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"A Study To Assess The Effectiveness of Videotaped Instruction on Child CPR Among Third Year B.Sc Nursing Students, College of Nursing, SVIMS, Tirupati."

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Abstract
Background:*CPR is a rescue procedure to be used when the heart and lungs have stopped working. Dangers of Sudden Cardiac Arrests (SCA) that can lead to death of an individual within a few minutes. CPR is a basic life support for the purpose of oxygenating brain and heart until the appropriate definitive medical treatment can restore the normal respiration and circulatory function.**Objectives:** 1. To assess the knowledge regarding child CPR among third year B.Sc Nursing students.2. To assess the effectiveness of videotaped instruction on child CPR among third year B.Sc Nursing students.3. To associate the knowledge on videotaped instruction on child CPR with selected demographic variables.4. To associate the knowledge on practice on videotaped instruction on child CPR with selected demographic variables.**Method:** A quasi experimental single group pre-test and post-test design was adopted to assess the effectiveness of videotaped instruction on child CPR in College of Nursing, SVIMS, Tirupati.*
*A total of 50 third year B.Sc Nursing students were selected by Random sampling technique.**Results:** The effectiveness of knowledge on CPR, knowledge on practice scores in pre-test, mean of knowledge was 7.90 and standard deviation was 0.763, mean of practice was 7.28 and standard deviation was 1.262. In post-test, mean of knowledge was 6.24 and standard deviation was 1.287, mean of practice was 13.26 and standard deviation was 1.175. Both the level of Knowledge and practices were significant at p<0.01 level**. **Conclusion:***This study was successful in presenting a better understanding of the issues associated with introduction of Cardiopulmonary resuscitation in children.*

Keywords: *CPR,Knowledge,Nursing students, Practices.*

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I. Introduction

Over one million heart attacks happen every year and more than 20% of people die before ever reaching a hospital. Latest data shows that cardiac arrest is becoming the number one cause of death. In fact, studies show that 80% of all cardiac arrests happen at home which will most likely be a family member or friend. Each year, a number of persons suffer with an accident or illness, severe enough to stop their breathing and leads to respiratory arrest. In a small number of these cases, it will even stop their heart beating and leads to cardiac arrest. Sudden cardiac arrest is a major cause of death in developed countries. Sudden death occurs when heart beat and breathing stops.Cardiac arrest accounts for 25 to 30 percent of all cases of sudden death in the pediatric population. The annual incidence of pediatric sudden cardiac arrest (PSCA) is 1.7 per 100,000 person-years with a reported range of 0.6 to 7.5 cases per 100,000 person years. There are more than 356,000 out-of-hospital cardiac arrests (OCHA) annually.[1]

CPR is a basic life support for the purpose of oxygenating brain and heart until the appropriate definitive medical treatment can restore the normal respiration and circulatory function. In essence, cardio (heart) pulmonary (lung) resuscitation (revive, revitalize) serves as an artificial heartbeat and an artificial respirator. Cardio pulmonary (CPR) as we recognize it today was developed in the late 1950s and 1960s. Elam and safar described technique and benefits of mouth to mouth ventilation in 1958. Kouwenhoven , knickerbocker, Jude subsequently described the benefits of external chest compressions, which in combination with mouth to mouth ventilation form the basis of modern CPR.[2]

II. Need For The Study

In India the annual incidence of sudden cardiac death accounts for 0.55 per 1000 population. The survival rate of a sudden cardiac arrest is almost less than 1%. Sudden cardiac death constitutes 40-45% of cardiovascular deaths and out of this almost 80% are due to heart arrhythmia disturbances or arrhythmia. Maximum arrests were because of cardiac respiratory arrests. According to American Heart Associations newly released Heart Disease andStroke Statistics -2018 , the annual incidence of EMS-assessed non- traumatic OHCA in people of any age is estimated to be 356,461. Despite being a leading cause of death, there are no nation wide standards for surveillance to monitor the incidence and outcomes of cardiac arrest. Thus, registries and clinical trials are used to provide best estimates.[3] Survival to hospital discharge was 10.7% among children (8.2% with good neurological function).The location of EMS-treated OCHA was at home for 89.5% of children <1 years old, and 77% of children 1-12 years of old, and 72.9% for children13-18 years old.[4]

III. Review Of Literature

- **MutluVural and Mustafa FeridunKosar(2017**), conducted a study on the questionnaire comprised of three parts about CPR knowledge: The first dealing with general questions to understand the importance of CPR in clinical practice; the second comprising the main goal and accuracy of CPR intervention; and the last consisting of questions targeting the indications, methods and effectiveness of CPR.Descriptive statistics and multiple response analyses were done. The results shows the students had good knowledge about the importance of CPR in clinical practice and stood average in knowing its indications and effectiveness. The mean score was 64.62 +/-17.84 out of 100 points. While only 11% of them were completely aware about the universal compression ventilation ratio, 16.62% were aware of current compression depth. In addition, 21.8% of participants have only indicated the order of CPR being compression, airway and breathing.[5]

- **Awwma Ma, Ayltou, BHE (Hons) (2017),** conducted a, questionnaire survey. This study investigated CPR knowledge and attitudes of 383 students aged 15-16 years across 18 schools to understand barriers and for CPR delivery. A questionnaire pilot tested and validated by a panel of health professionals was distributed to students, using a convenience sampling methodology. The results shows most students (87%) had not received CPR training, with common reasons for not attending being lack of time, lack of interest and not sure where to attend a course. Results of Mann Whitney U tests indicated that students who had received training scored significantly ($P<0.05$) higher on factual knowledge and also attributes toward CPR training than those without training. There were no gender differences. Most students reported that they would attempt to perform CPR in a cardiac arrest situation.[6]

- **Khaled abdallahkhader, AbdulrahmanN.Al-Ghamdi, Hanan A.M. Youssef (2016),** conducted cross-sectional survey was used to study 320 health-college students selected conveniently from Taif University. A 20 items questionnaire developed by the researchers was used to collect data about awareness of participant of CPR. The validity and reliability of questionnaire was tested and proved. All ethical issues like consent form and anonymity were considered. Data were analyzed using SPSS to gent descriptive and inferential data of the questionnaire. The results show most participants scored less than 50%. There were significant ($p<0.05$) differences among health colleges, program and year of study programme. Nursing students got the highest score among all participants.In addition, students of the bridging program had a higher score than regular students. All questions were answered correctly by at least third of participants. Low rate of correct answers were found in infant CPR, steps of doing CPR and update information of CPR.[7]

- **Bander Aziz Al Enizi, et.al (2015),** conducted a cross-sectional study in the secondary schools in Al-Qassim region. Thirty of 99 schools were randomly selected; ten teachers from each school were enrolled. Teachers completed the questionnaire. T-tests were used to examine whether participants with either previous CPR training or previous resuscitation experiences had higher scores on the skills test than those without training experience. The results shows 305 teachers (80% Saudi nationality); 75.4% were males and 66.5% were between the ages of 31 and 50. Among the teachers, 35.7% had completed CPR training previously; but overall CPR knowledge and skills were low (mean=4.0, SD=1.62). Infarct, the average scores did not differ between those who had training and those who did not. The majority of teachers wanted more training (64.9%) and were willing to take a free course (78.4%).[8]

IV. Operational Definitions

Effectiveness: Refers to the extent to which the videotaped instruction on child CPR achieves the desired effect in improving the knowledge of students.

Videotaped Instruction: In this study videotaped instruction refers to a systematic planned teaching and learning module prepared, depicting the anatomy and physiology of heart and lungs, the basic steps of CPR, the process of CPR (one rescuer and two rescuer) and complications of CPR.

Child CPR:In this study child CPR refers to the child belongs to 8-12 years with set of interventions at the time of cardiac arrest to support the airway, breathing and circulation.

Hypothesis:

- There will be significant improvement in knowledge of third year B.Sc nursing students regarding cardio pulmonary resuscitation after videotaped instruction.
- There will be significant improvement in practices of third year B.Sc nursing students regarding CPR after videotaped instruction.

V. Assumptions

- Videotaped instruction on cardio pulmonary resuscitation would bring about change in nursing students knowledge and practice.
- Nursing students may spread this information to others.
- Students have a desire to know about CPR.

VI. Methodology

Research design

- The research design selected for the present study was a quasi-experimental single group pre-test and post-test research design. The study was conducted in College of Nursing, SVIMS, Tirupati. The population of this study includes all third year B. Sc Nursing students. Sample size consisted of 50 students with Random sampling technique was adopted.

Inclusive Criteria

- 3rd year B.Sc Nursing students who are willing to participate in the study.
- Students who are available during the period of data collection.

VII. Data Analysis

After giving a score for each students, both pre-test and post-test results were tabulated. Descriptive and inferential statistics were used for the analysis of the pre-test and post-test.

VIII. Results And Discussion

Table 1(Annexure-I) : Distribution of Demographic variables among B.Sc Nursing III year students. The data presented in table – 1 shows that out of 50 B.Sc Nursing students , majority 34(68.0%) were aged 20 years and 6(12.0%) were at the age group of 22 years.As for the gender, majority of the students 42(84.0%) were females and 8(16.0%) were males.Regarding the religion, majority of the students 36(72.0%) were Hindus, 10(20.0%) were Christians and 4(8.0%) were Muslims. Related to education of the mother, majority 30(60.0%) were having Primary education, and none of them had Technical education. Related to education of the father, majority 23(46.0%) were having Secondary education, and none of them had Technical education.Pertaining to occupation of mother, majority 22(44.0%) were employees, and 7(14.0%) were home makers. In accordance with fathers occupation, majority 26(52.0%) were employees and 1(2.0%) were agriculture.Related to family income per anum, majority 16(32.0%) were having income of more than Rs 70001 and 7(14.0%) had income of less than Rs 30,000 rupees.Related to place of residence, majority 21(42.0%) were from semi urban and 11(22.0%) were rural.Regarding to attended CPR classes majority 45(90%) were attended classes and 5(10.0%) were not attended classes.Regarding the exposure to CPR during clinicals majority 44(88.0%) had exposed to CPR and 6(12.0%) was not exposed to CPR during clinicals.

Table 2(Annexure-II): Distribution of level of knowledge scores regarding child CPR among III year B.Sc Nursing students. Out of 50 students, in pre-test 14 (28.0%) had inadequate knowledge, 27 (54.0%) had moderate knowledge and 9 (18.0%) had adequate knowledge. In post-test 11 (22.0%) had inadequate knowledge, 18 (36.0%) had moderate knowledge and 21 (42.0%) had adequate knowledge.

Table 3(Annexure-I) : Distribution of level of knowledge on practice scores regarding child CPR among III year B.Sc Nursing students. The level of knowledge on practice scores reveals that in pre-test 14 (28.0%) had inadequate on practices, 16 (32.0%) had moderate on practices and 17 (34.0%) had adequate on practices.

In post-test 12 (24.0%) had inadequate on practices, 18 (36.0%) had moderate on practices and 20 (40.0%) had adequate on practices.

Table 4(Annexure-I):The effectiveness of videotaped instruction related to level of knowledge and knowledge on practices regarding Cardio Pulmonary Resuscitation among III year B.Sc Nursing students. Both the level of Knowledge and practices were significant at $p<0.01$ level.

IX. Conclusion

Nursing implications:

In order to improve the efficiency of the students to perform their CPR activities in various fields, there is a need for the provision of videotaped instruction. The findings of the study have implications in nursing service, nursing education, nursing administration and nursing research.

Nursing services:

Health education and videotaped instruction programmes are the essential part of nursing service. The results of the study would help the nurses to enlighten their knowledge on importance of health education and videotaped instruction. Nurses and other health personals could not prevent sudden cardiac arrests at home.

- Provide college based video on CPR to the students, so that they are familiar with the CPR technique.
- Motivate the students and community people to learn CPR.

Nursing Research:

- Nursing research on newer method of teaching focusing on interest, quality and cost effectiveness.
- The finding of the study serves as a basis for professional and student nurses to conduct for the studies on child CPR.

X. Suggestions

Based on the study findings, the following suggestions are proposed.

- A study could be conducted using the post-test after one month, six months and one year to see the relation of knowledge.
- The study could be conducted with large samples.
- The study could be replicated in different settings, such as community to strengthen the findings.
- Similar study could be conducted in community.
- A descriptive study to assess the knowledge and practices of nursing students regarding CPR.
- A comparative study could be conducted by using computer based instruction, manual instruction and live demonstration method.

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ANNEXURE-I

Table-1: Distribution of Demographic variables among B.Sc Nursing III year students

n=50

S.No	Demographic variables		Frequency	Percentage %
1.	Age	20 years	34	68.0
		21 years	10	20.0
		22 Years	6	12.0
		Total	50	100.0
2.	Gender	Male	8	16.0
		Female	42	84.0
		Total	50	100.0

3.	Religion	Hindu	36	72.0
		Christian	10	20.0
		Muslim	4	8.0
		Total	50	100.0
4.	Educational of Mother	No Formal Education	11	22.0
		Primary Education	30	60.0
		Secondary Education	5	10.0
		Collegiate Education	4	8.0
		Technical Education	0	.0
		Total	50	100.0
5.	Education of Father	No Formal Education	7	14.0
		Primary Education	7	14.0
		Secondary Education	23	46.0
		Collegiate Education	13	26.0
		Technical Education	0	.0
		Total	50	100.0
6.	Occupation of mother	Home Maker	7	14.0
		Laborer	8	16.0
		Business	13	26.0
		Employee	22	44.0
		Total	50	100.0
7.	Occupation of father	Laborer	12	24.0
		Agriculture	1	2.0
		Business	11	22.0
		Employee	26	52.0
		Total	50	100.0

		Frequency	Percentage %
8. Family Income (per anum In rupees)	< 30000	7	14.0
	30001 - .50000	13	26.0
	50001 – 70000	14	28.0
	> 70001	16	32.0
	Total	50	100.0
9 Place	Urban	18	36.0
	Semi Urban	21	42.0
	Rural	11	22.0
	Total	50	100.0
10 CPR	YES	45	90.0
	NO	5	10.0
	Total	50	100.0
11 CPR Clinical	YES	44	88.0
	NO	6	12.0
	Total	50	100.0

Table 2: Distribution of level of knowledge scores regarding child CPR among III year B.Sc Nursing students.

n=50

Variables	PRE TEST						POST TEST					
	Inadequate		Moderate		Adequate		Inadequate		Moderate		Adequate	
	N	%	N	%	N	%	N	%	n	%	N	%
Knowledge	14	28.0	27	54.0	9	18.0	11	22.0	18	36.0	21	42.0

Table 3 : Distribution of level of knowledge on practice scores regarding child CPR among III year B.Sc Nursing students.

n=50

Variables	PRE TEST						POST TEST					
	Inadequate		Moderate		Adequate		Inadequate		Moderate		Adequate	
	n	%	N	%	n	%	N	%	n	%	N	%
Practice	14	28.0	16	32.0	17	34.0	12	24.0	18	36.0	20	40.0

Table 4 :The effectiveness of videotaped instruction related to level of knowledge and knowledge on practices regarding Cardio Pulmonary Resuscitation among III year B.Sc Nursing students.

N=50

	Pre-test			Post-test					
Score	Mean	N	SD	Mean	N	SD	t-value	P-value	Significance
Knowledge	7.90	50	0.763	6.24	50	1.287	8.249	0.00	**
Practice	7.28	50	1.262	13.26	50	1.175	24.754	0.00	**