A Study to Evaluate the Effectiveness of Structured Teaching Programme on Knowledge Regarding Cardiopulmonary Resuscitation in Adult among Student Nurses (GNM 3rd Year) in a Selected School of Nursing, Dehradun, Uttrakhand

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Abstract: *A pre experimental research study was conducted to assess the Effectiveness of Structured Teaching Programme on Knowledge regarding cardiopulmonary resuscitation in adult among student nurses (GNM 3rd year) in a selected school of nursing, Dehradun , uttrakhand. Pre-experimental one group pre-test post-test research design was adopted for this study. A Structured Knowledge Questionnaire regarding cardiopulmonary resuscitation was prepared and used to collect the data. The data obtained was analyzed and interpreted in terms of the objectives of the study. Descriptive and inferential statistics were used for data analysis. Result of this study was that Majority (68.57%) of GNM 3rdyear Students were in the age group of 20-25 years. Majority (51.42%) were females. The highest percentages (51.42%) were intermediate pass. Extreme percentage (92.85%) of GNM 3rdyear Students were belongs to nonmedical family. Majority (74.28%) GNM 3rd year students had previous exposure to CPR. In pretest knowledge score of GNM3rdyear student's majority 82.85% (percent) had average knowledge, while 18.57% (percent) had poor knowledge and none of them had good knowledge regarding Cardiopulmonary Resuscitation. The knowledge score of GNM 3rd year Students in post-test shows majority i.e., 100% acquired good knowledge while, none of them had poor and average knowledge regarding Cardiopulmonary Resuscitation in adult among GNM 3rd year students. The calculated value of t-test is 30.406 and which is greater than the tabulated value of paired t test with 69 degree of freedom i.e. 1.94 at 0.05. It shows that the STP was highly effective as there was a significant increase in the post-test knowledge scores among GNM 3rd year student on Cardiopulmonary Resuscitation in adult. On the basis of the present study, the researcher concluded that GNM 3rdyear Students had inadequate knowledge regarding Cardiopulmonary Resuscitation in adult. Awareness regimen for knowledge on CPR using STP on Knowledge regarding Cardiopulmonary Resuscitation among GNM 3rd year Students was effective as their knowledge level improved significantly.*

Keywords: Effectiveness, Structured Teaching Programme, Knowledge, CPR, Student Nurses

1. Introduction

Heart disease is the world's largest killer, claiming 17.5 million lives every year. About every 29 seconds, an Indian dies of heart problem. As many as 20,000 new heart patients develop every day in India, six crore Indians suffer from heart disease and 30 percent more are at high risk. By 2020, India will have the largest coronary heart disease (CAD) burden in the world and will account for one third of all deaths , many of them will be young. The risk of sudden cardiac death from coronary artery disease in adults is estimated to be 1 per 1,000 adults 35 years of age and older per year [1]**.** Cardiac arrests are more common than we think, and they can happen to anyone at any time .Nearly 383,000 out-of-hospital sudden cardiac arrests occur annually, and 80 percent of cardiac arrests occur at home [2]**.** Cardiopulmonary Resuscitation was introduced in 1960. Cardio means "of the heart" and pulmonary means "of the lungs". Resuscitation is a medical word that means "to revive" or bring back to life. CPR is the first treatment for a person who has collapsed, has no pulse, and has stopped breathing. Effective CPR enables enough oxygen to reach the brain to delay brain death, and allows the heart to remain responsive to defibrillation attempts. Oct. 18, 2010 New guidelines released by the American Heart Association recommend that the three steps of cardiopulmonary resuscitation (CPR) be rearranged. Every nurse and student nurse should have knowledge and 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 [3].

1.1 Need of the study

Cardio pulmonary resuscitation competency is considered a fundamental skill for health care workers. In the wider community, it is an expectation that knowledge and competence in CPR is at a high standard in nursing education. Participation in both successful and unsuccessful cardiopulmonary resuscitation is one of the most stressful situations that the nursing students have to deal with after their registration. A thorough knowledge and competency (skill) help them to perform CPR to the patient's whenever is needed.

We might remember ABCs — airway, breathing, chest compressions. First open the airway and try to resuscitate the victim by giving quick breaths through the mouth. Then move on to pumping the chest to get the heart beating again. But now the American Heart Association (AHA) is officially changing the order of CPR, and urging rescuers to start with chest compressions first and now it is CAB [4]. Many students are not aware about American heart association guidelines of CPR.

Cardiopulmonary resuscitation is the fundamental technique for the emergency treatment of cardiac arrest. The standardized training of cardio pulmonary resuscitation has been emphasized more than ever. Cardio pulmonary resuscitation training is mandatory for nurses and is important as nurses often first discover the victims of cardiac arrest in-hospital. Available literature suggests a need for both initial cardiopulmonary resuscitation training and refresher courses. In this context, the training of nursing students to improve the knowledge and competency in cardio pulmonary resuscitation is having at most significance. It is because in future they are the one who is assessing and providing the needed care for the patient at the earlier stage.

1.2 Objectives of the study

1) To assess the level of knowledge among GNM 3rd year Students before and after administration of STP regarding Cardiopulmonary Resuscitation in adult.
2) To evaluate the effectiveness of STP regarding Cardiopulmonary Resuscitation among GNM 3rd year Students by comparing pre-test and post-test scores.
3) To associate pre-test level of knowledge on Cardiopulmonary Resuscitation in adult with the selected demographic variables.

1.3 Hypothesis

H$_1$: There will be significant difference between the pre- test knowledge and post-test knowledge of student nurses regarding Cardiopulmonary Resuscitation in adult.
H$_2$: There is a statistically significant association between pre-test knowledge scores of GNM 3rd year Students with the selected demographic variables.

2. Conceptual Framework

The present study is based in king's goal attainment theory

2.1 Review of literature

Based on the objective review of literature have been categories into two headings
1) Studies related to cardiopulmonary resuscitation
2) Studies related to effectiveness of structured teaching pogramme on knowledge regarding cardiopulmonary resuscitation in adult.

2.2 Studies related to cardiopulmonary resuscitation

This cross-sectional study to assess knowledge and attitudes related to Basic Life Support among undergraduate medical students in Tamil Nadu, India was conducted by Manni G. et al in 2014. The mean knowledge score of the participants was 4.55 ± 1.21 out of a possible high score of 6. The level of knowledge and attitudes related to BLS varied depending on the year of study, and this difference was statistically significant (p<0.05). The knowledge score decreased with increasing duration of training. The higher the year of study, the more positive the participants' attitudes were. Only 12.9% of the participants had ever practiced BLS. Twenty-one (21) participants (8.7%) expressed reluctance about performing BLS in a hospital setting, and 57.3% of the participants expressed reluctance about performing BLS in an out-of-hospital setting. Fear of acquiring infection, causing harm to the victim, and lack of confidence were the common causes for participants' reluctance.[5]

A descriptive cross sectional study "knowledge regarding cardiopulmonary resuscitation among medical students" was conducted by K. Shreedhara, Avabratha Bhagyalakshmi et al in 2012. The study was carried out in 3 medical college hospitals in the coastal Karnataka. A total of 285 interns participated in the study. Fifteen were excluded based on the exclusion criteria, so that 270 interns remained as the study population. So the level of knowledge is 9.05 with % mean of 45.25% which indicates inadequate knowledge among interns. The conclusion of the study is the knowledge regarding resuscitation among interns is not adequate; hence introduction of structured resuscitation program in the UG curriculum goes a long way in improving this. An effort should be made to determine an appropriate and efficient course design.[6]

2.3 studies related to effectiveness of structured teaching pogramme on knowledge regarding cardiopulmonary resuscitation in adult

A quasi experimental study " to evaluate the effectiveness of planned teaching programme on knowledge and practice regarding cardio pulmonary resuscitation among student in Mangalore" was conducted by Anil Kumar Parashar in 2010. The result of the study was that the mean post-test practice score (69.50%) was found to be significantly higher than the mean pre-test practice score (18.11%). (t cal value=30.929, p<0.05). The study showed that majority (35, 87.5%) of the students had inadequate knowledge and 40 (100%) had poor practice. The PTP facilitated them to update their knowledge and practice related to BLS. Hence the PTP was an effective teaching strategy to improve the knowledge and practice of sample on BLS.[7]

This pre experimental study was about "effectiveness of planned teaching programme on knowledge regarding basic life support in B.sc 2nd year students at Bhubaneswar" was conducted by MS kabina Ratha in 2014.the data was collected from 85 students by convenient sample technique. The result of the study shows that there was highly significant association between the overall knowledge scores of pre and posttest and area wise score values. The conclusion of the study was, highly significant difference found between pre and posttest knowledge scores indicate that PTP was effective for B.Sc Nursing students.[8]

3. Methodology

Research methodology provides a brief description of the method adopted by the investigator in the study.

3.1 Research Approach

Quantitative experimental (An Evaluative) approach was considered as an appropriate one for present study. This approach helps to explain the effect of the independent variable on the dependent variables.

3.2 Research Design

Research design adopted for the study is Pre-Experimental (one group pretest-post test).

3.3 Sample size and sample technique

The sample size for the present study is total 70 student nurses (GNM 3rd year) from state school of nursing and combined Institute medical science and sample technique for this study is non probability convenience sampling.

3.4 Criteria for Selecting Sample

3.4.1 Inclusive criteria
The study will be limited to student nurses (GNM 3rd year) who will be:
- Studying in selected school of nursing.
- Available at the time of data collection.
- Both genders are included

3.4.2 Exclusive criteria
- Student nurses who are not willing to participate for the study.
- Student nurses who are not present at the time of study.

3.5 Methods of data collection and tool

It consists 5 items of demographic data and 34 Self structured Knowledge Questionnaire regarding Cardiopulmonary Resuscitation in adult.

3.6 Data Analysis

Descriptive and Inferential statistics were used to analyze the obtained data in order to achieve the results based on objectives and hypotheses of the study.

4. Result

4.1 Description of Demographic variables of study subject

Table 1: Frequency and percentage distribution of study subjects according to their demographic variables, **N=70**

Demographic Variables	Category	Frequency	Percentage
Age	Less than 20 Years	1	1.40%
	20-25 years	48	68.57%
	26-30 years	15	21.42%
	31-35 years	6	8.57%
Gender	Male	34	48.57%
	Female	36	51.42%
Educational qualification	Intermediate	36	51.42%
	Graduation	26	37.14%
	Post Graduation	8	11.42%
Family background	Medical	5	7.14%
	Non Medical	65	92.85%
Previous exposure	Yes	52	74.28%
	No	18	25.71%

Table 2: Frequency and Percentage distribution of pre and post-test Knowledge score of GNM 3rd year students on Cardiopulmonary Resuscitation in adult

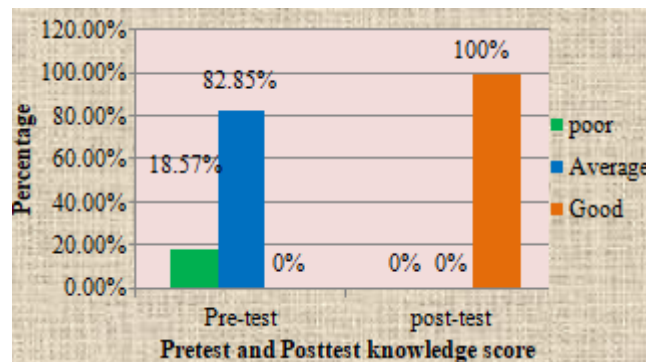| Knowledge Grading %	pretest		posttest	
	frequency (f)	Percentage (%)	frequency (f)	Percentage (%)
Poor (3-33 %)	13	18.57 %	0	0 %
Average (34-65%)	58	82.85 %	0	0 %
Good (66-100 %)	0	0 %	70	100 %

Figure 1: Shows pretest and posttest knowledge score of GNM 3rd year students

Table no. 2 and figure no 1. Shows data on Percentage distribution of the Knowledge Score of the GNM3rd year student on knowledge regarding Cardiopulmonary Resuscitation in adult. The data indicates that 18.57% (percent) had poor knowledge, While majority 82.85% percent had average knowledge and none of them had good knowledge in pre-test. The knowledge score of GNM 3rd year Students in post-test shows majority i.e., 100 %(percent) acquired good knowledge while, none of the student had average and poor knowledge. Thus it can be integrated the increase in knowledge may be one the effectiveness of structured teaching programme on cardiopulmonary resuscitation in adult.

Table 3: The Mean and Standard deviation of pre-test and post-test knowledge scores 0f GNM 3rd year student on Cardiopulmonary Resuscitation in adult

Group	N	Minimum	Maximum	Mean	Std. Deviation
Pretest knowledge score	70	6	21	14.44	3.578
Posttest knowledge score	70	23	23	28.36	1.745

Table No.3 shows that the mean, standard deviation of knowledge in pre-test and post-test. The mean Pre-test Knowledge score of the GNM 3rd year Students is 14.44 with a standard deviation of 3.578 has increased to the 28.36 with a Standard deviation 1.745 is a measure of spread of scores within a set of data. The large SD indicates greater variability in the data where as smaller SD indicates less variability in the data.

Table 4: Comparison between total pretest and total posttest knowledge score

Mean difference	Std difference	T	P value
13.914	3.829	30.406	.001

***highly significance at 0.05

The paired t test was computed to find the Effectiveness of STP on Cardiopulmonary Resuscitation in adult. The calculated value of 't'is -30.406 and 'p' value is .oo1 .p-value is less at 0.05 level. It shows that the STP was highly effective as there was a significant increase in the post-test knowledge scores among GNM 3rd year student on Cardiopulmonary Resuscitation in adult.

Table 5: Overview of Association between Pre-test Knowledge level and selected Demographic variables, **N=70**

S. NO	Demographic Variables	Category	Knowledge score			Chai Square	P Value
			Poor	Average	Good		
1	Age (in years)	>20 years	1	0	0	5.130	.163 NS
		20-25 years	9	39	0		
		26-30 years	2	13	0		
		31-35 years	2	4	0		
2	Gender	Male	5	29	0	1.158	.282 NS
		Female	9	27	0		
3	Educational qualification	Intermediate	10	26	0	3.707	.157 NS
		Graduation	4	22	0		
		Post -Graduation	0	8	0		
4	Family background	Medical	1	4	0	.000	1.000 NS
		Non -medical	13	52	0		
5	Previous exposure to CPR	Yes	6	46	0	9.049	.003* S*
		No	8	10	0		

NOTE: NS- not significant, S*-Significant

Table No. 5 presents the results of association between pre-test knowledge and demographic variables of GNM 3rd year Students like Age, Gender, educational qualification, family background and previous exposure to CPR ,regarding Cardiopulmonary resuscitation in adult. The chi-square analysis was carried out to determine the association between Knowledge and demographic variables. The association between pre- test Knowledge and previous exposure to CPR were significantly associated at p<0.05 level. It was Evident from result that GNM 3rd year Students was influenced by their previous exposure to CPR Hence, the research Hypothesis (H2) was accepted for association of Knowledge with variables previous exposure to CPR. Since significant association was not established for demographic variables such as Age, Gender, Educational qualification, family background research hypothesis (H2) was rejected for these variables.

5. Conclusion

The finding of the study concluded that the structured teaching programme on knowledge regarding cardiopulmonary resuscitation among GNM 3 rd nursing students was effective. And previous exposure to CPR has association with knowledge and age, sex, educational status and family background has no association with knowledge.

6. Recommendations

1) A similar study could be replicated on a sample with different demographic characteristics and with different techniques.
2) A similar study could be conducted in a different setting and longer samples for broader generalization.
3) A survey study could be initiated to check the knowledge of community people regarding CPR.

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