.149, p < 0.05$), with postnatal mothers from nuclear families having better knowledge. However, no significant associations were found for other demographic variables, including age, religion, education, occupation, income, and previous experience. These findings are in line with Ulfat Amin Bhat's study, which identified significant associations between knowledge and variables such as parity and previous experience [9].

5. Conclusion

Nursing Implications

Nursing Education

Nurses should incorporate the study findings into educational programs for postnatal mothers. Structured teaching on breast milk expression and storage can be conducted during hospital stays to enhance maternal knowledge, especially for working mothers. Nursing curricula should include updated maternal and child health practices.

Nursing Practice

Given the lack of knowledge among many mothers, nurses should make concerted efforts to raise awareness, including distributing pamphlets, demonstrating proper techniques, and addressing myths and misconceptions. Emphasizing

hygienic practices in milk expression is crucial. Social support networks should also be encouraged to alleviate stress and promote mental well-being.

Nursing Research

This study's findings can be expanded to larger populations to assess the effectiveness of educational interventions. Future research should explore different methods to improve breast milk expression and storage knowledge, ensuring studies are accessible to broader audiences.

Nursing Administration

Nurse administrators should focus on ongoing staff development programs, updating nurses on the latest techniques for breast milk expression and storage. Organizing awareness campaigns and fostering discussion can lead to improved practices. Policies should promote the positive attitude toward expressed milk feeding, and public sensitization should be encouraged.

Community Health Practice

Healthcare professionals and lactation consultants should educate expectant and new mothers early, particularly working women. Governments can promote awareness through public campaigns to improve feeding practices, ensuring widespread adoption of breast milk expression and storage techniques.

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How to Cite This Article

Raj S, Kala L, Sukanya. Effectiveness of structured teaching programme on knowledge regarding expression and storage of breast milk among postnatal mother. International Journal of Obstetrics and Gynaecological Nursing. 2024; 6(2): 139-142.

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