



## **Enhancing nursing student's neonatal resuscitation competency through skill-based training with stimulator: An intervention educational study**

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### **Abstract**

Life is complex and dynamic phenomenon that encompasses the existence of living organisms, their interactions and the processes that sustain them. Life operates at various levels, from microscopic cells to complex ecosystem. A child represents the beginning of life's journey, embodying potential innocence and curiosity. Neonatal resuscitation is a critical medical procedure performed to support newborns who experience difficulty initiating or maintaining effective breathing at birth. This requires swift actions and skilled health care provider, as delays can result in irreversible damage or death. The study was conducted on nursing students by using skill-based training.

**Aim:** the aim of the study is to assess the knowledge of nursing students on skill-based training regarding neonatal resuscitation.

**Methods:** A Qualitative research approach was used. A Quasi experimental pre-test post-test design was adopted for the study. The sample for the study were 60 nursing students. Samples were selected by simple random sampling. All nursing student's knowledge was checked using pre-test. Skill based training on neonatal resuscitation was given to nursing students and post test was conducted.

**Results:** The result shows that there is significant difference between control and experimental post-test level of knowledge. It shows that after giving skill-based training on neonatal resuscitation, there was a significant improvement in the level of knowledge of nursing students. It concluded that skill-based training is effective in enhancing the knowledge.

**Keywords:** Effectiveness, skill-based training on neonatal resuscitation, level of knowledge

### **1. Introduction**

Life is a quality of being alive that helps us to perform various process of life. Life is characterized by the process to perform various functions like to grow to reproduce to adapt to organize.

Child are the future of nation and will shape its destiny. It's important to maintain good child health. During early years of childhood, they grow and change rapidly. As they grow they learn about their surrounding and other things it's important to secure their health from birth to attain good immunity and betterment of health.

Resuscitation refers to the procedure to revive someone from unconsciousness or apparent death. It is an important part of emergency. It means to restore something to an active or flourished state. Basically, it is the method to restart the heart or lungs.

Competency based training is the other name of skill-based training in which strategies for the developing staff are done by teaching them the specific skills used in that process. The main goal of skill-based training is to improve the performance of the employees and improve their productivity and performance. Earlier we used traditional method training.

In ancient times, brutal methods like shaking, hitting, and electrocution were used by ancient physician and midwives. It includes Eber's papyrus and Talmud. Adult cardiopulmonary resuscitation was earlier explained in bible. In late 18<sup>th</sup> century first ventilator was seen which a major landmark in the history was. Many of the advancement was seen in 1950s<sup>[1]</sup>.

Neonatal resuscitation, also known as newborn resuscitation, is an emergency procedure focused on supporting approximately 10% of newborn children who do not readily begin breathing, putting them at risk of irreversible organ injury and death. The goal of this is to ensure effective ventilation. The work of Virginia APGAR reoriented that delivery room focus should also include neonates. She published the Apgar score in 1953<sup>[2]</sup>.

There were certain programmer and academics that were established like neonatal resuscitation instructor programme by national neonatology forum (1990), MDG 4 goal, 1 AP-NRP-FGM (Indian academy of paediatrics Neonatal resuscitation programme first golden minute). WHO says that neonatal deaths have been decreased by 44% since 2000<sup>[2]</sup>. Pauline T Kamau, Myra Koech and Julia Songok (2022)<sup>[5]</sup> conducted a study to assess the competence of healthcare

workers in basic neonatal resuscitation at six hospitals in Uasin Gishu County in Kenya. A cross sectional study of healthcare workers based on the Labour and delivery wards. Out of 46 healthcare workers who are assessed with written examination and skills assessment, 85% were nurses. While 46% were able to pass the written examination, none demonstrated all required steps of newborn resuscitation during the skill assessment by simulation. No significant associations were present between the pass rate of the written examination and years of experience, role, or prior in service training. All of the hospitals had the basic equipment required for neonatal resuscitation [3]. Samah Abdelalla Mohammed, Howaida Moawad Ahmed (2016) conducted a Quai experimental study was to assess the effect of simulation training on nurses and intern nursing students' skill, confident and satisfaction regarding neonatal resuscitation. The score improved in two groups. Thus there were correlation between confident skill and satisfaction of nurses than intern nursing students with their age. There was statistical significant difference in the nurse's post immediately [4].

### Methods

- **Research approach:** Quantitative research approach was used.
- **Research design:** A quasi-experimental pretest-posttest design.
- **Research Setting:** The main study was undertaken at the Child Health Nursing Lab at the Army College of Nursing, Jalandhar Cantt.
- **Target Population:** This study's population consists of nursing students.
- **Accessible Population:** Accessible population refers to nursing students who have some previous knowledge about neonatal resuscitation.
- **Sample:** The sample are nursing students who had some previous knowledge about neonatal resuscitation were selected.
- **Sampling Technique:** A purposive non-random Sampling technique.
- **Sample Size:** The study used a sample size of 60 nursing students.

### Criteria for sample selection

- **Inclusion Criteria:** Students who are in nursing field. Students who have some previous knowledge about

neonatal resuscitation.

- **Exclusion Criteria:** Students who have not studied child health nursing were not a part of this study. Students were not willing to participate in this study.
- **Variables:** Independent variable: Skill-based training on neonatal resuscitation.
- **Dependent variable:** Level of knowledge on neonatal resuscitation.
- **Development and description of the tool:** The tool consists of 2 sections:

**Section A:** Structured questionnaire to assess the socio-demographical variables. Socio-demographic variables of the students include age, gender, education, religion, primary language, and previous knowledge on neonatal resuscitation.

**Section B:** Structured questionnaire on neonatal resuscitation the structured questionnaire.

### Content validity

The validity of the tool is obtained from various experts in the field of nursing experts.

**Reliability:** Cronbach's alpha was used to assess the reliability of the structured questionnaire. By using Cronbach's alpha reliability formula, the alpha value was calculated.

### Ethical Consideration

- Permission was taken from the research authority and principal.
- Participants were informed about the purpose of the study.
- This study did not cause any harm to the participants.
- Professional norms were maintained.

### The procedure of data collection

- After obtaining formal permission from the research authority of Nursing, the research study was conducted in September-October 2024 among 60 samples.
- Nursing students were selected using a non-probability sampling technique from the college.
- Consent was obtained from each participant.

### Data analysis and interpretation:

## Section 1-Description of demographic variables of selected samples

**Table 1:** Frequency and percentage distribution of sample characteristics (N=60)

S. No.	Demographic variables	Frequency	Percentage (%)
1	Age (in Years)		
	• 18-20	6	10.0
	• 21-24	53	88.3
	• 25 and above	1	1.6
2	Gender		
	• Female	60	100.0
	• Male	-	-
3	Religion		
	• Hindu	55	91.6
	• Muslim	1	1.6
	• Sikh	4	6.66

	• Other	-	-
4	<b>Education</b>		
	• MSc (N)	-	-
	• BSc (N)	60	100.0
	• GNM	-	-
	• Others	-	-
5	<b>Primary Language</b>		
	• English	-	-
	• Hindi	55	91.6
	• Punjabi	4	6.66
	• Others	1	1.6
6	<b>Previous knowledge on neonatal resuscitation</b>		
	• Yes	60	100.0
	• No	-	-
7	<b>Source of information</b>		
	• Mass media	5	8.33
	• Health personnel/organization	43	71.6
	• E-books	12	20.0
	• Family relatives	-	-

## Section 2-Analysis of pretest and posttest level of knowledge on skilled based training on neonatal resuscitation

**Table 2:** Frequency and percentage distribution of level of knowledge among the selected sample

S. No.	Level of knowledge	Pre-test control		Pretest EXP		Post-test control		Post-test EXP	
		Frequency	Percentage%	Frequency	Percentage%	Percentage%	Percentage%	Percentage%	Percentage%
1.	Excellent Knowledge	03	10	02	6.6	10	33.33	27	90
2.	Good Knowledge	22	73.33	16	53.33	20	66.66	03	10
3.	Average Knowledge	05	16.66	12	40	-	-	-	-
4.	Poor Knowledge	-	-	-	-	-	-	-	-
	Total	30	100	30	100	30	100	30	100

## Section 3: Evaluation of effectiveness of skill-based training on level of knowledge regarding neonatal resuscitation

**Table 3:** Effectiveness of SBT on level of knowledge

Category	Mean	standard deviation	mean difference	Paired 't' Test
Post-test (C)	15.06	0.376	3.2	29.08es
Post-Test (E)	18.26	0.471		

### Discussion

The findings of study are depicted and discussed based on objectives. H<sub>1</sub>: There will be significant difference in knowledge of nursing students receiving skill-based practice in experimental and control group. H<sub>2</sub>: there will be significant association in knowledge of the students receiving skill-based practice in experimental and control group. Impact of resuscitation training program on neonatal outcomes in a region of high socioeconomic vulnerability in Brazil: An interventional study Renato Oliveira de Lima *et al.* J Pediatric (Rio J). 2023 Nov-Dec. Objectives: This pre/post-intervention study aimed to evaluate neonatal outcomes after the implementation of the Neonatal Resuscitation Program of the Brazilian Society of Pediatrics.

### Methods

This interventional study was conducted across five secondary healthcare region that supported 62 cities in the southwestern mesoregion of Piauí. It included 431 healthcare professionals responsible for neonatal care in the study region. The participants were trained in neonatal resuscitation through the Neonatal Resuscitation. Finding of present study shows that there is effectiveness of skill training program on neonatal resuscitation among

nursing students so there is need to organize such trainings among students.

**Significant findings of study:** The study findings justify that skill-based training administered by researchers was effective to improve knowledge regarding neonatal resuscitation among nursing students.

**Implication of the study:** The findings of the study have implication in different field of nursing that is nursing practice, nursing education, nursing administration and nursing research.

### Implication for nursing education

Nursing educator can motivate the student nurses to organize skill-based training regarding neonatal resuscitation which is beneficial for student nurses. Nursing curriculum help the nurses to encourage the teachers to improve the student's training regarding neonatal resuscitation.

### Implication for nursing administration

Nurse administrators can supervise seminars on neonatal resuscitation and significance of skill-based training among nursing students.

Nurse administrators develop knowledge among nursing students regarding the effects of poor training on neonatal resuscitation.

### Implication for nursing research

Broad research analysis can be formulated to improve the training among the nursing students to increase the survival rate of neonates.

### Implication for nursing practice

The Child health nurses must take steps to develop knowledge among nursing students through periodic health training program in different settings.

### Recommendation

- A comparative study can be conducted among nursing students of different areas like rural and urban area.
- A study can be conducted to find out the knowledge of parents and teachers on neonatal resuscitation.

### Conflict of Interest

Not available

### Financial Support

Not available

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