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Assessing the Transformational Impact of a Newborn Resuscitation Training Program on Nursing Students' Knowledge and Skills

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Abstract:

Background: The Neonatal Resuscitation Program (NRP) is a widely recognized and standardized training program developed by the American Academy of Pediatrics and the American Heart Association[1]. **Aims:** It aims to equip healthcare providers, including nurses, with the knowledge and skills necessary to resuscitate and stabilize newborn infants in the immediate postnatal period. This study aimed to evaluate the effectiveness of a newborn resuscitation skill training programme on the knowledge and skills of B.Sc. nursing students. **Methodology:** A pre-test/post-test design was employed. A Purposive sampling of B.Sc. nursing 3rd year students (n = 100) enrolled in Faculty of Nursing SGT University, Gurugram participated in the study. The training programme consisted of theoretical sessions, practical demonstrations, and hands-on practice sessions using simulation models. **Result:** The pre-test data indicates that the majority of subjects (70%) had Average knowledge, with only 22 % possessing good knowledge and only (8%) demonstrating Excellent knowledge. Conversely, the post-test data reveals that a vast majority of subjects (82 %) exhibited Excellent knowledge, while only 18% demonstrated Good knowledge. Analysis of the pre-test and post-test skill scores yielded a statistically significant "t" value of 21.30 (compared to a table value of 2.05, $p < 0.05$), leading to the rejection of the null hypothesis and acceptance of the research hypothesis. This indicates a significant difference between the mean pre-test and post-test skill scores of nursing students, demonstrating the effectiveness of the training programme in enhancing the skills of nursing students in newborn resuscitation.

Conclusion: These findings suggest that the newborn resuscitation skill training programme was effective in enhancing the knowledge and skills of B.Sc. nursing students in this area. Future research could explore the long-term retention of these skills and their application in clinical settings.

Key Words: Neonatal, Resuscitation, knowledge, skill, paediatric

Introduction

The Neonatal Resuscitation Program (NRP) plays a critical role in equipping healthcare providers, including nurses, with the necessary knowledge and skills to respond effectively to neonatal emergencies. However, there is a need to assess the effectiveness of such training programmes, particularly among nursing students[2]. This study aimed to evaluate the impact of a newborn resuscitation skill training programme on the knowledge and skills of B.Sc. nursing students[3].

The Neonatal Resuscitation Program (NRP) is a standardized training programme developed by the American Academy of Pediatrics and the American Heart Association to equip healthcare providers with the necessary skills to resuscitate and stabilize newborn infants[4]. With neonatal resuscitation being a vital aspect of newborn care, it is imperative to assess the effectiveness of training programmes, particularly among nursing students. This study aimed to evaluate the impact of a newborn resuscitation skill training programme on the knowledge and skills of B.Sc. nursing students.

Nursing students are integral members of healthcare teams, particularly in the care of newborns, where their roles encompass a wide range of responsibilities, including resuscitation during critical emergencies. However, the preparedness of nursing students in this crucial area of newborn care may vary due to differences in educational backgrounds, clinical exposure, and training opportunities. As frontline caregivers, it is imperative that nursing students possess the necessary knowledge and skills to effectively respond to neonatal resuscitation scenarios, as prompt and proficient interventions can significantly impact the outcomes of newborns in distress.[7]

Despite the importance of neonatal resuscitation training, there is a paucity of research evaluating the effectiveness of training programmes specifically tailored for nursing students. Consequently, there remains a critical need to assess the impact of such programmes on the competency and confidence levels of nursing students in managing newborn resuscitation cases.[8] By addressing this gap in the literature, our study seeks to contribute valuable insights into the educational strategies and interventions that can enhance the preparedness of nursing students in neonatal resuscitation.[9]

Furthermore, with advancements in medical technology and evolving best practices in neonatal care, there is an ongoing need to update and refine training programmes to align with current

standards and guidelines. Through the evaluation of the effectiveness of the training programme, our study aims to identify areas for improvement and optimization, ultimately fostering a culture of continuous learning and improvement in nursing education.[10]

Ultimately, the findings of this study have the potential to inform curriculum development, training protocols, and educational policies aimed at enhancing the competency of nursing students in neonatal resuscitation.[11] By equipping future generations of nurses with the necessary knowledge and skills, we can strive towards improved neonatal care practices and better outcomes for newborns in emergency situations.[12]

Objectives:

- To assess the knowledge and skills regarding new born resuscitation among 3rd year BSc (N) Students.
- To evaluate the effectiveness of NRP Training programme on knowledge and skills regarding neonatal resuscitation.

Research Questions

- What are the immediate and long-term effects of a newborn resuscitation skill training program on the theoretical knowledge acquisition of B.Sc. Nursing students?
- How does participation in a newborn resuscitation skill training program impact the practical skills proficiency of B.Sc. Nursing students in real-life clinical settings?

Methodology

Research Design: Pre-test/post-test design.

Approach: Quantitative approach.

Population: B.Sc. nursing students.

Research Setting: Conducted at the Faculty of Nursing, SGT University, Gurugram.

Sample: 3RD Year B.Sc. nursing students studying in Faculty of Nursing SGT University.

Sampling Technique: Purposive sampling method.

Inclusion Criteria:
Participants were required to be third-year B.Sc. nursing students who provided informed consent to participate in the study.

Exclusion Criteria:
Students who did not provide consent or were not in their third year of the B.Sc. nursing programme were excluded from the study.

Variables:

Independent Variable: Newborn resuscitation skill training programme.

Dependent Variables: Knowledge and Skills

Data Collection procedure

The data collection procedure for this study involved several steps to ensure the accurate and comprehensive assessment of B.Sc. nursing students' knowledge and skills in newborn resuscitation. Firstly, a purposive sampling technique was employed to select 100 third-year B.Sc. nursing students from the Faculty of Nursing at SGT University, Gurugram. Prior to the training programme, after permission from the authorities and consent of participants a pre-test assessment was administered to gauge the participants' baseline knowledge and skills in newborn resuscitation. Subsequently, the participants underwent a structured training programme consisting of theoretical sessions, practical demonstrations, and hands-on practice sessions. Following the completion of the training programme, a post-test assessment was conducted to evaluate the participants' knowledge and skills improvement. Both the pre-test and post-test assessments utilized standardized tools to ensure consistency and reliability of data collection.

Result

This chapter analyses data from 100 third-year B.Sc. nursing students regarding their knowledge and skills in newborn resuscitation. Data were analysed using descriptive and inferential statistics.

Technique of Data Collection and Analysis Plan:

Pre-test and post-test assessments were administered to measure knowledge and skills separately. Sections A and B present knowledge and skills scores, respectively. Section C assesses the effectiveness of the training programme by comparing pre-test and post-test scores. Data was analysed by using SPSS.

Section A: Knowledge Scores:

Descriptive and inferential statistics analyze knowledge scores to determine improvement post-training.

Section B: Skills Scores:

Descriptive statistics summarize skills scores, with inferential analysis to assess improvement after training.

Section C: Effectiveness of Training Programme:

Descriptive statistics quantify knowledge and skill score gains, with inferential analysis to determine statistical significance.

The data represented in table -1 shows that in the pre-test, 70% of subjects demonstrated good knowledge, with 22% having average knowledge and only 8% exhibiting excellent knowledge. Conversely, in the post-test, 82% of subjects showed excellent knowledge, while 18% had good knowledge.

The data represented in table -2 shows that in the pre-test, 96% of subjects demonstrated good skills, with 4% having average skills. Conversely, in the post-test, 94% of subjects showed excellent knowledge, while 6% had good knowledge.

A paired t-test was conducted to determine the significance of the difference between the mean pre-test and post-test knowledge scores and skill scores. The computed "t" value between the pre-test and post-test knowledge scores (t = 21.23), p=0.03. The computed "t" value between the pre-test and post-test skill (t = 28.69) ,p=0.001   Consequently, the null hypothesis is rejected, and the research hypothesis is accepted. These results indicate a significant difference between the mean pre-test and post-test knowledge scores and skill score of nursing students. Thus, it can be concluded that the training programme was effective in increasing the knowledge and skill of nursing students regarding newborn resuscitation.

Discussion

The significant difference observed between the mean pre-test and post-test knowledge scores underscores the effectiveness of the newborn resuscitation training programme in enhancing the knowledge of nursing students. The substantial improvement in knowledge scores following the training programme suggests that the intervention successfully addressed gaps in understanding and comprehension of newborn resuscitation principles and techniques. This outcome is particularly noteworthy as it demonstrates the tangible impact of targeted

educational interventions on the competency development of nursing students in a critical area of neonatal care. By equipping students with the necessary knowledge and understanding, the training programme not only enhances their ability to respond effectively to neonatal emergencies but also instills confidence in their clinical practice. Moreover, the findings highlight the importance of ongoing education and training initiatives in nursing education to ensure that students are adequately prepared to meet the demands of contemporary healthcare settings. Future research should focus on evaluating the long-term retention of knowledge and assessing the translation of knowledge into clinical practice to further validate the effectiveness of training programmes in improving patient outcomes.

Conclusion

This study effectively evaluated the impact of a newborn resuscitation training programme on the knowledge and skills of B.Sc. nursing students. The significant improvement observed in both pre-test and post-test knowledge scores demonstrates the efficacy of the intervention in enhancing the understanding of newborn resuscitation principles and techniques among students. By equipping nursing students with essential knowledge and skills, the training programme contributes to their competency development and readiness to respond to neonatal emergencies effectively. These findings underscore the importance of targeted educational initiatives in nursing education to ensure the delivery of high-quality care in clinical practice. Moving forward, continued investment in educational programmes and research is crucial to further enhance nursing education and improve patient outcomes. Overall, the results of this study have significant implications for nursing practice, education, and ultimately, the well-being of newborns in need of resuscitative measures.

Conflict of interest: The authors declare that there are no conflicts of interest.

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Tables

Table 1: Pre-test and post- test knowledge scores of newborn resuscitation training programme.

Level of Knowledge	Pre Test		Post Test	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Average 0-10	70	70	0	0
Good 11-20	22	22	18	18
Excellent 21-30	8	8	82	82

Table 2: Pre-test and post- test skill scores of newborn resuscitation training programme.

Level of Knowledge	Pre Test		Post Test	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Average 0-5	96	96	0	0
Good 5-10	4	4	6	6
Excellent 10-15	0	0	94	94