"An Evaluation of Nursing Interventions on Selected Neonatal Outcomes Among Postnatal Mothers with Breast Complications at Selected Hospital in Kollam."

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Abstract: A quasi-experimental study was conducted to evaluate the effectiveness of nursing interventions on selected neonatal outcomes among postnatal mothers experiencing breast complications. The objectives of the study were: (1) to assess the impact of nursing interventions on selected neonatal outcomes, and (2) to determine the association between neonatal outcomes and selected demographic variables. The conceptual framework was based on Katharine Kolcaba's Comfort Theory. A pretest-posttest control group design was employed, and purposive sampling was used to select 60 participants. Data collection included the LATCH breastfeeding charting scale and selected neonatal outcome parameters. The experimental group received targeted nursing interventions, while the control group received routine care.

The results indicated that the mean post-test neonatal outcome score in the experimental group (16.7 ± 4.75) was significantly higher than both the mean pretest score in the same group (10.27 ± 4.31) and the mean post-test score in the control group (11.5 ± 4.08). The calculated t-value (4.52) exceeded the critical t-value (2.02) at the 0.05 level of significance, indicating a statistically significant difference. These findings suggest that the nursing interventions were effective in improving neonatal outcomes among postnatal mothers with breast complications.

Further, the study revealed a significant association between the pretest scores of neonatal outcomes and certain demographic variables. The calculated Chi-square values for age in years $(\chi^2 = 10.17)$, type of delivery $(\chi^2 = 30.47)$, education $(\chi^2 = 17.49)$, and occupation $(\chi^2 = 23.55)$ were greater than the critical value at the 0.05 level, indicating statistically significant associations. In contrast, no significant associations were observed for parity $(\chi^2 = 3.54)$, weeks of gestation $(\chi^2 = 1.043)$, place of living $(\chi^2 = 5.143)$, and family support system $(\chi^2 = 0.855)$, as their values were below the critical threshold. Overall, the findings strongly support the effectiveness of structured nursing interventions in improving neonatal outcomes among postnatal mothers with breast complications. The study highlights the need for targeted nursing strategies that include education, support, and clinical interventions to address breastfeeding-related issues, thereby promoting better neonatal health outcomes.

Key words: Nursing interventions; breast complications; neonatal outcomes.

INTRODUCTION

The postnatal period is a critical phase for both mothers and newborns, involving significant physiological, emotional, and social adjustments. Effective postnatal care plays a vital role in ensuring the health and well-being of both. Among the challenges faced during this period, breastfeeding complications are highly prevalent and can negatively impact neonatal outcomes if not promptly addressed. Common breast complications such as engorgement, cracked nipples, mastitis, and insufficient milk production can impair the effectiveness of breastfeeding, thereby reducing neonatal nutrition, immunity, and growth.

Breastfeeding is universally recognized as the optimal method for infant feeding, offering a multitude of short- and long-term benefits, including reduced infant mortality, enhanced immunity, and improved cognitive development. However, the success of breastfeeding is often hindered by maternal complications, particularly in the early postpartum days. These complications not only affect maternal comfort and emotional well-being but also influence important neonatal parameters such as weight gain, feeding adequacy, hydration status, and overall developmental progress.

In India, despite government initiatives promoting institutional deliveries and breastfeeding practices, gaps still exist in the quality of postnatal support, particularly in addressing lactation issues. Many mothers are discharged from hospitals without receiving adequate breastfeeding education or intervention for breast-related problems, increasing the risk of poor neonatal outcomes and early cessation of breastfeeding.

Nursing professionals play a central role in providing comprehensive postnatal care, especially in educating mothers, managing breast complications, and promoting effective breastfeeding techniques. Structured nursing interventions can offer targeted support, improve maternal comfort, and enhance neonatal health indicators. However, there is a lack of focused research examining the direct impact of such nursing interventions on specific neonatal outcome parameters in the context of maternal breast complications.

This study was conducted to evaluate the effectiveness of nursing interventions on selected neonatal outcomes among postnatal mothers with breast complications at a selected hospital in Kollam. By using a quasi-experimental pretest-post-test control group design and implementing evidence-based nursing interventions, the study aims to demonstrate measurable improvements in neonatal health outcomes. The findings are expected to contribute to clinical practice by reinforcing the importance of early, structured nursing care in postnatal wards and guiding the development of targeted breastfeeding support programs in healthcare settings.

Background of the Problem

Breastfeeding offers unparalleled health advantages to both mothers and infants, promoting optimal nutrition, enhanced immunity, and improved long-term outcomes such as cognitive development and protection against infections and chronic diseases. Despite its benefits, breastfeeding is often disrupted by maternal breast complications—engorgement, mastitis, cracked nipples, and delayed lactation onset—which can hinder effective lactation and lead to suboptimal neonatal outcomes.

A recent meta-analysis of randomized controlled trials (22 trials, n = 3,681) demonstrated that breastfeeding educational interventions significantly reduced breast engorgement (OR = 0.27 at 3 days postpartum) and breast pain, while also increasing exclusive breastfeeding rates. Additionally, randomized trials assessing physical therapies like massage or myofascial release have shown improved neonatal outcomes: one study demonstrated that pectoralis myofascial release massage increased infants' breast milk intake and reduced formula supplementation.

Other non-pharmaceutical approaches—such as ultrasound, acupuncture, warm/cold compresses, and cabbage leaf applications—have also been effective in alleviating engorgement and mastitis5. Meanwhile, interventions within hospital settings—such as early essential newborn care and kangaroo care—have been linked to higher breastfeeding initiation rates and reduced formula use.

However, while the effectiveness of these interventions is documented, few studies have concurrently measured targeted nursing care among mothers with breast complications and quantified effects on neonatal parameters such as weight gain, feeding adequacy, hydration, and overall neonatal well-being, especially in resource-variable settings like Kerala, India.

Addressing this gap, the present study employs Kolcaba's Comfort Theory to design and evaluate structured nursing interventions aimed at managing maternal breast complications and enhancing neonatal outcomes in a hospital in Kollam. The findings aim to inform best practices in postnatal care and reinforce the role of nursing-led interventions in improving maternal–infant dyad outcomes.

Need and Significance of the Study

Breast complications—such as engorgement, cracked nipples, mastitis, and delayed lactogenesis—are common in the early postnatal period, particularly among primiparous mothers and those undergoing caesarean section7. These conditions hinder effective breastfeeding, leading to reduced nutrition, delayed weight gain, and elevated risk of neonatal infection and dehydration. In resource-variable settings like Kerala, unnoticed or untreated lactation issues can negatively influence neonatal parameters—underscoring an urgent need for targeted interventions.

Nursing-led breastfeeding support—through prenatal education, postnatal guidance, and hands-on techniques—has been proven to increase maternal self-efficacy, exclusive breastfeeding rates, and neonatal feeding adequacy. In neonatal intensive care units, interventions such as kangaroo care, avoidance of bottles, and structured support are associated with stronger breastfeeding rates at discharge and improved infant growth, particularly among preterm or low birthweight infants.

Adequate nursing resources and favorable work environments enable consistent breastfeeding support. Conversely, missed care due to low staffing correlates with lower exclusive breastfeeding rates and poorer neonatal outcomes. This demonstrates the critical importance of structured, nurse-led postnatal care—especially where breast complications are prevalent.

Though research supports the benefits of breastfeeding support broadly, there is limited data examining the direct impact of nursing interventions on neonatal outcomes among mothers with existing breast complications. This study fills that gap by implementing and evaluating a structured nursing intervention based on Kolcaba's Comfort Theory, directly addressing maternal breast complications and measuring their neonatal impact.

Findings can inform hospital policies and professional standards for postnatal care. Integrating evidence-based nursing protocols into routine care may enhance breastfeeding success, reduce neonatal morbidity, and ultimately contribute to public health improvements in maternal–infant health.

Statement of the problem

"An Evaluation of Nursing Interventions on Selected Neonatal Outcomes Among Postnatal Mothers with Breast Complications at Selected Hospital in Kollam."

Objectives of the study

The objectives of the study were:

- To evaluate the effectiveness of nursing interventions on selected neonatal outcomes among postnatal mothers with breast complications at Selected Hospital in Kollam.
- To find the association between mean pretest scores of selected neonatal outcomes among postnatal mothers with breast complications and selected demographic variables such as age, parity, weeks of gestation, type of delivery, place of living, education, occupation and family support system.

Operational definitions

Evaluation – A systematic process of determining the merit, worth, and value of things, and taking action based on such appraisals.
In this study evaluation refers to identifying the benefits of nursing interventions among postnatal mothers with breast complications.

Effectiveness: Effectiveness is defined as the extent to which a treatment achieves its intended purpose.
In this study effectiveness refers to progression of neonatal outcomes by providing nursing interventions among postnatal mothers with breast complications.

Nursing Interventions: Nursing interventions is defined as an action for which nurses are responsible that is intended to benefit a patient.
In this study nursing interventions refers to direct care given by the nurses to the postnatal mothers such as assisting in breast-feeding, breast-feeding positions, warm and cold application, syringe method, oil massage and use of nipple shield for cracked nipple.

Neonatal outcomes: Neonatal outcomes are defined as the measurement that helps to diagnose the health status of the neonate.14
In this study selected neonatal outcomes refers to measuring the weight of the baby, skin colour, skin turgor, cry, anterior fontanels, number of times passing urine and stools, reflexes such as rooting, sucking/ swallowing, tonic neck, grasp, stepping, Moro.

Breast complications: defined as the secondary diseases that occurs in the breast due to the aggravation of an existing one.15
In this study breast complications refers to breast engorgement, cracked nipple, inverted nipple and flat nipple.

Hypotheses

(All the hypotheses were tested at 0.05 level of significance.)

H1: There is a significant difference between the pretest and post-test scores of neonatal outcomes among postnatal mothers in the experimental group.

H2: There is a significant difference between the mean post- test scores of selected neonatal outcomes among postnatal mothers in experimental and control group.

H3: There is a significant association between mean pretest scores of selected neonatal outcomes among postnatal mothers with breast complications and selected demographic variables such as age, parity, weeks of gestation, type of delivery, place of residence, education, occupation and family support system.

2. MATERIALS AND METHODS

Research Approach: A research approach is the plan to investigate phenomenon under study in a structured or unstructured or a combination or two methods.
In view of nature of the problem selected and objectives to be accomplished, a quantitative approach was adopted in this study to assess the effectiveness of nursing interventions on selected neonatal outcome parameters among mothers with breast complications.
Quantitative research is the formal, objective, systematic process used to describe variables, test relationship between them and examine cause-and-effect interactions among variables.

Research Design: Research design is the researcher's overall plan for answering the research questions or testing the research hypothesis.

The research design selected for the study was quasi experimental pretest post-test control group design. Through the research design, the researcher was able to assess the effectiveness of nursing interventions on selected neonatal outcomes among postnatal mothers with breast complications.

E	O_1	X	O_2
C	O_1	-	O_2

E - Experimental group
O_1 - Pretest of experimental and control group
O_2 - Posttest of experimental and control group
X –Nursing interventions
C - Control group

Variables: Variables are the qualities, properties, or characteristics of the persons, things or situations that change or vary and are manipulated or measured in the research.[21]Dependent variables, independent variable and demographic variables were the variables considered in this study.

Independent Variable: Independent variable is the stimulus or activity that is manipulated or varied by the researcher to create an effect on the dependent variable.
        The independent variable chosen for this study was nursing interventions.

Dependent Variable: Dependent variable is the outcome or response due to the effect of the independent variable, which researcher wants to predict or explain.
        The dependent variable chosen for this study was selected neonatal outcomes.

Demographic variables: The characteristics and attributes of the study subjects are considered as demographic variables.[16]
         In this study the demographic variable were age, parity, weeks of gestation, type of delivery, place of living, education, occupation and family support system.

Research setting: Setting is the location in which the research is conducted.
        The setting of the study was postnatal wards at Bishop Benziger Hospital, Kollam.

Population: Population is the entire set of individuals or objects having some common characteristics selected for a research study.
        In this study, the population comprised of postnatal mothers with breast complications who were admitted in the postnatal wards at Bishop Benziger hospital, Kollam.

Sample and Sampling technique: Sample is the part or subset of population selected to participate in research study.
        In this study, the sample consisted of 60 mothers who met sampling and inclusion criteria.
Sampling: is the process of selecting the sample from the target population to represent the entire population.
        In this study, purposive sampling was used.

Criteria for sample selection
        The following were the criteria for the selection of samples of the study.

Inclusion Criteria
  ➢ Postnatal mothers who are currently breastfeeding their newborns.
  ➢ Postnatal mothers who provide informed consent and are willing to participate in the study.
  ➢ Mothers admitted to the postnatal wards at Bishop Benziger Hospital, Kollam.
  ➢ Postnatal mothers experiencing breast complications (e.g., engorgement, nipple pain, cracked nipples).
  ➢ Mothers of neonates aged between birth and 4 days.

Exclusion Criteria
  ➢ Postnatal mothers who have experienced stillbirth.
  ➢ Mothers with high-risk postnatal conditions such as mastitis or clinically diagnosed breast infections.

Tool used for data collection
        A research tool is a device used to measure the concept of interest in a research project that a researcher uses to collect data.
The following tools were used in this study
  • Section A: Demographic Proforma.
  • Section B: LATCH breastfeeding charting scale.
  • Section C: Selected neonatal outcome parameters check list.

DESCRIPTION OF THE TOOL

Section A: Demographic Proforma

This section was designed to collect baseline demographic and obstetric information from the participants. It included variables such as age, parity, gestational age at delivery, place of residence, mode of delivery, level of education, occupation, and the availability of family support during the postnatal period.

Section B: LATCH Breastfeeding Charting Scale

The LATCH scale is a standardized tool used to assess the effectiveness of breastfeeding. It evaluates five critical aspects of breastfeeding, each scored on a scale of 0, 1, or 2:

- **L –** Latch: how well the infant latches onto the breast
- **A** – Audible swallowing: presence of swallowing sounds during feeding
- **T** – Type of nipple: condition or type of the mother's nipple
- **C** – Comfort: the mother's level of pain or comfort during breastfeeding
- **H** – Hold: the amount of assistance the mother requires to position and hold the baby

The total score ranges from 0 to 10, categorized as:

- Poor: 0–3
- Moderate: 4–7
- Good: 8–10

Section C: Selected Neonatal Outcomes Checklist

This checklist assessed 13 key neonatal health indicators, including: Weight of the baby, Skin colour, Skin turgor, Cry, Anterior fontanelle status, Number of times voiding urine, Number of times passing stool, rooting reflex, Sucking/swallowing reflex, Tonic neck reflex, grasping reflex, Stepping reflex and Moro reflex. Each parameter was scored on a three-point scale (0, 1, 2), yielding a total score ranging from 0 to 26. The scores were classified as follows:

- Poor Neonatal Outcome: 0–9
- Moderate Neonatal Outcome: 10–17
- Good Neonatal Outcome: 18–26

Content Validity

Validity refers to the extent to which an instrument accurately measures the concept it is intended to measure (Polit & Beck, 2021). To establish content validity, the research tool—along with the statement of the problem, objectives, hypotheses, operational definitions, and a content validation checklist—was submitted to a panel of nine experts. The panel included five nursing experts, One gynaecologist, One paediatrician, One Malayalam language expert and One English language expert.

For Section A (Demographic Proforma) and Section C (Selected Neonatal Outcomes Checklist), the majority of experts provided 100% agreement, with a few suggestions for minor modifications. These suggestions were incorporated to enhance clarity and accuracy.

Section B (LATCH Breastfeeding Charting Scale) received 100% agreement from all experts without any modifications needed, confirming strong content relevance and clarity.

Reliability of the Tool

Reliability refers to the consistency and dependability with which an instrument measures a variable (Polit & Beck, 2021). In this study, reliability was assessed using the inter-rater reliability method, which evaluates the level of agreement between two independent raters.

- The LATCH Breastfeeding Charting Scale demonstrated high reliability with a correlation coefficient of 0.97, indicating excellent consistency in scoring across different raters.
- The Selected Neonatal Outcome Parameters Checklist also showed strong reliability, with a correlation coefficient of 0.91, confirming it as a dependable tool for assessing neonatal outcomes.

These values reflect the robustness and precision of the instruments used in the study.

Data collection process

Data collection refers to the identification of subjects and precise, systematic gathering of information relevant to the research purpose or the specific objectives, questions or hypothesis of the study.

The study was conducted at Bishop Benziger Hospital, Kollam following formal approval from the concerned institutional authority. Written informed consent was obtained from both the hospital administration and the participating postnatal mothers. The data collection period extended from May 10, 2025, to May 31, 2025.

A purposive sampling technique was employed to select eligible participants based on the inclusion criteria. The purpose of the study was clearly explained to each participant, and informed written consent was obtained prior to data collection.

Initially, baseline demographic and obstetric data were gathered from all participants using a structured demographic proforma. A pretest assessment was then conducted for both the experimental and control groups using the LATCH Breastfeeding Charting Scale and the Selected Neonatal Outcomes Checklist.

On the same day, the experimental group received structured nursing interventions aimed at reducing breast complications. These interventions were provided and supervised by the researcher. Meanwhile, the control group received routine postnatal care as per hospital protocol.

The experimental group was monitored and guided daily for three consecutive days. On the fourth day, a post-test assessment was conducted for both groups using the same standardized tools. This assessment included evaluation of: Neonatal weight, Skin turgor and skin colour, Quality and pitch of cry, Fontanelle condition, Frequency of urination and defecation, Neonatal reflexes (rooting, sucking/swallowing, tonic neck, grasping, stepping, and Moro reflex). This structured process ensured consistency in intervention delivery and outcome assessment between the groups.

Data analysis Process

Data analysis refers to the method of organizing data in such a way that research questions can be answered and hypothesis can be tested.

The collected data were systematically entered into a master sheet and analysed using both descriptive and inferential statistical methods.

- Demographic variables of the participants were analyzed using frequency and percentage distributions to describe the baseline characteristics of the study population.
- Breastfeeding effectiveness, assessed using the adapted LATCH Breastfeeding Charting Scale in both the experimental and control groups, was analyzed using frequency and percentage to determine the prevalence and severity of breast complications.
- Selected neonatal outcomes in both experimental and control groups were also analyzed using frequency and percentage, providing a descriptive understanding of neonatal health status across both groups.
- To determine the effectiveness of nursing interventions on selected neonatal outcome parameters among mothers with breast complications:
  - Paired t-test was used to compare the pretest and post-test scores within the experimental group.
  - Unpaired t-test was used to compare the post-test scores between the experimental and control groups.
- The association between pretest scores of neonatal outcome parameters and selected demographic variables was assessed using the Chi-square test, to identify any significant relationships.

3. RESULT

Section I: Description of sample characteristics

This section deals with the percentage distribution of sample characteristics such as age, parity, weeks of gestation, place of residence, type of delivery, education, occupation, family support system.

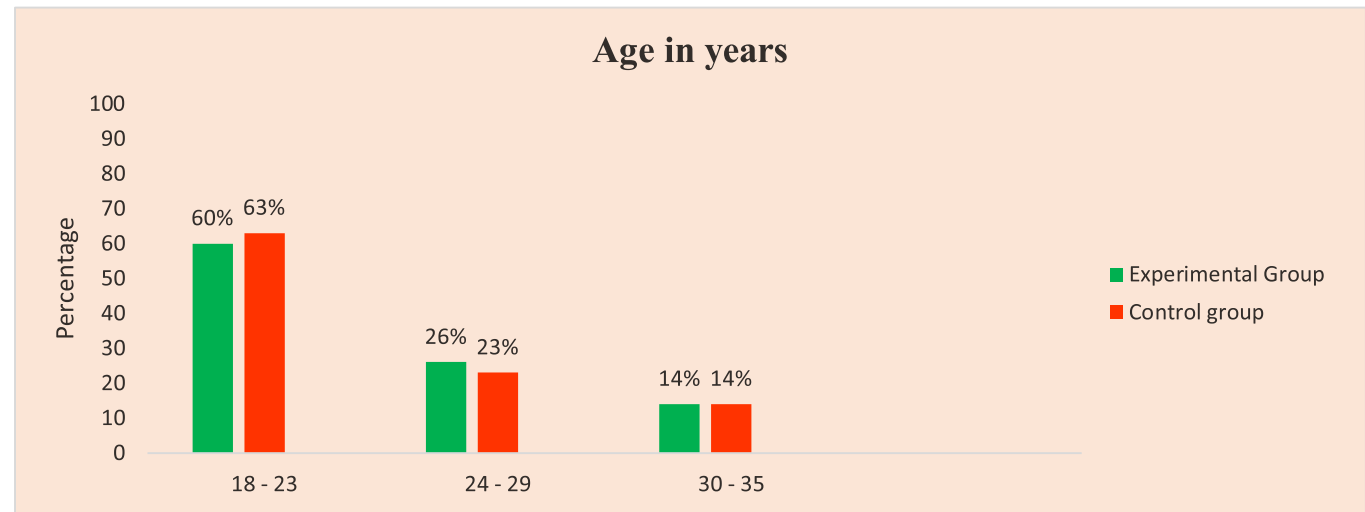**Graphical representation of demographical variables**

N=60

Figure 1: Percentage wise distribution of the sample according to age

The data presented in Figure 1 indicate that in the experimental group, 60% of the participants belonged to the 18–23 years age group, 26% were in the 24–29 years age group, and 14% were in the 30–35 years age group. In the control group, 63% of the participants were aged 18–23 years, 23% belonged to the 24–29 years group, and 14% were in the 30–35 years age group.
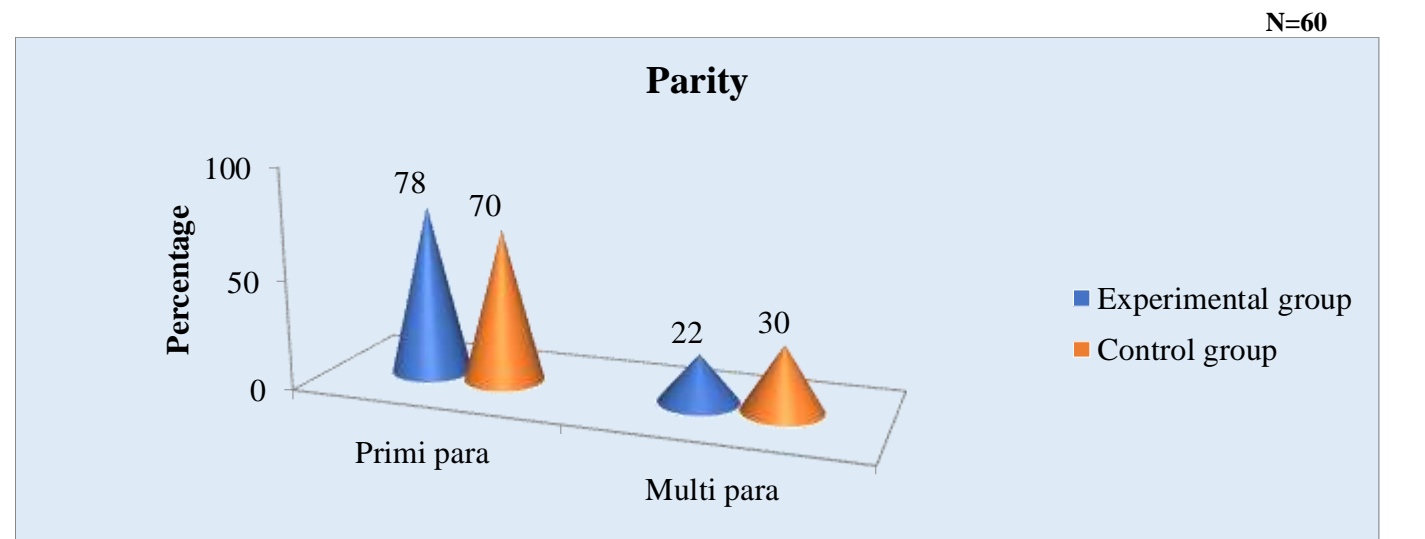
N=60

Figure 2: Percentage wise distribution of the sample according to parity

The data presented in Figure 2 show that in the experimental group, 78% of the participants were primiparous, while 22% were multiparous. In the control group, 70% were primiparous, and 30% were multiparous.
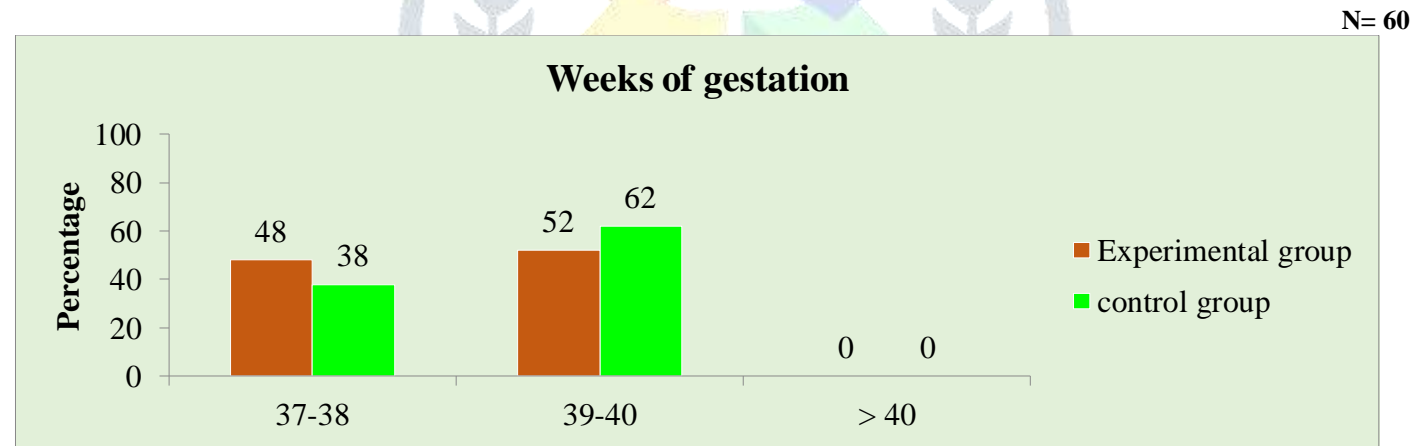
N= 60

Figure 3: Percentage wise distribution of the sample according to weeks of gestation

The data presented in Figure 3 show that in the experimental group, 48% of the participants had a gestational age of 37–38 weeks, while 52% had a gestational age of 39–40 weeks. In the control group, 38% of the participants had a gestational age of 37–38 weeks, and 62% had a gestational age of 39–40 weeks.
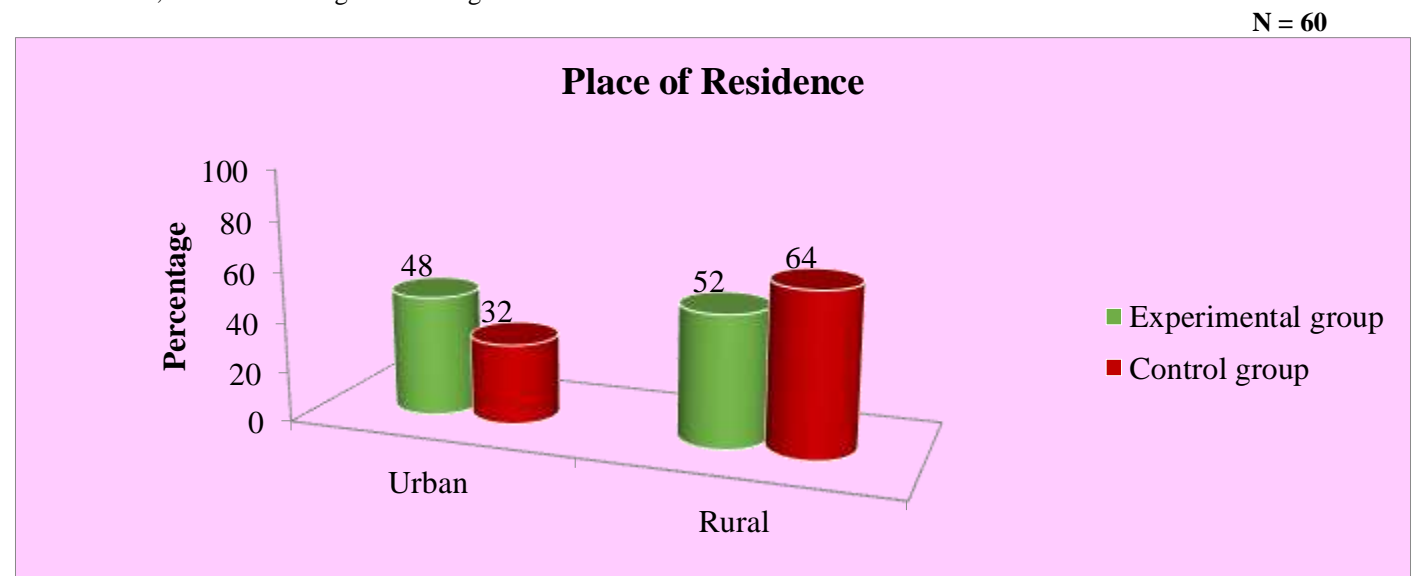
N = 60

Figure 4: Percentage wise distribution of the sample according to place of residence

The data presented in Figure 4 indicate that in the experimental group, 48% of the participants were from urban areas, while 52% were from rural areas. In the control group, 32% of the participants were from urban areas, and 64% were from rural areas.
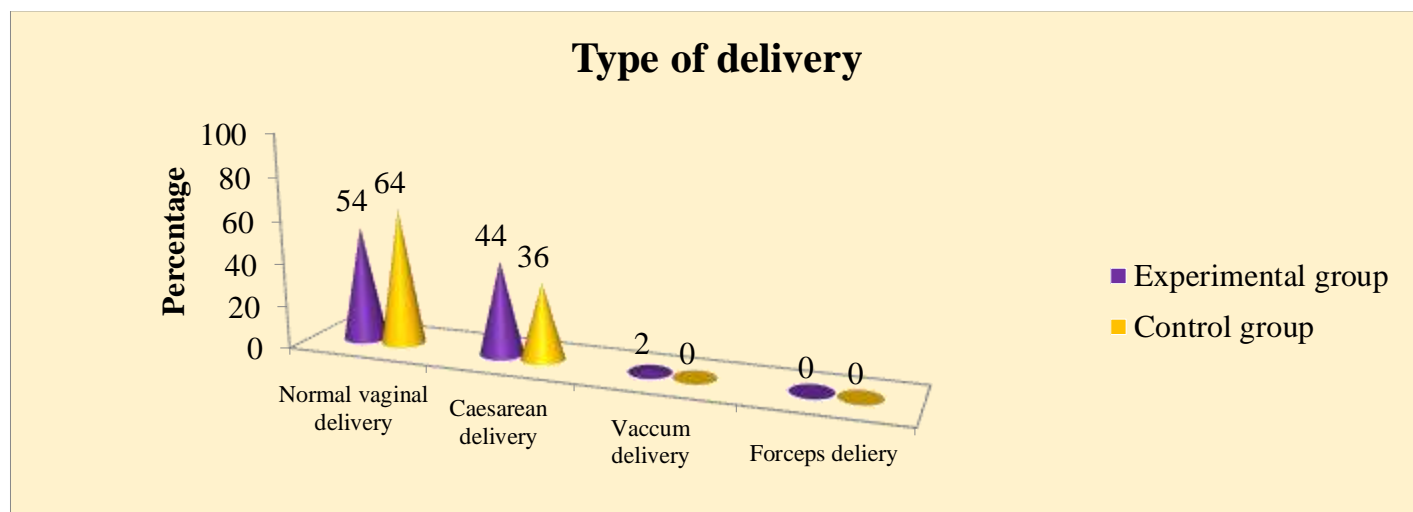
N = 60

Figure 5: Percentage wise distribution of the sample according to type of delivery

The data presented in Figure 5 show that in the experimental group, 54% of the participants had a normal vaginal delivery, 44% underwent a caesarean delivery, and 2% had a vacuum-assisted delivery. In the control group, 64% of the participants had a normal vaginal delivery, while 36% underwent a caesarean delivery.
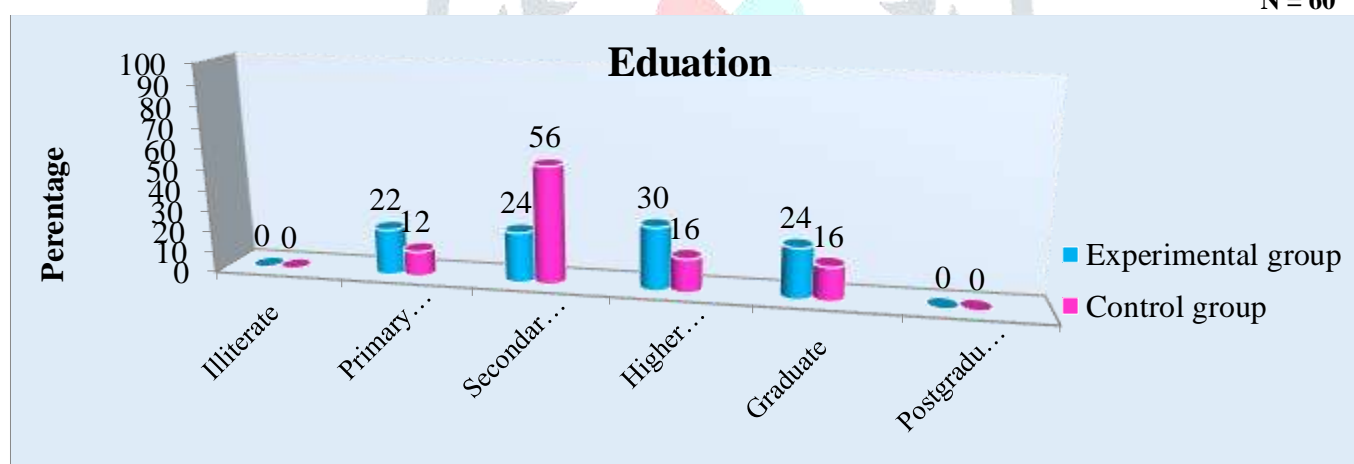
N = 60

Figure 6: Percentage wise distribution of the sample according to education

The data presented in Figure 6 show that in the experimental group, 22% of the participants had primary education, 24% had secondary education, 30% had completed higher secondary education, and 24% were graduates. In the control group, 12% of the participants had primary education, 56% had secondary education, 16% had higher secondary education, and 16% were graduates.
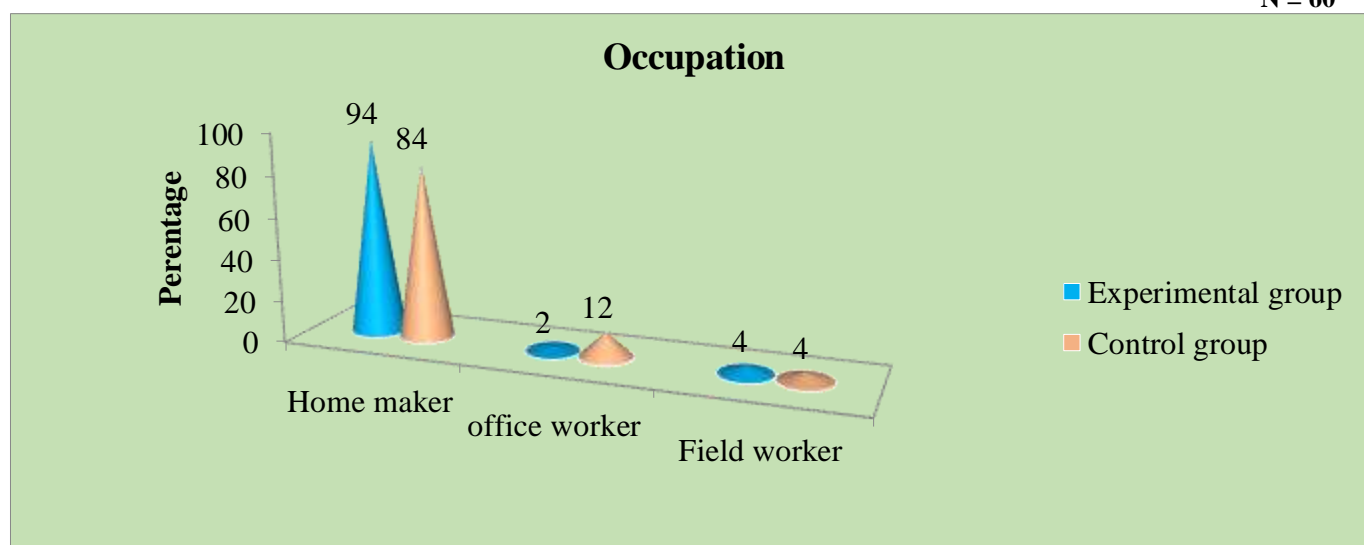
N = 60

Figure 7: Percentage wise distribution of the sample according to occupation

The data presented in Figure 7 show that in the experimental group, 94% of the participants were homemakers, 2% were office workers, and 4% were field workers. In the control group, 84% were homemakers, 12% were office workers, and 4% were field workers.
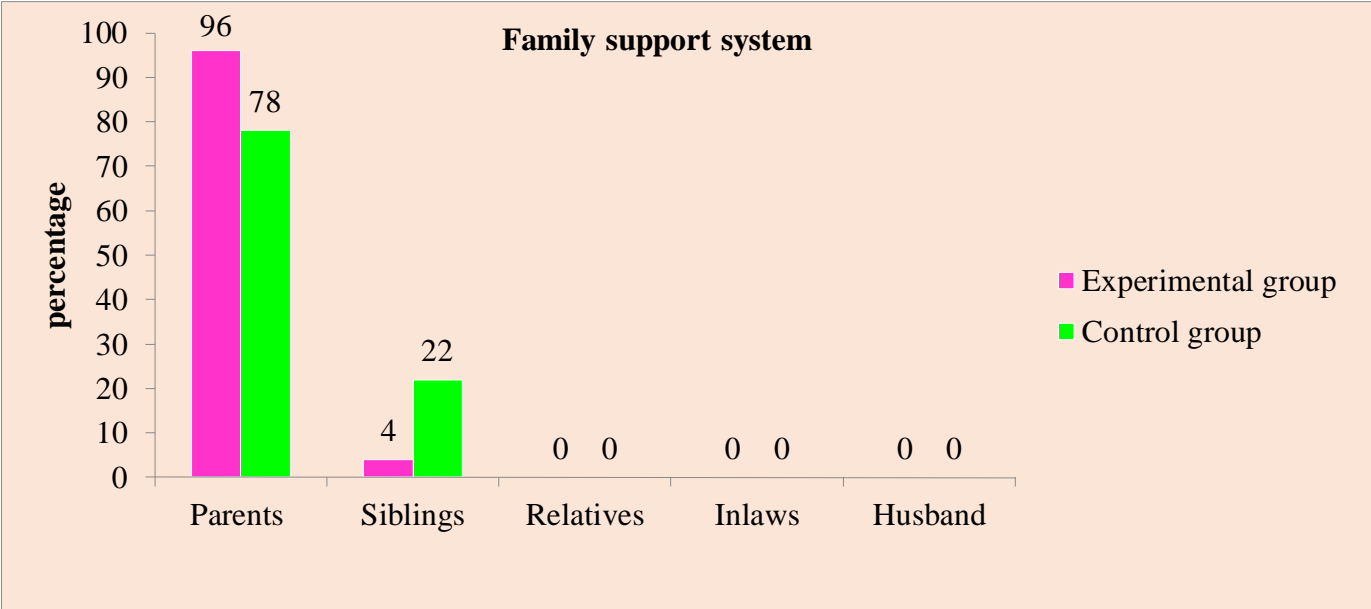
N = 60

Figure 8: Percentage wise distribution of the sample according to family support system

The data presented in Figure 8 show that in the experimental group, 96% of the participants received support from parents, while 4% received support from siblings. In the control group, 78% of the participants were supported by parents, and 22% received support from siblings.

Section II: Description of LATCH breast feeding charting scale among mothers with breast complication

The breast complications of postnatal mothers were assessed using the adapted LATCH Breastfeeding Charting Scale, which is a standardized three-point scale. The collected data were tabulated and analyzed using frequency and percentage distributions. The LATCH scale evaluates five key components of breastfeeding, each scored from 0 to 2, with a total possible score ranging from 0 to 10. For interpretation, the scores were categorized as follows:

- Poor: 0–3
- Moderate: 4–7
- Good: 8–10

This categorization helped in identifying the severity of breastfeeding difficulties and monitoring improvement following nursing interventions.

Table 1: Frequency and percentage of LATCH pretest scores among postnatal mothers with breast complications in experimental and control group.

N = 60

LATCH Score Category	Score Range	Experimental Group n = 30	Control Group n = 30
Poor	0 – 3	18 (60%)	22 (73%)
Moderate	4 – 7	12 (40%)	8 (27%)
Good	8 – 10	0	0
Total	—	30 (100%)	30 (100%)

Table 1 presents the distribution of LATCH pretest scores among postnatal mothers with breast complications in both the experimental and control groups. In the experimental group, 60% of the mothers had a poor LATCH score, while 40% had a moderate score. In the control group, 73% of the mothers had a poor score, and 27% had a moderate score. None of the mothers in either group achieved a good LATCH score during the pretest.

Section III: Description of selected neonatal outcomes of postnatal mothers with breast complications.

This section deals with the neonatal outcome parameters of samples in the experimental and control group. The data were tabulated and analyzed in terms of frequency and percentage. Selected neonatal outcome parameters is analysed on a three-point scale. The score range was categorized as poor neonatal outcome (0-9), moderate neonatal outcome (10-17) and good neonatal outcome (18-26).

Table 2: Frequency and percentage of pretest scores of neonatal outcomes among postnatal mothers with breast complications in experimental and control group.

Neonatal outcomes	Score Range	Experimental Group *n = 30*	Control Group *n = 30*
Poor	0 – 9	16 (53%)	14 (46%)
Moderate	10 – 17	13 (43%)	14 (46%)
Good	18 – 26	1 (4%)	2 (8%)
Total	—	30 (100%)	30 (100%)

Table 2 presents the frequency and percentage distribution of pretest scores related to neonatal outcomes among postnatal mothers with breast complications in both the experimental and control groups. In the experimental group, 53% of neonates had poor outcome scores, 43% had moderate outcome scores, and 4% had good outcome scores. In the control group, 46% of neonates had poor outcomes, another 46% had moderate outcomes, and 8% had good outcome scores.

Section IV: Effectiveness of nursing interventions on selected neonatal outcomes among postnatal mothers with breast complications.

This section describes the effect of nursing interventions on selected neonatal outcomes among postnatal mothers with breast complications. Inferential statistics was used to determine effect of nursing interventions on selected neonatal outcome parameters among mothers with breast complications. Paired 't' test and unpaired 't' test were used to determine effect of nursing interventions on selected neonatal outcomes among postnatal mothers with breast complications. To test the statistically significant difference between pretest neonatal outcomes scores of experimental and control groups unpaired' test was computed.

Table 3: Mean, mean difference, standard deviation and unpaired 't' value of pretest neonatal outcomes scores in experimental and control group

N = 60

Group	Mean	Mean deference	SD	t value	Significance
Experimental group	10.27	0.60	4.31	0.53	NS
Control group	10.87		4.5		

t (58) = 2.02, Not significant at 0.05 level of significance

Table 3 presents the mean, mean deference, standard deviation, and unpaired t-value, for the pretest neonatal outcome scores in the experimental and control groups. The calculated t-value (0.53) is less than the critical table value (2.02) at the 0.05 level of significance, and the p-value (0.60) is greater than 0.05. This indicates that there is no statistically significant difference between the pretest neonatal outcome scores of the experimental and control groups. Therefore, the homogeneity between the two groups at baseline was established.

Test of Significant Difference Between Pretest and Post-test Scores of Neonatal Outcomes Among Postnatal Mothers in the Experimental Group

To assess the effectiveness of the intervention, a paired t-test was conducted to determine the significant difference between the pretest and post-test scores of neonatal outcome parameters in the experimental group. The following research hypothesis was formulated:

Research Hypothesis (H₁): There is a significant difference between the pretest and post-test scores of neonatal outcomes among postnatal mothers in the experimental group.

Table 4: Mean, mean difference, standard deviation and paired 't' value of pretest and post-test neonatal outcomes scores in experimental group

(n = 30)

Test	Mean	Mean deference	SD	t value	Significance
Pretest	10.27	6.10	4.31	5.21	S
Post-test	16.37		4.75.		

t (29) = 2.05, *Significant at 0.05 level of significance

Table 4 presents the mean, mean difference, standard deviation, and paired t-value of the pretest and post-test neonatal outcome scores in the experimental group. The calculated t-value (5.21) is greater than the critical table value (2.05) at the 0.05 level of significance, and the p-value is less than 0.001, indicating a statistically significant difference between the pretest and post-test scores. Therefore, the research hypothesis (H₁) was accepted, suggesting that the intervention had a significant positive impact on neonatal outcomes in the experimental group.

Test of Significant Difference Between Post-test Scores of Neonatal Outcomes Among Postnatal Mothers in the Experimental and Control Groups

To determine whether there was a statistically significant difference in the post-test scores of neonatal outcome parameters between the experimental and control groups, an unpaired t-test was conducted. The following research hypothesis was formulated:

Research Hypothesis (H_2): There is a significant difference between the post-test scores of neonatal outcome parameters among postnatal mothers in the experimental and control groups.

Table 5: Mean, mean difference, standard deviation and unpaired 't' value of post-test score of neonatal outcome parameters among mothers in experimental and control group

N = 60

Group	Mean	Mean deference	SD	t value	Significance
Experimental group	16.37	4.87	4.31	4.52	S
Control group	11.5		4.04		

t (58) = 2.02, *Significant at 0.05 level of significance

Table 5 presents the mean, mean difference, standard deviation, and unpaired t-value of the post-test neonatal outcome parameters in the experimental and control groups. The calculated t-value (4.52) exceeds the critical table value (2.02) at the 0.05 level of significance, indicating a statistically significant difference between the post-test scores of neonatal outcomes in the two groups. Therefore, the research hypothesis (H_2) was accepted, suggesting that the intervention had a significant positive effect on neonatal outcomes in the experimental group compared to the control group.

Section V: Association Between Pretest Scores of Selected Neonatal Outcome Parameters and Selected Demographic Variables

To assess the association between pretest scores of selected neonatal outcome parameters among mothers with breast complications and their demographic variables, a Chi-square test was performed. The demographic variables considered for analysis included: age, parity, weeks of gestation, type of delivery, place of living, education, occupation, and family support system.

The following research hypothesis was formulated:

H_3: There will be a significant association between the pretest scores of selected neonatal outcome parameters and selected demographic variables such as age, parity, weeks of gestation, type of delivery, place of living, education, occupation, and family support system.

Table 6: Association between pretest scores of selected neonatal outcomes and selected demographic variables such as age, parity, weeks of gestation, type of delivery, and place of living, education, occupation and family support system.

N = 60

Demographic variables	Neonatal outcome			df	Chi square	Table value	Significance
	Poor	Moderate	Good				
Age in years							
18-23 years	15	21	1				
24-29 years	12	2	1	4	10.17	9.488	S
30-35 years	3	4	1				
Parity							
Primi para	21	22	1				
Multi para	9	5	2	2	3.54	5.99	NS
Weeks of gestation							

Demographic variables	Neonatal outcome			df	Chi square	Table value	Significance
	Poor	Moderate	Good				
37-38wks	13	10	2	2	1.043	5.99	NS
39-40 wks	17	17	1				
Place of residence							
Urban	10	12	3	2	5.143	5.99	NS
Rural	20	15	0				
Type of delivery							
Normal vaginal delivery	17	12	1				
Caesarean delivery	13	15	0	4	30.47	9.488	S
Forceps delivery	0	0	1				
Education							
Primary education	7	2	0				
Secondary education	17	7	0				
Higher secondary education	4	10	1	6	17.94	12.592	S
Graduate	2	8	2				
Occupation							
Home maker	28	24	0				
Office worker	1	2	1	4	23.55	9.488	S
Field worker	1	1	2				
Family support system							
Parent	26	23	2	2	0.855	5.99	NS
Siblings	4	4	1				

0.05 level of significance *S-Significant   NS-Non-significant

The data presented in Table 6 indicate that the calculated Chi-square values for variables such as age in years, type of delivery, education, and occupation were greater than the corresponding table value at the 0.05 level of significance. This implies a significant association between the pretest scores of selected neonatal outcome parameters and these demographic variables. Conversely, the calculated Chi-square values for parity, weeks of gestation, place of living, and family support system were found to be less than the table value at the 0.05 level of significance, indicating no significant association between these variables and the pretest scores of neonatal outcomes. Therefore, the research hypothesis (H_3)—stating that there would be a significant association between the pretest scores of selected neonatal outcome parameters and selected demographic variables—was partially accepted, as significance was observed only in some variables.

4. Discussion

The present study was conducted to assess the effectiveness of nursing interventions on selected neonatal outcomes among postnatal mothers experiencing breast complications. To achieve the objectives of the study, a quasi-experimental pretest-post-test control group design was employed. A total of 60 postnatal mothers were selected through purposive sampling, with 30 mothers assigned to the experimental group and 30 to the control group.

The results indicated that the mean post-test neonatal outcome score in the experimental group (16.7 ± 4.75) was significantly higher than both the mean pretest score in the same group (10.27 ± 4.31) and the mean post-test score in the control group (11.5 ± 4.08). The calculated t-value (4.52) exceeded the critical t-value (2.02) at the 0.05 level of significance, indicating a statistically significant difference. These findings suggest that the nursing interventions were effective in improving neonatal outcomes among postnatal mothers with breast complications.

Further, the study revealed a significant association between the pretest scores of neonatal outcomes and certain demographic variables. The calculated Chi-square values for age in years ($\chi^2 = 10.17$), type of delivery ($\chi^2 = 30.47$), education ($\chi^2 = 17.49$), and occupation ($\chi^2 = 23.55$) were greater than the critical value at the 0.05 level, indicating statistically significant associations. In contrast, no significant associations were observed for parity ($\chi^2 = 3.54$), weeks of gestation ($\chi^2 = 1.043$), place of living ($\chi^2 = 5.143$), and family support system ($\chi^2 = 0.855$), as their values were below the critical threshold.

These findings are supported by a systematic review conducted in Turkey, which aimed to identify breastfeeding problems encountered during the postpartum period and evaluate the effectiveness of interventions addressing these issues. The review included 6736 parents and 592 infants. The most commonly reported problems included general breastfeeding difficulties (24.5%), concerns about milk insufficiency and infant satisfaction (15.7%), and lack of breastfeeding knowledge and support (17.8%). Other reported issues were flat or inverted nipples (7.7%), pain or sensitivity (3.9%), breast engorgement (10.8%), redness (28.8%), nipple cracks or bleeding (26.1%), and mastitis (5.6%). The review further concluded that prenatal education, counselling, follow-up, and proactive lactation management, including the use of moist heat applications, breast milk or olive oil, breast shields, and alternative feeding methods (such as containers or pacifiers), were effective strategies in managing breastfeeding complications. These findings reinforce the need for comprehensive prenatal and postnatal support services to reduce breastfeeding difficulties and enhance neonatal outcomes.

5. Conclusion

The present study was undertaken to evaluate the effectiveness of nursing interventions on selected neonatal outcomes among postnatal mothers with breast complications. The study adopted a quasi-experimental pretest-post-test control group design, with purposive sampling of 60 postnatal mothers—30 each in the experimental and control groups.

The baseline data showed that the majority of mothers in both groups had poor LATCH scores and that neonatal outcome scores were comparable between groups, establishing homogeneity at baseline (p > 0.05). Specifically, no statistically significant difference was found in the pretest neonatal outcome scores between the experimental and control groups, confirming that both groups were similar before the intervention.

Following the nursing intervention, the experimental group showed significant improvement in neonatal outcome scores, as evidenced by the increase in mean post-test scores and a highly significant t-value (p < 0.001). In contrast, the control group, which received routine care, did not show comparable improvement. The post-test comparison between the experimental and control groups further supported the effectiveness of the intervention, with a statistically significant difference in neonatal outcomes (t = 4.52, p < 0.05).

The Chi-square analysis demonstrated a significant association between pretest neonatal outcome scores and selected demographic variables such as age, type of delivery, education, and occupation, while no significant association was found with parity, gestational age, place of living, or family support system. This indicates that certain demographic factors may influence neonatal outcomes at baseline, necessitating individualized care approaches.

Overall, the findings strongly support the effectiveness of structured nursing interventions in improving neonatal outcomes among postnatal mothers with breast complications. The study highlights the need for targeted nursing strategies that include education, support, and clinical interventions to address breastfeeding-related issues, thereby promoting better neonatal health outcomes.

6. Limitations and Recommendations

The study is limited to small sample size and confined to single setting. The study can be carried out on large samples and at different settings.

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7. Reference

1. Choudhury, R. H., et al. (2016). Determinants of maternal satisfaction in postnatal care: A review of the literature. *Journal of Health Research*, 30(2), 83-92.

2. Creswell, J. W., Klassen, A. C., Plano Clark, V. L., & Smith, K. C. (2017). Best practices for mixed methods research in the health sciences. *Office of Behavioral and Social Sciences Research (OBSSR)*.

3. Dasgupta, A., Sarkar, K., & Sinha, D. (2020). Maternal satisfaction on quality of care during delivery and its determinants: Evidence from a cross-sectional study. *BMC Pregnancy and Childbirth*, 20(1), 1-8.

4. Gupta, R., Sharma, N., & Jain, A. (2021). Role of digital technology in enhancing maternal and child health: A review. *International Journal of Medical Informatics*, 153, 104512.

5. Kumar, R., & Singh, A. (2020). Barriers to utilization of postnatal care among rural women in India. *International Journal of Reproductive Medicine*, 2020.

6. Smith, L. J., & Brown, M. A. (2018). Structured postnatal care: An integrative review of the literature. *Midwifery*, 58, 48-55.

7. Thomas, R., Nair, P. M., & Joseph, A. (2019). Maternal satisfaction in public and private hospitals in Kerala. *Indian Journal of Public Health*, 63(3), 207-213.

8. World Health Organization. (2014). *WHO recommendations on postnatal care of the mother and newborn*. Geneva: WHO Press.

9. Shu J. New mothers guide to breastfeeding. Am AcadPediatr. 2016 [Cited 2019 Nov 14]; 12(5) 36. Available from https://www.healthychildren.org/English/ages-stages/baby/breastfeeding/Pages/Benefits-of-Breastfeeding-for-Mom.aspx.

10. Spencer J. Patient education common breastfeeding problems beyond the basis. AJOGAH. 2019 [Cited 2019 Oct 10]; 10(8) 28. Available from https://www.uptodate.com/contents/common-breastfeeding-problems-beyond-the-basics.

11. Dieterich CM, Felice J P, O'Sullivan E, Rasmussen K M. Breastfeeding and health outcomes for the mother-infant dyad. Pediatr Clin. 2013; 60(1): 31–48.

12. Nobel W. Breastfeeding. Geneva, Switzerland: WHO Publication; 2016.

13. Raman AV. Maternity nursing family newborn and women's healthcare. 19th ed. New Delhi: Wolters Kluwer Publications; 2014.

14. Wayne D. Breast feeding [Master's thesis]. Evanston: North Shore University Health Publications; 2014.

15. Miller K. Encyclopedia and dictionary of medicine nursing and allied health. 7th ed. London: Elsevier Publications; 2003 p.125.

16. Sharma KS. Nursing research and statistics. 2nd ed. New Delhi: Elsevier Publishers; 2014.