

# A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge and Skill Regarding Cardiopulmonary Resuscitation in Children among 3<sup>rd</sup> Year B.Sc. Nursing Students of a Selected College of Nursing at Mangaluru

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Short heading- Knowledge and skill regarding cardiopulmonary resuscitation in children among 3<sup>rd</sup> year B.Sc. Nursing students

**Abstract:** CPR is a combination of rescue breathing and chest compressions. If someone isn't breathing or circulating blood inadequately, CPR can restore circulation of oxygen rich blood to the brain. CPR may be necessary during many different emergencies including accidents, near drowning, suffocation, and poisoning, smoke inhalation, electronic injuries which can cause cardiac and respiratory arrest. Every nurse should know how and when to administer CPR because when performed correctly, CPR can save a life by restoring breathing and circulation until advanced life support can be given by health care providers. *Methods* A quasi-experimental one group, pre-test post-test design was used for the study. Simple random technique was used to select 30 subjects. After the pre-test and assessment of skill and knowledge by observational check list and questionnaire, a STP was administered and CPR demonstrated to the subjects and on the seventh day post-test was conducted with the same questionnaire and observational checklist. *Results* The mean post-test knowledge scores obtained by the subjects (30.16) were higher than the mean pre-test knowledge scores (17.13). The computed 't' value (23.04) is higher than the table value ( $t_{29}=2.045$ ) at  $p<0.05$  level of significance. The mean post-test skill scores obtained by the subjects (16.03) were higher than the mean pre-test skill scores (7.6). The computed 't' value (29.98) is higher than the tabled value ( $t_{29}= 2.045$  at  $p<0.05$  level of significance). *Interpretation and conclusion* Finding of the study showed that the knowledge score and skill score of the III year BSc students were very less before the introduction of STP and demonstration of CPR. The enhanced them to gain more knowledge and demonstration enhanced them to gain more skill regarding CPR. Hence, STP and demonstration of CPR was an effective strategy for providing information and to improve knowledge and skill of student nurses, which was well appreciated and accepted by student nurses.

**Keywords:** Effectiveness; knowledge; structured teaching programme; CPR; student nurses

## 1. Introduction

CPR is a triumph of medicine but also is frequently performed vain. It is a young science; the term "CPR" was first published less than 50 years ago. Cardiopulmonary resuscitation (CPR) is the foundational technique for the emergency treatment of cardiac arrest (CA). When the Paediatric Advanced Life Support (PALS) course was first developed in 1988, outcomes from paediatric cardiac arrests were dismal. Paediatric BLS refers to the provision of CPR, with no devices or with bag/mask ventilation or barrier devices, until advance life support (ALS) can be provided. It includes infants from birth to 1 year of age and children from 1-18 year of age. For best survival and quality of life, paediatric basic life support (BLS) should be a part of community effort that include prevention, basic CPR, prompt access to the emergency medical services (EMS) system and prompt paediatric advanced life support (PALS).

Every nurse and physician should be skilled in CPR because cardiac arrest, the sudden cessation of breathing, and adequate

circulation of blood by the heart, may occur at any time or in any setting. The American Heart Association establishes the standards for CPR and is actively involved in teaching BCLS and ACLS to health professionals. Of all healthcare professionals, nurses are often the first to discover a patient of cardiopulmonary arrest (CPA) in any part of the hospital, be it the "emergency" or the "in-patient" wards. Therefore training program on PALS is important for students to gain knowledge and improve skill. If the students are educated and are skillful in performing CPR, Healthcare providers can control the incidence of death due to cardiac and respiratory arrest to great extent. This describes the need to develop a programme that gives the nurses an opportunity to transfer their knowledge and skill into practice. Nurses who participate in this programme will be more confident in providing life saving measures.

## 2. Objectives of Study

- 1) To assess the knowledge level of student nurses regarding Cardiopulmonary Resuscitation in children before and after

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the structured teaching program using a structured knowledge questionnaire.

- 2) To assess the skill of student nurses regarding Cardiopulmonary Resuscitation in children before and after the structured teaching program using an observation check list.
- 3) To evaluate the effectiveness of structured Teaching program on knowledge regarding cardiopulmonary Resuscitation in children among nursing students in terms of gain in mean post-test knowledge score.
- 4) To evaluate the effectiveness of structured Teaching program on skill regarding cardiopulmonary Resuscitation in children among nursing students in terms of gain in mean post-test skill score.

### 3. Materials and Methods

#### Research approach and design:

Evaluative research is an applied form of research that involves finding out how well a programme, practice, procedure or policy is working. The research design used in this study was the quasi-experimental one group pre-test post-test design

#### Setting of the Study:

The study was conducted at Athena Institute of Health Sciences at Mangalore

#### Population:

Population of the study consisted of 80 third year B. Sc. nursing students of a selected college of nursing at Mangalore.

#### Sample and Sample technique:

The sample consisted of 30, Third year B. Sc. nursing students from Athena Institute of Health Sciences, Mangalore. Simple random sampling technique was used to select the samples who met inclusion criteria.

#### Description of the tool

##### Tool 1: Structured knowledge questionnaire

This part of the tool consisted of 36 items in four areas on knowledge of third year B. Sc. nursing students regarding CPR. They were: Introduction, Definition, purpose and indication for CPR, Precautions, sequence and equipment's used for CPR, Performing CPR on children, After care of the patient.

##### Part 2: Observational checklist

An observational checklist for assessing skill to perform CPR consists of 3 aspects, which represented the sequential steps to be followed while providing CPR, Assessment-6 items, Chest compressions-8 items and Opening airway and providing ventilation -6 items. The observational checklist comprised of 20 items pertaining to the skills of student nurses regarding the performance of CPR.

#### Data analysis

Data was planned to be analyzed on the basis of objectives and hypothesis.

- 1) The knowledge and skill score of student nurses before and after structured teaching programme and demonstration of CPR will be analyzed in terms of frequency, percentage, mean, median, standard deviation and will be presented in the form of tables and figures.
- 2) Effectiveness of STP will be analyzed in terms of gain in mean post-test knowledge and skill scores.
- 3) The significant difference between the mean pre-test knowledge and post- test knowledge and skill scores would be determined by paired 't' test.

### 4. Result

#### Section I: Knowledge level of III year B. Sc. Nursing students regarding CPR in children

**Table 1:** Grading of Pre-test and Post-test knowledge scores of student nurses

N=30				
Level of knowledge	Range of score	Percentage of score	Pre-test	Post-test
Poor	0-12	0-33%	13.33%	0
Average	13-24	34-65%	83.33%	13.33%
Good	25-36	66-100%	3.33%	86.66%

Maximum score: 36

Data in Table 1 show that 86.66% of the subjects had good knowledge in post-test score ranging between 66-100% and 13.33% percent had average score ranging between 34-65% whereas in the pre-test 83.33% of the sample had average scores ranging between 34-65%.

**Table 2:** Range, Mean, Standard deviation and Mean percentage of Pre-test and Post-test knowledge scores

N=30				
Knowledge level	Range	Mean	SD	Mean%
Pre-test	7-29	17.13	4.44	48.05%
Post-test	21-35	30.16	3.62	83.72%

Maximum possible score: 36

It is evident from Table 2 that the mean post-test knowledge score (30.16) and mean percentage (83.72%) is higher than the mean pre-test knowledge score (17.13) and mean percentage (48.05%).

#### Section II: Skill level of III year B. Sc. Nursing students regarding CPR in children

**Table 3:** Grading of pre-test and post-skill score of students

N=30				
Grading of skill	Range of score	Percentage of score	Pre-test	Post-test
Poor	0-6	0-30%	33.33%	0
Average	7-13	31-65%	66.66%	16.66%
Good	14-20	66-100%	0	83.33%

Data in Table 3 shows that majority of subjects (83.33%) scored ranging (66-100%) in the post-test as compared to pre-test whereas 66.66% scored average and 33.33% were poor. This indicated that there was considerable gain skill scores in the post-test.

**Table 4:** Range, Mean, Standard deviation and Mean percentage of Pre-test and Post-test skill scores, N=30

Skill level	Range	Mean	SD	Mean%
Pre-test	4-12	7.6	2.03	38%
Post-test	12-19	16.03	2.07	80.15%

Maximum possible score: 20

It is evident from Table 4 that the mean post-test skill score (16.03) and the mean percentage (80.15%) was higher than the mean pre-test skill score (7.6) and the mean percentage (38%).

### Section III: Effectiveness of STP in terms of gain in mean post-test knowledge and skill scores

#### Section III (A): Effectiveness of STP in terms of gain in mean post-test knowledge scores

**Table 5:** Paired 't' test to test the significant difference between the mean pre-test and post-test knowledge scores, N=30

Group	Knowledge score	Mean difference	SD of difference	't' value	Inference
Pre-test	17.13	13.03	-0.82	23.04	Significant
Post-test	30.16				

Maximum score-36 ( $t_{29}=2.045$ ,  $p<0.05$ )

Data in Table 5 shows that the mean post-test knowledge score 30.16 was higher than the mean pre-test knowledge scores(17.13). The computed 't' value (23.04) is higher than the tabled value ( $t_{29}=2.045$ ) at  $p<0.05$  level of significance. Hence, the null hypothesis is rejected and research hypothesis is accepted. The findings show that STP was highly effective in increasing the knowledge of nursing students regarding CPR in children.

#### Section III (B): Effectiveness of STP in terms of gain in mean post-test skill scores

**Table 6:** Paired 't' test to test the significant difference between the mean pre-test and post-test skill scores N=30

Group	Skill score	Mean difference	SD of difference	't' value	Inference
Pre-test	7.6	8.43	0.04	29.98	Significant
Post-test	16.03				

Maximum score-20 ( $t_{29}=2.045$ ,  $p<0.05$ )

Data in Table 6 shows that the mean post-test skill score (16.03) was higher than the mean pre-test skill score(7.6). The computed 't' value (29.98) is higher than the tabled value ( $t_{29}=2.045$  at  $p<0.05$  level of significance). Hence, the null hypothesis is rejected and research hypothesis is accepted. The findings show that STP was highly effective in increasing the skill of nursing students regarding CPR in children.

## 5. Discussion

### Section 1: Knowledge level of 3 year B. Sc. nursing students regarding CPR in children

- 1) Majority of the subjects (86.66%) had good knowledge scores (Percentage of score: 66-100 % in the post-test) as compared to the pre-test knowledge scores in which 3.33% had good knowledge and 83.33 % ( Percentage of score:34-65%) had average knowledge score. 13.33 % (Percentage of scores 0-33%) had poor knowledge score.
- 2) The mean post-test knowledge score (30.16) was higher than the mean pre-test knowledge score (17.13) suggesting that the STP helped in improving the knowledge of student nurses regarding CPR in children.
- 3) The mean percentage of post-test knowledge score were (83.72%) higher than the mean percentage of pre-test knowledge score (48.05%).Therefore it can be inferred that STP was effective in increasing knowledge of student nurses.

### Section II: Skill level of 3 year B.sc nursing students regarding CPR in children

- 1) Majority of the subjects (83.33%) had good skill scores (percentage of score: 66-100 % in the post-test) as compared to the pre-test k skill scores in which no one had good skill score and 66.66% (percentage of score: 31-65%) had average knowledge score. 33.33%(Percentage of scores 0-33%) had poor skill score.
- 2) The mean post-test skill score (16.03) was higher than the mean pre-test skill score (7.6) suggesting that the STP helped in improving the skill of student nurses regarding CPR in children.
- 3) The mean percentage of post-test skill score was (80.15%) higher than the mean percentage of pre-test knowledge score (38%). Therefore it can be inferred that STP with demonstration of CPR was effective in increasing skill of student nurses.

### Section III: Effectiveness of STP in terms of gain in mean post-test knowledge and skill scores

A significant difference between the mean post-test (30.16) and mean pre-test(17.13) knowledge scores of student nurses regarding CPR in children was found to be highly significant( $t=23.04$ ,  $p<0.05$ ),suggesting that structured teaching program was effective in improving the knowledge scores of student nurses.

A significant difference between the mean post-test (16.03) and mean pre-test(7.6) skill scores of student nurses regarding CPR in children was found to be highly significant(29.98,  $p<0.05$ ), suggesting that STP and Observational checklist used to demonstrate CPR was effective in improving the skill scores of student nurses.

## 6. Conclusion

The main purpose of this study was to assess the knowledge and skill on CPR in children among student nurses and

teaching them about definition, purpose and indications of CPR, precautions, sequence and equipment's used for CPR, performing CPR on an paediatric dummy, and after care of the patient. All of the student nurses (100%) knowledge scores were average (34-65%) before the administration of STP, whereas after the administration of STP there was increase in their knowledge level as it was evident from the post-test knowledge scores where most of them (86.66%) gained good scores (66-100%) after the administration of STP.

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