

Research Article

Study to Evaluate the Effectiveness of Structured Teaching on Basic Neonatal Resuscitation Program in Terms of Knowledge and Practice of Nursing Officers

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A B S T R A C T

Introduction: Basic Neonatal Resuscitation Program by the American Academy of Pediatrics and American Heart Association provided a uniform, systematic, and action-oriented approach to the resuscitation of the newborn. The study was done to assess and evaluate the knowledge and practice regarding the Basic Neonatal Resuscitation Program among the nursing officers.

Methods: This was a single-center, prospective, quasi-experimental, and observational study that was conducted in Delhi, India. A sample of 60 nursing officers who met the sampling criteria was selected by non-probability convenience sampling.

Results: Pre-test knowledge score was found to be 15.68 ± 2.61 , while post-test knowledge score was found to be 21.87 ± 2.29 . There was a weak correlation of 0.0614 between post-test knowledge and post-test practice of nursing officers, which is found less than the table, "r" value at df (58) at 0.05 level. There was a weak correlation, and it was not very significant.

Conclusion: The present study concluded that a structured teaching program was effective in improving the knowledge and practice of the nursing officer on the Basic Neonatal Resuscitation Program.

Keywords: Newborn, Neonatal Resuscitation, Structured Teaching Programme, Basic Neonatal Resuscitation Program, Nursing Students

Introduction

Newborn care often receives less than optimum attention. To ensure a healthy start in life, it is now widely recognized that infants themselves need unique care that is distinct from that of their mothers. The immediate causes of newborn death include infection, birth asphyxia, complications related to premature birth, and congenital anomalies.¹ Globally, the neonatal mortality rate is 5.1million annual

neonatal deaths, of these five million neonatal deaths (98% of the world total) occurring in developing countries. Approximately 136 million babies are born annually; around 10 million require assistance to breathe.²

Birth asphyxia can be avoided with proper pregnancy and labor management, but subpar intrapartum care can increase the risk. The same immediate corrective action must be taken regardless of the cause of birth asphyxia:

instant resuscitation of a newborn. If resuscitation is done in a timely and effective manner, it can drastically reduce deaths, neurological damage, and subsequent disabilities in the newborns who fail to initiate and sustain breathing at birth.³

Most neonatal deaths (75%) occur during the first week of life, and in 2019, about 1 million newborns died within the first 24 hours. Preterm birth, childbirth-related complications (birth asphyxia or lack of breathing at birth), infections, and birth defects caused most neonatal deaths in 2019.⁴

India has made progress in reducing newborn mortality, with its share of the global newborn mortality burden coming down from one-third of newborn deaths in 1990 to below a quarter of total newborn deaths today.⁵

Most of the neonatal deaths can be prevented with simple, cost-effective solutions that do not depend on a highly trained provider or sophisticated equipment. To address this discrepancy, a multidisciplinary, simulation-based newborn resuscitation program should be considered with continual clinical reinforcement of best practice.⁶

Since the introduction of the Basic Neonatal Resuscitation Program by the American Academy of Pediatrics and American Heart Association, launched in India under the aegis of the National Neonatology Forum (NNF) in 1990 provided a uniform, systematic, and action-oriented approach to the resuscitation of the newborn.⁷

The study aimed to assess and evaluate the knowledge and practice regarding the Basic Neonatal Resuscitation Program before and after administration of a structured teaching program among the nursing officers.

Methodology

Study Design

This was a single-center, prospective, quasi-experimental, pre-test and post-test designed study that was conducted in, Delhi, India. The duration of the study was of 13 days, i.e., from 13 February 2023 to 25 February 2023.

Study Population

A sample of 60 nursing officers who met the sampling criteria was selected by non-probability convenience sampling. The purpose of the study was explained to the group, and confidentiality of the respondents was assured. Consent was taken prior to the data collection. The criteria for inclusion were nursing officers who are working in the labor room, nursery, and maternity wards and are willing to participate in the study. And, the exclusion criteria were nursing officers who were unwilling to take part in the study.

Data Collection

The data were collected using a structured knowledge questionnaire and a structured rating scale from 60 nursing officers. On days from 13 February 2023 to 18 February 2023, a pre-test on knowledge and practice was conducted for 5 days (10 nursing officers each day). Two batches per day were taken in 2 shifts. 5 nursing officers were taken in each batch. Post-test was taken from the 8th day, i.e., from 20 February 2023 to 25 February 2023. Two batches per day were taken in 2 shifts. 5 nursing officers were taken in each batch.

Study Procedure

After obtaining the formal ethical clearance from the office of Medical Superintendent, Safdarjung Hospital, New Delhi, the final study was conducted from 13/2/23 to 25/2/23 to assess the knowledge and practice of nursing officers regarding the Basic Neonatal Resuscitation program.

Assessment of knowledge and practice was conducted, and information related to Basic Neonatal Resuscitation was provided to the group via a PowerPoint presentation and an information booklet. Information on the hands-on skills with the mannequin was also provided after the hands-on skills.

The questionnaire comprised two sections. The first section collected data on participants' demographic characteristics, such as age, gender, and educational qualifications of nursing officers. The second section includes two tools for the assessment of Knowledge and Practice, respectively.

The first tool involved a structured knowledge questionnaire on Basic Neonatal Resuscitation, comprising 30 items. The areas that were described in the section were Introduction & neonatal transition extrauterine life, Birth Asphyxia, Preparation for resuscitation, Assessment & care of newborn at birth, Airway management, Ventilation with Bag & Mask, Evaluation of the Resuscitation, and Post Resuscitation Care.

Among 30 questions, every correct response was awarded a score of 1, and every wrong answer was given a score of 0. The categories of scoring ranged from 0-30, establishing 0-10 as "Poor Knowledge", 11-20 as "Fair Knowledge", and 21-30 as "Good Knowledge". And, the maximum score was 30.

Another tool was constructed to assess the practice of the nursing officers regarding the Basic Neonatal Resuscitation Program. A tool was developed by an extensive review of research and non-research literature, taking opinions of the experts. The tool was prepared to evaluate the effectiveness of a structured training program in finding out the practice of the nursing officer on the Basic Neonatal Resuscitation Program. It comprised 30 items, describing the following criteria of preparation for birth, routine care, initial steps,

brief ventilation, prolonged ventilation with slow heart rate, and post-resuscitation care and documentation.

Every correct response was awarded a score of 2; every partially correct response is awarded a score of 1; and every wrong answer is awarded a score of 0. The maximum possible score can be 60. The scoring category ranges from 0-30 as "Poor Practice", 31-45 as "Fair Practice", and 46-60 as "Good Practice".

Statistical Analysis

Microsoft Excel was initially used to enter the data. Data were then analyzed using SPSS 26.0 version. Conventional descriptive statistics were performed in the present study. Data have been presented as either mean±Standard Deviation (SD) or n (%). An independent t-test was used to obtain the t-scores and p-value. Karl Pearson's coefficient of correlation was used to evaluate the linear relationship between post-test knowledge and post-test practice. Chi-square test was performed to establish the association of variables with post-knowledge and post-practice score. P-value was considered significant at <0.05.

Results

A total of 60 nursing officers were enrolled in the study. The average age of the study participants was 29.7±5.15. Among all participants, 58 (97%) were female nursing officers and 2 (3%) were male nursing officers. The pre-test knowledge score was found to be 15.68±2.61, while the post-test knowledge score was found to be 21.87±2.29. Table 1 represents baseline characteristics of nursing officers.

Figure 1 shows the distribution of knowledge scores among nursing officers. 57 (95%) of officers had fair knowledge at the pre-test, while only 01 (1.7%) had good scores. In contrast, a maximum, i.e., 44 (73.3%) of participants had a good score on the post-test.

Figure 2 shows the distribution of practice scores among nursing officers. 59 (98.3%) of officers had poor knowledge

at the pre-test, while only 01 (1.7%) had fair scores. In contrast, a maximum, i.e., 46 (76.6%) of participants had a fair score on the post-test.

It has been shown that the mean post-test knowledge score of 21.87 of nursing officers is significantly higher than their mean pre-test knowledge score of 15.68. The calculated "t" value was 22.02 and was found significant at the <0.05 level. Similarly, the mean post-test practice score of 42.67 of nursing officers is higher than their mean pre-test practice score of 11.42. The calculated "t" value of 53.07 for df 59 was found to be statistically significant at the <0.05 level of significance. Table 2 elaborates on the association of knowledge and practice scores between pre- and post-test.

There was a weak correlation of 0.0614 between post-test knowledge and post-test practice of nursing officers, which is found less than the table's "r" value at df (58) at the 0.05 level. There was a weak correlation, and it was not very significant. Table 3 depicts the Karl Pearson coefficient correlation between post-test knowledge and practice score of nursing officers.

According to the data given in table the computed chi square value of selected variable years of experience (12.71) was found to be statistically significant at 0.05 level of significance, whereas computed chi- square value of age (4.59), Gender (0.06), Educational qualification (3.12), Previous education in service (1.68) and Previously performed Basic Neonatal Resuscitation Program (0.00) were not to be found significant at 0.05 level of significance in Post-Practice scores. In case of post- knowledge scores, it has been shown that computed chi- square value of age (3.21), Gender (0.00), Education qualification (4.29), Years of experience (0.54), previous education in service (3.35) and previously performed Basic Neonatal Resuscitation Program (0.18), were not to be found significant at 0.05 level of significance. Table 4 depicts the association of variables with post-test knowledge and post-test practice.

Table 1. Baseline Characteristics of Nursing Officers

Parameters	Value
Age (in years)	29.7±5.15
Female Nursing Officers	58 (97%)
Male Nursing Officers	02 (3%)
Educational Qualifications of Nursing Officers	
G.N.M	09 (15%)
Post-Basic Nursing	05 (8%)
B.Sc. Nursing	40 (67%)
M.Sc. Nursing	06 (10%)

Years of Experience	
Less than 1 Year	13 (22%)
Between 1-3 Years	09 (15%)
Between 4-6 Years	19 (32%)
Between 7-10 Years	12 (20%)
More than 10 Years	07 (11%)
Experience of any short-term course	20 (33%)
Previous Experience of Basic Neonatal Resuscitation	24 (40%)
Knowledge Score	
Pre-Test	15.68±2.61
Post-Test	21.87±2.29
Practice Score	
Pre-Test	11.42±5.24
Post-Test	42.67±4.74

Data was presented as either mean±SD or n (%)

Table 2. Association of Knowledge and Practice Scores between Pre-test and Post-test

Parameters	Scores	t-value	p-value
Knowledge Score			
Pre-test	15.68±0.32	22.02	<0.05
Post-test	21.87±0.32		
Practice Score			
Pre-test	11.42±0.5	53.07	<0.05
Post-test	42.67±0.5		

Data is presented as mean±SD

p-value was considered significant at <0.05

An Independent t-test was used to obtain the t-score and p-value

Table 3. Karl Pearson Coefficient of Correlation between post-test knowledge score and post- test practice score of nursing officers on Basic Neonatal Program

Variable Score	Value	"r" value
Post-test Knowledge	21.87±2.29	0.06
Post-test Practice	42.67±4.75	

Data is presented as mean±SD

Table 4. Association of Variables with Post-test Knowledge and Post-test Practice

Variables	Post-test Knowledge	Post-test Practice
Age	3.21	4.59
Gender	0.009	0.00
Educational Qualifications	4.296	3.12
Years of Experience	0.54	12.71
Experience of any short-term course/In-service education programme.	3.35	1.68
Previously performed the Basic Neonatal Resuscitation Program.	0.18	0.00

A chi-square test was performed to obtain the chi-square value

Level of significance was <0.05

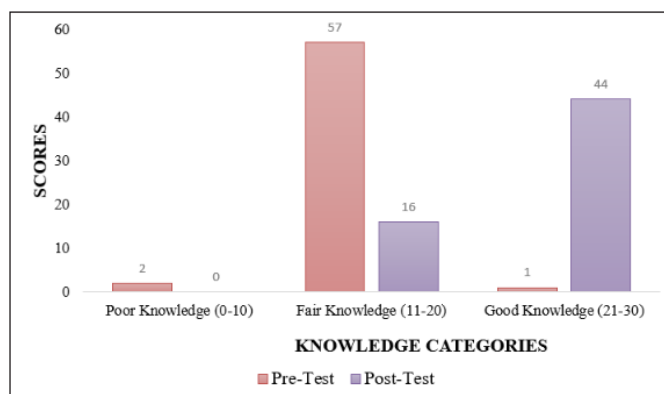


Figure 1. Distribution of Knowledge Scores among Study Participants

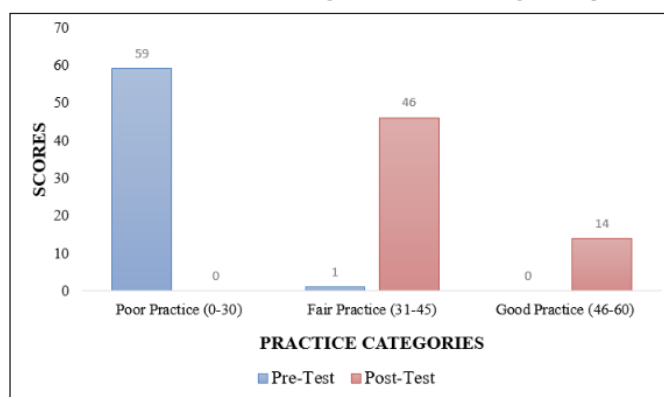


Figure 2. Distribution of Practice Scores among Study Participants

Discussion

The present quasi-experimental study evaluated the effectiveness of a structured teaching program on basic neonatal resuscitation in enhancing the knowledge and practice of nursing officers working in critical maternal and newborn care settings.

The mean post-test knowledge score of 21.87 for nursing officers is higher than their mean pre-test knowledge score of 15.68. A study conducted by Pradhan R et al. in 2016 revealed that the mean post-test knowledge score of 17.92 was higher than the mean pre-test knowledge score of 13.17. Both showed significant improvement in knowledge of nursing staff.²

In accordance, the mean post-test practice score of nursing officers (42.67) was significantly higher than the mean pre-test practice score of the nursing officers (11.42). Similarly, Parvinder K et al in a study conducted in 2015 showed that the mean 5th post-implementation practice score of nursing personnel regarding neonatal resuscitation (39.37) was higher than the pre-implementation practice score of nursing personnel (30.10).⁸ The findings are reported to be similar, and congruency is observed between studies.

The study depicted a weak positive correlation between post-test knowledge and practice score of nursing officers, which is less than the table-r value at df (58) at a 0.05 level

of significance. Goudar S et al. had similar findings with a correlation between knowledge score and skill score; there was a statistically significant positive correlation between the knowledge score and skill score of respondents regarding newborn resuscitation.^{9,10}

The study revealed no significant association between the post-test practice score of nursing officers on the Basic Neonatal Resuscitation Program and the years of experience, except for that. In contrast, a study by Nair M et al. identified a highly significant association between the age of students and their level of skill among nursing 1st-year students regarding the Basic Neonatal Resuscitation Program. There is also an association between knowledge and their educational status related to the Basic Neonatal Resuscitation program.^{11,12}

Strength and Limitations

The present study has several notable strengths. The use of a quasi-experimental one-group pre-test and post-test design enabled direct assessment of the effectiveness of the structured teaching program by measuring changes in knowledge and practice among nursing officers. Additionally, the study was conducted among nursing officers working in high-risk areas such as labor rooms, nurseries, and maternity wards, thereby increasing the clinical relevance and practical applicability of the results.

The present study was limited to a small sample of 60 nurses of the labor room, nursery, and maternity wards for assessing the knowledge and practice, thus posing restrictions to make a broader generalization. The study sample was restricted to only one setting, and that was only Safdarjung Hospital, New Delhi. The present study was limited to only one group, a pre-test, post-test design, and 8th-day interval after the administration of the program. No attempt was made to measure the retention of knowledge gained and improved skills due to time constraints. In the future, studies can be replicated on a large sample of nursing officers selected from various hospitals; thereby, the findings can be generalized for a large population.

Conclusion

On the basis of the present study, conclusions were drawn that a structured teaching program was effective in improving the knowledge and practice of the nursing officer on the Basic Neonatal Resuscitation Program. The increase in knowledge of nursing officers on the Basic Neonatal Resuscitation Program also increases their practice on Basic Neonatal Resuscitation. There was no association between post-test knowledge score and the selected variables. There was no significant association between the post-test practice score of nursing officers on the Basic Neonatal Resuscitation Program and the years of experience, except for that. Practice was found to be dependent on years of experience. This indicates that the practice of the nursing officers was dependent and influenced by years of experience.

Clinical Implications

Enhanced knowledge and competency in basic neonatal resuscitation among nursing officers can facilitate timely recognition and effective management of neonatal respiratory compromise, thereby reducing birth asphyxia-related morbidity and mortality. Regular structured training and competency-based assessments may improve adherence to evidence-based resuscitation protocols, optimize neonatal outcomes, and strengthen the quality of newborn care.

References

1. Bang A, Mail ID. Basic Neonatal Resuscitation Trainings: Need of the Hour. *Health*. 2014;2(3). [Google Scholar]
2. Pradhan R, Nayak GR. Effectiveness of video assisted teaching module on knowledge regarding Neonatal Resuscitation protocol as per NSSK guidelines of staff nurses in IMS and SUM Hospital, Bhubaneswar, Odisha. *Asian Journal of Nursing Education and Research*. 2016;6(1):101-4. [Google Scholar]
3. Gillam-Krakauer M, Gowen Jr CW. Birth asphyxia. [updated 2023 Aug 14]. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. 2024. <https://www.ncbi.nlm.nih.gov/books/NBK430782>.
4. Bantie B, Moges N, Awoke W, Azene AG. Mapping the spatial distribution of harmful umbilical cord stump care among neonates in Ethiopia: A spatial with multilevel analysis. *Plos one*. 2024;19(10):e0310471. <https://doi.org/10.1371/journal.pone.0310471> [Google Scholar] [PubMed]
5. Levels & Trends in Child Mortality. Report 2022, Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation. 2023. <https://childmortality.org/wp-content/uploads/2023/01/UN-IGME-Child-Mortality-Report-2022.pdf>
6. Mistry SC, Lin R, Mumphansha H et al. Newborn resuscitation skills in health care providers at a Zambian tertiary center, and comparison to world health organization standards. *Anesthesia & Analgesia*. 2018;127(1):217-23. 10.1213/ANE.0000000000003337 [Google Scholar] [PubMed]
7. Deorari AK, Paul VK, Singh M, Vidyasagar D. News from the regions-newsletter from India. The national movement of neonatal resuscitation in India. *Journal of Tropical Pediatrics*. 2000;46(5):315-7. [Google Scholar] [PubMed]
8. Parvinder K, Yogesh K, Gurneet K. Practices of Nursing Personnel Regarding Neonatal Resuscitation. *International Journal of Health Sciences & Research*. 2015;277(5):277-80. [Google Scholar]
9. Goudar SS, Dhaded SM, McClure EM et al. ENC training reduces perinatal mortality in Karnataka, India. *The Journal of Maternal-Fetal & Neonatal Medicine*. 2012;25(6):568-74. [Google Scholar] [PubMed]
10. Rajagopalachari US, Puranik MP, Rajput S. Knowledge, attitude, and practices toward evidence-based dentistry among dentists of Bengaluru city. *Journal of Indian Association of Public Health Dentistry*. 2017 Jul 1;15(3):239-43. https://www.ovid.com/jnls/aphd/fulltext/10.4103/jiaphd.jiaphd_51_17~knowledge-attitude-and-practices-toward-evidence-based.
11. Nair M. A Study to Assess the Effectiveness of Basic Neonatal Resuscitation Programme Conducted by IAP in Terms of Knowledge and Skill among ANM 1st Year Students at PG College of Nursing, Bhilai (CG). *International Journal of Research in Engineering, Science and Management*. 2019;2(10):260-262 https://www.ijresm.com/Vol.2_2019/Vol2_Iss10_October19/IJRESM_V2_I10_71.pdf.
12. Sweet DM, Gauba A, Jeba T. Knowledge and attitude on neonatal resuscitation among nursing students: a cross-sectional study. *Florence Nightingale Journal of Nursing*. 2024 Oct 1;32(3):232. [Google Scholar] [PubMed]