

## A STUDY TO ASSESS THE EFFECTIVENESS OF COMPUTER ASSISTED TEACHING ON KNOWLEDGE REGARDING MANAGEMENT OF CARDIAC EMERGENCIES AMONG FINAL YEAR B.SC NURSING STUDENT OF SELECTED NURSING COLLEGE, BANGALORE

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### ABSTRACT

**Introduction:** Cardiovascular diseases are single leading causes of death globally mainly due to cardiac arrest, myocardial infarction and stroke which predicts that the death rate would reach 23.6 million by 2030. Management of cardiac emergency includes the prevention and treatment of in-hospital and out-of-hospital cardiac arrest where the prompt response and necessary skills in nursing help in rapid recognition and treatment that doubles the survival rates of the victim.

**Objective:** To assess the effectiveness of computer assisted teaching programme on knowledge regarding management of cardiac emergencies among final year B.Sc.nursing students of selected nursing college. **Methods:** A Pre experimental one group pre-test and post-test study design were conducted among 60 nursing students at Indira Gandhi Nursing Collage Bangalore using the non- probability convenient sampling technique. A self-administered structured questionnaire was used to collect the data. Computer assisted teaching was given to the nursing student on management of cardiac emergencies. The collected data was analyzed using descriptive and inferential statistics through SPSS version 16.0. **Results:** In the pre-test assessment only 8.3% of the respondents had moderate knowledge while the majority (91.7%) of the respondents had inadequate knowledge and none of the respondents had adequate knowledge. In post-test, nearly three quarters (73.3%) of the respondents had adequate level of knowledge, more than one quarter (26.7%) of the respondents had a moderate level of knowledge and none of the respondents had inadequate level of knowledge. The post-test knowledge mean score was  $26.67 \pm 3.516$  higher than the mean pre-test knowledge score  $10.5 \pm 1.605$ . The calculated 't' value (19.72) and p-value ( $<0.0001^{**}$ ) was less than tabulated value which is highly significant. No association was found between the levels of knowledge with any demographic variables regarding management of cardiac emergencies. **Conclusion:** Thus the study concluded that computer assisted teaching was significantly effective in increasing the knowledge on management of cardiac emergencies among nursing students.

**KEYWORDS:** Knowledge, Computer assisted teaching, Student, Management of cardiac emergencies.

### BACKGROUND OF THE STUDY

Coronary artery disease (CAD) is one of the important causes of cardiovascular morbidity and mortality globally. The major form of cardio vascular disease is coronary artery disease, myocardial infarction, angina pectoris or sudden cardiac death. Cardiovascular emergencies are life-threatening disorders that must be recognized immediately to avoid delay in treatment and to minimize morbidity and mortality. Cardiovascular or heart related emergencies are common and often account for several deaths in a year due to lack of awareness.<sup>[1]</sup> Cardiovascular disease is the most prevalent disease

worldwide. It is the leading global cause of death, accounting for 15 million deaths in 2015. Among a number of emergency conditions the cardiac emergencies account for the major contribution towards the mortality and morbidity rates.<sup>[2]</sup>

Cardiovascular disease (CVD) has become the single most important and largest cause of non-communicable disease deaths worldwide, at over 50%. The World Health Organization (WHO) estimates that 17.6 million people died of CVD worldwide in 2012. Proportionally this accounts for an estimated 31.3% of global mortality,

with ischemic heart disease (IHD) accounting for 7.4 million deaths, 13.2%. IHD was also the greatest single cause of death in 2000, accounting for an estimated 6.0 million deaths. The global burden of CVD falls, principally, on the lower- and middle-income countries, accounting for over 80% of CVD deaths. Heart Disease is still the leading cause of death in India killing 1.7 million Indians in 2016<sup>[3]</sup> Heart Disease and Stroke Statistics, 2015. This number is expected to rise to more than 23.6 million by 2030.<sup>[4]</sup>

Therefore the management of cardiac emergency is essential in emergency care. As nurses have inadequate knowledge in management of cardiac emergency, lack of knowledge among nurses motivated the researcher to do this study. It is anticipated that the study will help the nurses to acquire knowledge regarding management of cardiac emergency so the researcher is interested to do this study.

### OBJECTIVES OF THE STUDY

1. To assess the pre-test level of knowledge regarding management of cardiac emergencies among B. Sc. nursing final year student in selected nursing college, Bangalore.
2. To find the effectiveness of computer assisted teaching program on level of knowledge regarding management of cardiac emergencies by comparing pre-test score on post-test knowledge score.
3. To find out the association between pre-test knowledge score and selected demographic variables.

### Hypothesis

H1: There will be significant difference between the mean post-test knowledge score of nursing student regarding management of cardiac emergencies will be significantly higher than the mean pre-test knowledge score.

H2: There will be significant association between selected demographic variables and the pre-test knowledge scores of nursing student regarding management of cardiac emergencies.

### METHODOLOGY

**Research Design:** The research design used in this study was pre experimental one group pretest & posttest research design.

**Research Setting and Population:** The study was conducted in Institute of Indira Gandhi Nursing College Bangalore. The population of this study includes all students studying in final year B.sc nursing in Indira Gandhi Nursing College Bangalore.

**Sample:** The sample size for this study is 60 B.sc final year nursing student of Indira Gandhi Nursing College students between the age group of 18-26 years, who were available at the time of data collection and also who fulfill the inclusion criteria.

**Sampling technique:** Non probability convenient sampling technique was used for this study.

**Instrumentation:** The tool used for research study was self-administered structured questionnaire which was prepared after an extensive review of literature and discussion with the experts. The structured questionnaire consisted of two sections covering the following areas.

Section A: This section consists of 4 items seeking information on demographic data which includes age, gender, religion and residential.

Section B: Self- structured questionnaire to assessing knowledge. The tool consists of 32 knowledge test items of multiple choice types.

Section C: Development of computer assisted teaching: The title of the computer assisted teaching is on the management of cardiac emergencies. The content in a self-instructional computer assisted teaching deal on knowledge about cardiac emergencies, types, risk factors, sign and symptoms and steps of management of cardiac emergencies. The knowledge regarding the importance of cardiac emergencies was measured in terms of knowledge scores. Each correct scoring was given a score of one and wrong answers a score of zero. The maximum score was 32 and the minimum score was 0. It interprets level of knowledge the score was distributed as follows.

1. Inadequate knowledge : < 50% ( $\leq 15$ )
2. Moderate knowledge : 50-75% (16-24)
3. Adequate knowledge : > 75% ( $\geq 25$ )

Pretesting of instrument was done in 10% (6 students) of total sample at Miranda Collage of Nursing Bangalore, for the feasibility of the tool. Instrument was revised and finalized on the basis of pretest and feedback. The reliability co-efficient of the tool was calculated by using the Pearson's formula  $r = 2r/1+r$ , the calculated value of  $r=0.78$ . The developed tool was found to be highly reliable.

**Data Collection Procedure:** Prior to the commencement of the study, proposal approval and ethical clearance was obtained from Research Committee of Miranda Collage of Nursing Bangalore. Data was collected after getting ethical clearance from Committee of Miranda Collage of Nursing Bangalore and approval letter from Rajiv Gandhi University of Health Science, Karnataka, Bangalore. Researcher obtained the Formal written permission from the principle of Indira Gandhi College of nursing, Bangalore prior to the study.

Before data collection, the purpose of the study was explained to the class teacher and students. The participants of study were 60 students (between the ages of 18-26 years) who were selected by convenient sampling method Written informed consent was obtained from those who are willing to participate in the research study voluntarily. After the participants who agreed to participate were provided with a self-structured knowledge questionnaire set of questionnaires and

Anonymity of each participant was maintained by using code number and briefing of the questions was done. The filled questionnaire was collected by the researcher herself after it is filled.

Phase 1: In this phase pretest was conducted on 12-6-2019 by distributing the self-administered structured questionnaire about knowledge regarding the management of cardiac emergencies and instructions were given on answering the questionnaire and doubts were clarified. Each subject took 5-6 minutes to answer demographic data and 30-35 minutes to fill the questionnaire.

Phase 2: In this phase the investigator gave computer assisted teaching on management of cardiac emergencies and instructions given by using A.V aids PPT among the same sample for improving their knowledge and doubts were clarified.

Phase 3: In this phase post test was conducted on 7<sup>th</sup> day on (pre-12-06-2019 / post-19-06-2019). After 7 days post-test was conducted by using the same self-structured questionnaire to reassess the knowledge.

**Data Analysis Procedure:** All collected data were coded, organized and entered into Statistical Package for Social Sciences (SPSS) 16.0 version. Data were analyzed by using descriptive statistics i.e. frequency, percentage, mean, range and standard deviation to determine the level of knowledge of nursing students regarding the management of cardiac emergencies. Regarding inferential statistics, paired t test was used to analyze the effectiveness of computer assisted teaching on knowledge regarding the management of cardiac emergencies. Chi-square test was used to determine the association between the pretest levels of knowledge and selected demographic variables.

## RESULTS

**Table 1: Frequency and Percentage Distribution of Nursing Student According to Their Demographic Characteristics.**

n=60

S.No.	Demographic Characteristics	Frequency(n)	Percentage(%)
1.	Age in years		
	18-20 years	39	65
	21- 23 years	21	35
2.	Gender		
	Female	60	100
3.	Religion		
	Hindu	45	75
	Muslim	6	10
	Christian	9	15
4.	Residential Area		
	Rural	57	95
	Urban	3	5

Table 1 shows socio-demographic information of the participants where more than half (65%) of the nursing students were in the age group 18- 20years and more than one quarter (35%) were of 21-23 age group. With regards to gender, 100% nursing student were female.

With regard to religion most (75%) of the nursing students were Hindu similarly only (15%) were Christian only few (10%) were Muslim. With regard to residential area, majority (95%) nursing students were from rural area whereas only few 5% were from urban area.

**Table 2: Frequency and Distribution Regarding Level of Knowledge on Management of Cardiac Emergencies.**

n = 60

S.no.	Level of knowledge	Pre test		Post test	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	Inadequate knowledge	55	91.7	0	0
2	Moderate knowledge	5	8.3	16	26.7
3	Adequate knowledge	0	0	44	73.3
	<b>TOTAL</b>	<b>60</b>	<b>100</b>	<b>60</b>	<b>100</b>

Table 2 represents that, in the pre-test assessment only 8.3% of the respondents had moderate knowledge while the majority (91.7%) of the respondents had inadequate knowledge and none of the respondents had adequate knowledge. Regarding post-test knowledge of the

respondents after educational intervention, nearly three quarters (73.3%) of the respondents had an adequate level of knowledge, more than one quarters (26.7%) of the respondents had a moderate level of knowledge and

none of the respondents had an Inadequate level of knowledge.

**Table 3: Paired t-test Analysis for the Significance between overall Pre-Test and Post-Test Knowledge Regarding Management of cardiac emergencies.**

n=60

Aspect of knowledge	n	Maximum score	Mean	Mean difference	Range	Standard Deviation	Mean %	t value	p- value
Pretest	60	17	10.05	16.6	14	1.605	59.11	19.72	<0.0001**
Posttest	60	32	26.67		15	3.516	83.34		

\*\*\*p-value significant at <0.05 /\*\*\*p-value not significant at >0.05

Table 3 shows that the knowledge score gained by respondents in the results shows that the mean value of knowledge in the pre-test was  $10.05 \pm 1.605$  and in the post-test was  $26.67 \pm 3.516$ . Since the “p” value for the test is <0.05. The calculated ‘t’ value was 19.72 which shows that there was a significant difference between the mean pre-test and mean post-test knowledge score. This

shows that the obtained mean difference of pre-test and post-test knowledge scores was a true difference and not by chance and the calculated ( $p < 0.0001^{**}$ ) p-value is less than tabulated value. So, it can be concluded that the CAT is effective for imparting knowledge on management of cardiac emergencies. i.e research hypothesis is accepted.

**Table 4: Association between Pretest Level of Knowledge and Selected Demographic Variables.**

N=60

Variables	Inadequate Education	Moderate Education	$\chi^2$ value	p-value
Age (In Years)				
18-20	34	5	2.937	0.152
21-23	21	0		
Religion of participants				
Hindu	41	4	0.073	0.787
Non Hindu	14	1		
Residential area				
Rural	52	5	0.287	0.592
Urban	3	0		

Note: S-significant ( $p < 0.05$ ), NS-Not significant ( $p > 0.05$ )

Table 4 reveals that there is no association between pretest level of knowledge and selected demographic variables. None of the demographic variables i.e., age, religion and residential areas were not found statistically significant with pretest level of knowledge as calculated value is more than tabulated value. Hence research hypothesis is rejected.

## DISCUSSION

The findings of the present study revealed that in the pre-test assessment, only 8.3% of the respondents had moderate knowledge while the majority (91.7%) of the respondents had inadequate knowledge and none of the respondents had adequate knowledge. Whereas, post-test knowledge of the respondents after computer assisted teaching, nearly three quarters (73.3%) of the respondents had an adequate level of knowledge while more than one quarter (26.7%) of the respondents had a moderate level of knowledge and none of the respondents had an adequate level of knowledge regarding management of cardiac emergencies. This finding is in line with the study conducted by Sabir M, et.al (2017)<sup>[5]</sup> which revealed that only 3.2% respondents got high scores in pretest the majority of respondents (93.5%) had moderate knowledge level and 3.2% had low knowledge level. Regarding posttest assessment, 96.8% secured high score and remaining

3.2% had moderate score on Basic Cardiac Life Support among nursing student. Likewise, the study conducted by Dissanayake MP, Udaya RK et.al.(2016)<sup>[6]</sup> showed that less than half (44.3%) of the respondents had average knowledge, less than half (43.1%) of respondent had good knowledge and only few (12.3%) had poor knowledge on management of ALS among medical student.

In the present study, the post- test knowledge mean score ( $26.67 \pm 3.516$ ) was higher than the mean pre-test knowledge score ( $10.5 \pm 1.605$ ). The calculated ‘t’ value (19.72) and p- value ( $p < 0.0001^{**}$ ) was less than tabulated value which is highly significant (0.05). The present study has concluded that the computer assisted teaching programmed was effective in increasing mean value of knowledge among nursing student on management of cardiac emergencies. This findings is supported by a study conducted by Patidar K, Soni A (2019)<sup>[7]</sup>, which showed that the post- test knowledge mean score ( $21.45 \pm 2.77$ ) was higher than the pre-test knowledge mean score ( $9.72 \pm 1.99$ ). The calculated ‘t’ value (34.5) was greater than the table value (1.98) at 0.05 level of significance. The study has concluded that the structured teaching programmed was effective in increasing the knowledge regarding cardiac emergencies.<sup>[6]</sup> Likewise, the findings is supported by

another study conducted by Kose S, Akin S, et.al (2019)<sup>[8]</sup> which also showed that the post- test knowledge mean score ( $27.82 \pm 5.95$ ) was higher than the mean pre-test knowledge score ( $14.12 \pm 7.75$ ). The calculated 't' value (12.442) and *p*- value ( $p < 0.000$ ) was less than tabulated value which is highly significant. The study has concluded that the structured teaching programmed was effective in increasing the knowledge regarding cardiac emergencies.<sup>[7]</sup> Similarly a study conducted by Vinil U, Sweta, Ujjwal P et.al.(2018)<sup>[9]</sup> showed that the structured teaching program was effective in imparting knowledge regarding emergency cardiac medication.

The findings of the present study showed that there was no significant association between pre-test knowledge scores with selected demographic variables i.e., age ( $p > 0.152$ ), gender ( $p > 0.787$ ), residential ( $p > 0.592$ ). This finding is supported by the study conducted by Gupta VR, Dias R (2014)<sup>[10]</sup> which showed that there was no significant association between pre-test knowledge scores with selected demographic variables. In contrast to the findings of present study Patidar K, Soni A (2019)<sup>[7]</sup> revealed that there was significant association between pre-test knowledge score and selected demographic variables.

## CONCLUSION

The findings of the study concluded that the computer assisted teaching was effective in improving knowledge of nursing student regarding the management of cardiac emergencies. The CAT helped the students to ask the questions regarding the management of cardiac emergencies and the process of undergoing this counseling and clarifying their doubts. It also helps them to upgrade their knowledge on the management of cardiac emergencies.

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