



Effectiveness of a Structured Health Education Programme on Knowledge and Practices Regarding Newborn Care and Danger Signs among Nursing Students of a Selected Nursing College of Rajasthan: A Quasi-Experimental Study

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Abstract

Background: Newborns are particularly vulnerable to health problems during the neonatal period. Adequate knowledge regarding essential newborn care and recognition of danger signs is important for nursing students because they are future healthcare professionals who may provide direct care and health education to mothers and families. Structured educational interventions may strengthen their knowledge and practical skills related to newborn care.

Methodology: A quantitative quasi-experimental pre-test and post-test control group design was adopted. A sample of 100 nursing students was selected using a purposive sampling technique and equally divided into experimental and control groups, with 50 students in each group. Data were collected using a structured knowledge questionnaire and a practice checklist regarding newborn care and danger signs. The experimental group received a structured health education programme, whereas the control group received routine academic instruction.

Results: The mean knowledge score of the experimental group increased from 14.16 ± 3.21 in the pre-test to 25.12 ± 2.48 in the post-test. The mean practice score increased from 11.38 ± 2.63 to 17.56 ± 1.74 . The improvement in both knowledge and practice scores was statistically significant at $p < 0.001$. The control group showed comparatively smaller improvement.

Conclusion: The structured health education programme was effective in improving knowledge and practices regarding newborn care and danger signs among nursing students.

Keywords: Newborn Care, Danger Signs, Nursing Students, Health Education, Neonatal Care, Nursing Education, Quasi-Experimental Study.

INTRODUCTION

The neonatal period is one of the most critical stages of human life. Newborns are particularly vulnerable to infections, feeding difficulties, hypothermia, respiratory problems and other complications. Appropriate newborn care and timely recognition of danger signs are therefore essential components of maternal and child healthcare.

Nurses have an important role in providing newborn care, identifying complications and educating mothers and families regarding appropriate newborn-care practices. Nursing students receive theoretical and clinical education related to maternal and child health and are expected to develop adequate knowledge and practical skills before entering professional practice.

Essential newborn care includes maintaining warmth, appropriate feeding, hygienic care, cord care, infection prevention, immunization and observation for signs of illness. WHO recommendations emphasize evidence-based care for mothers and newborns during the antenatal, childbirth and postnatal periods.¹

Breastfeeding is another important component of

newborn health. Appropriate counselling and support can help mothers initiate and continue breastfeeding successfully. WHO recommends exclusive breastfeeding for the first six months of life and continued breastfeeding along with appropriate complementary foods thereafter.²

Recognition of newborn danger signs is particularly important because delays in identifying serious illness may result in delayed treatment. Nursing students therefore need adequate knowledge about signs such as difficulty in breathing, poor feeding, convulsions, abnormal temperature, lethargy and other clinical manifestations requiring immediate assessment.³

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Although newborn care is included in nursing education, differences may exist between theoretical knowledge and practical application. Structured educational programmes using systematic teaching, demonstrations and practice opportunities may help improve students' understanding and confidence.⁴

Therefore, the present study was undertaken to evaluate the effectiveness of a structured health education programme on knowledge and practices regarding newborn care and danger signs among nursing students of a selected nursing college of Rajasthan.⁵

Newborn health is an important component of nursing education because nurses are frequently involved in newborn assessment, routine care, counselling and early identification of complications.⁶

Nursing students must possess adequate knowledge about essential newborn care before undertaking independent professional responsibilities. However, classroom teaching alone may not always provide sufficient opportunity to integrate theoretical concepts with practical application.^{7,8}

The present study was therefore planned to determine whether a structured health education programme could improve knowledge and practices regarding newborn care and danger signs among nursing students.

OBJECTIVES

1. To assess the pre-test level of knowledge regarding newborn care and danger signs among nursing students in the experimental and control groups.
2. To assess the pre-test level of practices regarding newborn care and danger signs among nursing students.
3. To assess the post-test level of knowledge among nursing students after the structured health education programme.
4. To assess the post-test level of practices among nursing students after the structured health education programme.
5. To determine the effectiveness of the structured health education programme on knowledge regarding newborn care and danger signs.
6. To determine the effectiveness of the structured health education programme on practices regarding newborn care and danger signs.
7. To determine the association between pre-test knowledge scores and selected demographic variables.

HYPOTHESES

H₁: There will be a significant difference between pre-test and post-test knowledge scores among nursing students in the experimental group.

H₂: There will be a significant difference between pre-test and post-test practice scores among nursing students in the experimental group.

H₃: There will be a significant difference between post-test knowledge scores of nursing students in the experimental and control groups.

H₄: There will be a significant difference between post-test practice scores of nursing students in the experimental and control groups.

H₅: There will be a significant association between pre-test knowledge scores and selected demographic variables among

nursing students.

ASSUMPTIONS

1. Nursing students may have varying levels of knowledge regarding newborn care.
2. Structured health education may improve knowledge and practice.
3. Nursing students are capable of applying acquired knowledge during simulated or practical situations.

DELIMITATIONS

The study was delimited to:

- 100 nursing students.
- One selected nursing college of Rajasthan.
- Students available during the period of data collection.
- Knowledge and practices related specifically to newborn care and danger signs.

METHODOLOGY

Research Approach

A **quantitative research approach** was used.

Research Design

A **quasi-experimental pre-test and post-test control group design** was adopted.

Design Representation

Experimental Group:

Pre-test → Structured Health Education Programme → Post-test

Control Group:

Pre-test → Routine Academic Instruction → Post-test

Research Setting

The study was conducted among nursing students of a selected nursing college in Rajasthan.

Population

The target population consisted of nursing students studying in the selected nursing college.

Sample Size

The total sample consisted of **100 nursing students**.

Group	Sample
Experimental Group	50
Control Group	50
Total	100

Sampling Technique

Purposive sampling technique was used for selection of participants.

INCLUSION CRITERIA

Nursing students who:

1. Were enrolled in the selected nursing college.
2. Were available during the period of data collection.
3. Were willing to participate.

4. Could understand Hindi or English.
5. Had not recently participated in an identical structured newborn-care training programme.

EXCLUSION CRITERIA

Students who:

1. Were absent during either pre-test or post-test.
2. Had already completed specialized newborn-care training immediately before the intervention.
3. Were unwilling to participate.

VARIABLES

Independent Variable: Structured health education programme.

Dependent Variables: Knowledge and practices regarding newborn care and danger signs.

Demographic Variables: Age, gender, year of study, previous clinical exposure, previous newborn-care

STRUCTURED HEALTH EDUCATION PROGRAMME

The educational programme was delivered to the experimental group through:

- Lecture
- Interactive discussion
- Demonstration
- Question-answer session
- Teaching aids
- Practical examples

DATA COLLECTION PROCEDURE

Permission was obtained from the concerned authorities of the

training, previous source of information and academic background.

TOOLS FOR DATA COLLECTION

Section A: Demographic Information

Section B: Structured Knowledge Questionnaire

A 30-item structured questionnaire was developed to assess knowledge regarding:

SECTION C: PRACTICE CHECKLIST

A 20-item structured checklist was used to assess practices related to newborn care.

Scoring

Correct practice = 1

Incorrect practice = 0

Maximum score = 20

Score	Practice Level
0–7	Poor
8–14	Moderate
15–20	Good

selected nursing college. The purpose of the study was explained to the participants and informed consent was obtained.

A pre-test was conducted for both experimental and control groups. The structured health education programme was subsequently administered to the experimental group. The control group continued with routine academic instruction.

After the intervention, a post-test was conducted using the same knowledge questionnaire and practice checklist.

RESULTS

The findings of the study are presented below to assess the effectiveness of the structured health education programme on knowledge and practices regarding newborn care and danger signs among nursing students.

Demographic Variable	Experimental n=50	Control n=50	Total n=100
Age			
18–20 years	28	27	55
21–23 years	19	20	39
–	3	3	6
Gender			
Male	9	8	17
Female	41	42	83
Year of Study			
1st Year	15	16	31
2nd Year	17	16	33
3rd Year	18	18	36
Previous Newborn-Care Training			
Yes	16	15	31
No	34	35	69
Previous Source of Information			
Classroom teaching	24	23	47
Clinical experience	14	16	30
Internet/social media	7	6	13
Other sources	5	5	10

Table 2. Comparison of Pre-test Knowledge Scores between Experimental and Control Groups (N=100)

Group	Mean	SD	Mean %
Experimental (n=50)	14.16	3.21	47.20
Control (n=50)	14.42	3.08	48.07

The pre-test mean knowledge scores were comparable between the experimental and control groups.

Table 3. Comparison of Pre-test and Post-test Knowledge Scores in Experimental Group

Test	Mean	SD	Mean Difference	t value	p value
Pre-test	14.16	3.21	10.96	22.71	<0.001
Post-test	25.12	2.48			

The mean knowledge score increased from 14.16 ± 3.21 in the pre-test to 25.12 ± 2.48 in the post-test. The difference was statistically significant ($p < 0.001$).

Table 4. Comparison of Pre-test and Post-test Knowledge Scores in Control Group

Test	Mean	SD	Mean Difference	t value	p value
Pre-test	14.42	3.08	1.36	3.18	0.002
Post-test	15.78	3.11			

The control group showed only a small improvement in knowledge scores.

Table 5. Comparison of Pre-test and Post-test Practice Scores in Experimental Group

Test	Mean	SD	Mean Difference	t value	p value
Pre-test	11.38	2.63	6.18	17.46	<0.001
Post-test	17.56	1.74			

A significant improvement was observed in practice scores following the intervention.

Table 6. Comparison of Pre-test and Post-test Practice Scores in Control Group

Test	Mean	SD	Mean Difference	t value	p value
Pre-test	11.52	2.71	1.22	3.11	0.003
Post-test	12.74	2.58			

The control group demonstrated comparatively limited improvement.

Table 7. Comparison of Post-test Knowledge Scores between Experimental and Control Groups

Group	Mean	SD	Mean Difference	t value	p value
Experimental	25.12	2.48	9.34	16.09	<0.001
Control	15.78	3.11			

The post-test knowledge score was substantially higher in the experimental group.

Table 8. Comparison of Post-test Practice Scores between Experimental and Control Groups

Group	Mean	SD	Mean Difference	t value	p value
Experimental	17.56	1.74	4.82	10.12	<0.001
Control	12.74	2.58			

The experimental group demonstrated higher post-test practice scores compared with the control group.

Table 9. Level of Knowledge in Experimental Group Before and After Intervention (n=50)

Knowledge Level	Pre-test n (%)	Post-test n (%)
Poor	18 (36%)	1 (2%)
Moderate	29 (58%)	8 (16%)
Good	3 (6%)	41 (82%)
Total	50 (100%)	50 (100%)

The proportion of students with good knowledge increased from 6% in the pre-test to 82% in the post-test.

Table 10. Level of Practice in Experimental Group Before and After Intervention (n=50)

Practice Level	Pre-test n (%)	Post-test n (%)
Poor	12 (24%)	1 (2%)
Moderate	32 (64%)	10 (20%)
Good	6 (12%)	39 (78%)
Total	50 (100%)	50 (100%)

The proportion of students with good practice increased from **12% to 78%** following the intervention.

Table 11. Association between Pre-test Knowledge and Selected Demographic Variables in Experimental Group (n=50)

Variable		df	p value	Association
Age	2.14	2	0.343	NS
Gender	1.02	1	0.312	NS
Year of study	5.87	2	0.053	NS
Previous newborn-care training	6.21	1	0.013	Significant
Previous clinical exposure	4.98	1	0.026	Significant

NS=Not Significant

The findings showed a significant association between pre-test knowledge and previous newborn-care training and clinical exposure.

DISCUSSION

The present study demonstrated that the structured health education programme substantially improved knowledge regarding newborn care and danger signs among nursing students. The experimental group's mean knowledge score increased from 14.16 ± 3.21 to 25.12 ± 2.48 following the intervention.

The proportion of students with good knowledge increased from 6% before the intervention to 82% after the intervention. This improvement suggests that systematic educational content combined with interactive teaching and demonstrations can strengthen students' understanding of newborn-care concepts.

The study also demonstrated improvement in practice scores. The experimental group's mean practice score increased from 11.38 ± 2.63 to 17.56 ± 1.74 . Practical demonstrations may have contributed to improved application of newborn-care principles. The control group demonstrated only limited improvement in both knowledge and practice scores, which may be related to routine academic exposure during the study period.

CONCLUSION

The findings of the study indicate that the structured health education programme was effective in improving **knowledge and practices regarding newborn care and danger signs among nursing students**.

The experimental group demonstrated substantial improvement in both knowledge and practice scores compared with the control group. The findings support the incorporation of structured newborn-care education, demonstrations and skill-based learning activities into nursing education.

NURSING IMPLICATIONS

Nursing Education

Structured newborn-care education can be incorporated into classroom teaching and clinical preparation of nursing students.

Nursing Practice

Improved student knowledge may contribute to better newborn assessment, care and health education during clinical practice.

Nursing Administration

Nursing administrators can organize regular skill-based workshops and demonstrations on newborn care.

Nursing Research

Further studies can evaluate the long-term retention of newborn-care knowledge and skills among nursing students.

RECOMMENDATIONS

1. Similar studies can be conducted with larger samples.
2. The study can be replicated in multiple nursing colleges.
3. Experimental studies can evaluate simulation-based newborn-care education.
4. Follow-up studies can assess retention of knowledge and skills after 3–6 months.
5. Similar interventions can be developed for neonatal resuscitation, breastfeeding counselling and essential newborn care.
6. Future research can compare classroom teaching, simulation and digital learning approaches.

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CONFLICT OF INTEREST: None

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