Original Research Paper

Nursing

A STUDY TO EVALUATE THE EFFECTIVENESS OF SIMULATION TRAINING ON KNOWLEDGE & PRACTICE OF CARDIO PULMONARY RESUSCITATION (CPR) AMONG FIRE& SAFETY STUDENTS IN A SELECTED INSTITUTION AT MANGALORE

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ABSTRACT Heart disease is the world's largest killer disease claiming 17.5 million lives every year. An Indian dies of heart problem in every 29 seconds. As many as 20,000 new heart patients develop every day in India, six cores Indians suffer from heart disease and 30% more are at high risk by 2020. This study undertaken to evaluate the effectiveness of simulation training on knowledge & practice of cardio pulmonary resuscitation (CPR) among fire and safety students in a selected institution at Mangalore. The Objectives of the study were To assess the knowledge and practice of fire & Safety students regarding CPR., Evaluate the effectiveness of simulation training on cardiopulmonary resuscitation among fire and safety students. Compare the post test knowledge with practice on CPR and To find the association between pre-test knowledge and practice score on CPR with selected demographic variables. A quantitative approach one group pre-test post –test was adopted to evaluate the effectiveness of simulation teaching module Knowledge of participants on CPR was assessed by using structured knowledge questionnaire and observational checklist was administered to assess the practical knowledge level. The study concluded that the simulation training on CPR was very effective to improve knowledge and practice of cardio pulmonary resuscitation (CPR) among fire and safety students.

KEYWORDS : Effectiveness; simulation; CPR; knowledge; practice.

INTRODUCTION

"Birth and death are the two natural phenomena". Death can occur at any time due to any cause. However, death in some incidence can be prevented. Death due to cardiac arrest can be prevented by giving cardio pulmonary resuscitation in time. Cardio pulmonary resuscitation is a technique used to establish heart and lung function until more advanced life support is available.

Cardio- pulmonary systems function has relationship between the work of the heart and lung organs. The cardiopulmonary system describes the function of the heart in relation to the body's entire breathing mechanism, from the nose and throat to the lungs.[6]

MATERIALS AND METHODS

A quantitative approach one group pre-test post –test was adopted to evaluate the effectiveness of simulation teaching module. The population for the study was students studying fire and safety course from selected fire and safety engineering college Mangalore. Simple random sampling technique (lottery method) was used to select 30 students. The tool was divided in to three sections.

Part1 1: Demographic Performa

The investigator constructed the tool to collect the demographic details, which consisted three items age, education qualification, and previous knowledge regarding CPR.

Part 2: Structured Knowledge Questionnaire

It consists of 30 closed ended multiple choice items to assess the knowledge of sample regarding CPR. The question were divided in to:

Section 1: Meaning and goals of CPR-5 items

Section 2: Procedures of CPR-24 items

Section 3: Post resuscitation complication-1 items

The structured questionnaire had 4 alternative responses, the correct response was given a score of one mark and incorrect was scored as zero. The total knowledge questionnaire score was 30, which was classified as

- Poor knowledge   0-10
- Average knowledge   10-20
- Good knowledge   20-30

Part 3: Observation Checklist

An observation checklist was used to assess the practice of sample on CPR. It consists of 36 items divided in to 3 sections.

- Section 1: Assessment phase-5 items
- Section 2: Performance phase-25 items
- Section 3: Reassessment phase 5-items

The scoring was as follows: There were 36 items in the observational checklist score of one mark was given to those who have performed the steps correctly and zero for those who was not performed in well.

Categories

The practice scores were arbitrary categorised as: Poor practice: < 80 (0-29)Good practice: > 80% (29-36)

Statistical Methods

Data were organized, tabulated and analysed by using descriptive and inferential statistics. Version spss18.

RESULT

Among 30 samples distribution of students based on their age showed that most of the students 16 (53.3%) belong to the age group of 15-20 years, and 10 (33.3%) students belong to 21-25 years and rest 4 (13.3) of students belongs to the age group of 25yrs and above. According to their educational qualification among 30 students 18 (60%) students had studied up to PUC, 9 (30%) were completed SSLC, 2 (6.6%) were graduation and 1 (3.3) have completed post graduation. Previous exposure to information on CPR represents that that among 30 students, 19 (63.3%) of students had previous exposure to information on CPR and 11 (36.3) of students had no exposure. With regards to previous exposure to previous exposure to information on CPR majority of the sample 4 (36.3%) got information from textbooks, 3 (27.2%)from healthcare professionals and 3 (27.2%) from mass media and remaining 1 (9.09) from other sources.

Section 2: Assessment Of Pre-test Knowledge Of Fire And Safety Students Regarding CPR

Sl. No.	Knowledge level	Frequency (N)	Percentage (%)
1	Poor (0-10)	5	83.3
2	Average (11-20)	25	16.6
3	Good (21-30)	-	-
	Total	30	100

Showed that 25 (83.3%) students had poor knowledge and 5 (16.6%) were having average knowledge. None of them were

having good level of knowledge regarding CPR.

Section 3: Assessment The Pre-test Practice Level Of Students   N=30

Score range (36)	Frequency (N)	Percentage (%)
Good practice (>30)	-	-
Poor practice (<30)	30	100

Shows that 12 (40%) students had average knowledge 18 (60%) improved to level of good knowledge regarding CPR. None of them had good level of knowledge on CPR.

Section 4: Effectiveness Of Simulation Training On Cardiopulmonary Resuscitation Among Fire And Safety Student
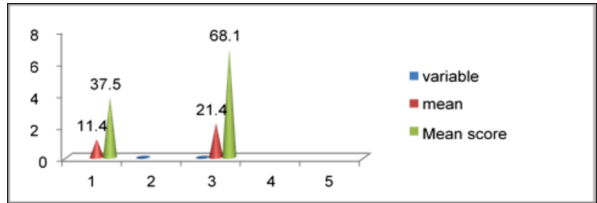
Knowledge Score On CPR

shows that overall the mean post-test knowledge scores (21.46) in all areas of CPR are higher than the mean pre-test score (11.43). The enhancement of knowledge score was 30.49%. Therefore the simulation training was very effective to enhance the knowledge on Cardio Pulmonary Resuscitation among fire and safety students.
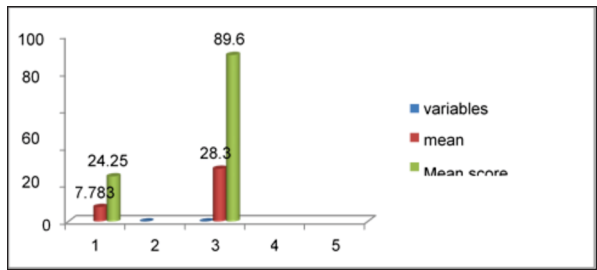
Score

Table 3.1 and Figure 14 shows that overall the mean post-test knowledge scores (21.46) in all areas of CPR are higher than the mean pre-test score (11.43). The enhancement of knowledge score was 30.49%. Therefore the simulation training was very effective to enhance the knowledge on Cardio Pulmonary Resuscitation among fire and safety students.

Section 4: Compare Post- Test Knowledge With Practice On CPR

Sl. No.	Variables	Knowledge score		Practice score		r value
		Mean	SD	Mean	SD	
1.	Post-test	21.46	5.046	28.35	4.57	0.154

Shows that there was positive correlation found that simulation training to improve knowledge and practice of CPR. The poor pre-test knowledge and practice mean score wasfound to be 11.4 and 7.78 respectively.

The knowledge and practice mean score level was increased with mean knowledge 21.46 and practice score 28.34. So there was a significant positive correlation between post-test knowledge and post-test practice score.

The improvement in knowledge among students showed improved practice of CPR technique.

Section 5: Association Of Pre-test Knowledge And Practice

And Demographic Variable Of The Students

Knowledge level					x^2		
Sample Characteristics	Poor	Avg	Good	Total	value	df	Inference
Age in years							
15-20	1	15	0	16			
21-25	2	8	0	10	4.5	3	NS
25and above	2	2	0	4			
Educational qualification							
SSLC	2	7	0	9	0.20	1	NS
PUC	3	15	0	18			
graduation	0	2	0	2			
Post graduation	0	1	0	7			
Previous information on CPR							
Yes	4	7	0	11	7.1	2	S
No	1	18	0	19			
Source of information about CPR							
Healthcare professionals	1	2	0	3	1.52	1	Ns

Knowledge level							
Sample Characteristics	Poor	Avg	Good	Total	Y^2 value	df	Inference
Textbook	2	2	0	4			
Mass media	1	2	0	3			
Others	1	0	0	1			

revealed that the chi square value of variables such as age (4.5) Educational Qualification (0.20) exposure to information on CPR (7.1) and source of information about CPR (1.52). There was significant association found between pre-test knowledge and previous information on CPR. But there was no significant association found between pre-test level of practice on CPR with demographic variables such as age, education and previous knowledge on CPR.

DISCUSSION

In present study the overall pre-test mean knowledge of students was 11.43 with standard deviation ±3.607 and pre-test practice score was 7.783 with standard deviation ± 3.325.Pre-test knowledge score study reported that the students had poor knowledge regarding CPR. According pre-test practice score, the students had poor practice on CPR. Knowledge was poor. The score were ranged from 0-36.Overall pre- test mean practice score of students was 7.783 with standard deviation ±3.32and mean score percentage 24.25.

Simulation training programme played a significant role in the enhancement of the mean post-test practice scores 28.35 with standard deviation ±3.32 in all areas of CPR are higher than the mean pre-test score 7.783 with standard deviation ±4.57. The effectiveness of simulation method proved by obtaining't' value 56.90%, which was found to be significant at 0.05 levels. So the simulation technique was very effective to enhance the practice regarding cardiopulmonary resuscitation among fire and safety students.

Karl Pearson's Correlation Coefficient was used to determine the correlation between post-test knowledge score and practice score on CPR. The computed score lies in between 0 and 1 ($0 \leq r \leq 1$) which is considered as moderately positive correlation. The improved knowledge of students showed good level of practice in CPR. Hence the present study findings revealed that there was asignificant positive correlation between post-test knowledge and practice score on CPR (r=0.154). The table value was considered as positive correlation. Chi-square test was used in the present study to find out the association between pre-test knowledge and practice score on CPR with selected demographic variables. Variables such as age (4.55), educational qualification (0.209), exposure to information on CPR (7.1), and source of

information about CPR (1.52) were significant at 0.05 levels. But there was no significant association between pre-test practice scores with selected demographic variables.

A quantitative study was conducted on effectiveness of demonstration regarding cardiopulmonary resuscitation on knowledge and practice among policemen at Mumbai. The results of the study revealed that the mean knowledge score of subjects was 11.66 and post- test were 19.38 and on overall mean practice score of subjects in pre-test was 6.52 and in post-test was 14.56. The study concluded that there was a positive co-relation between post- test knowledge score and practice score on CPR.[7]

CONCLUSION

The study findings was concluded that, the post-test mean knowledge of students was (21.46±5.046) significantly higher than the pre-test mean knowledge sore (11.43±3.607) of students. There was an improvement in the post-test mean practice score of students (28.35±4.57) was significantly higher than the pre-test mean knowledge score 7.783±3.325). The study concluded that simulation training was very effective to enhance the practice of fire and safety students regarding cardiopulmonary resuscitation.

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