

Efficacy of Cardiopulmonary Resuscitation Training Program on Knowledge and Practice of Nursing Students

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ABSTRACT

Background: Cardiopulmonary Resuscitation (CPR) is a technique of providing BLS to restore the circulation and breathing of an individual in cardiac arrest. Effective CPR in first few minutes can improve the chance of survival of arrest victims. Best results of cardiopulmonary skills can be achieved when resuscitation education prepares students to perform it effectively. The aim of the study was to assess the effectiveness of CPR training program on nursing students and to find correlation between the knowledge and practice of nursing students regarding CPR.

Methods: This study used a quantitative approach with one group pre-test post-test research design. Study was conducted in a selected college, total 60 subjects were selected through random stratified sampling. Data collection was done by knowledge questionnaire and observation checklist.

Conclusion: Majority of the participants, 93.2% (55) were females and 6.8% (4) were males. Average mean knowledge score difference from pretest to posttest was 12.9 and average mean practice score was 9.2. There was a weak positive correlation between the knowledge and practice scores of nursing students. It was concluded that knowledge and practice of nursing students were significantly better after the training program.

Keywords: Cardiopulmonary Resuscitation, Effectiveness of training program, nursing students

INTRODUCTION

Human life is precious; therefore, man strives to live healthy as health is an asset that man is blessed with. According to WHO census (2009) in India 4,280 per one lakh people die each year from sudden cardiac arrest. It is a silent epidemic and 7-10 percent survival chances reduce with every passing minute.¹ Cardio means “of the heart” and pulmonary means “of the lungs”. Resuscitation is a medical word that means “revive” or bring back to life. Cardiac arrest occurs when blood supply to the brain ceases and it leads to depression of breathing. The combination of

these two activities, that is no breathing and no circulation, causes myocardial ischemia which provides only 10-minute window period time. Therefore, any rescue procedure has to be done within this frame of time only. According to American Heart Association, CPR should be started within 10 seconds of recognition of cardiac arrest.²

Early cardiopulmonary resuscitation (CPR) implementation can increase the survival rate of those suffering cardiac arrest by two to three times.³ Chest compressions have saved lives of many people, the rate of survival can even be three times higher when

cardiac arrests are attended by persons who are able to provide immediate resuscitation.⁴ Life-threatening emergencies can occur anytime, anywhere, and to anyone. It is necessary for all medical, nursing and paramedical staff to learn about BLS as they come across life-threatening emergencies in their routine life.

According to AHA (2019) one to two lakhs lives could be saved every year if CPR is performed immediately after cardiac arrest, 4% - 16% patients who immediately received CPR were eventually discharged from the hospital.^{5,6} As nurses are the first responders in many of the cardiac arrest situation he or she should know how to resuscitate and be familiar with resuscitation equipment, drugs, and procedures. Nursing staff as well as nursing students should be very competent in this field of work. In this study, Cardiopulmonary Resuscitation training was given to nursing students and the objective of the study was to assess the effectiveness of CPR training program on knowledge and practice of nursing students and to find correlation between the knowledge and practice of nursing students regarding CPR.

MATERIAL AND METHODS

Design and setting: This study was conducted in a selected nursing college, Haldwani from May 2019 to June 2019. Quasi-experimental one group Pretest - Posttest design was used in the study.

Participants: 60 subjects were taken from Basic B.Sc. nursing 4th year, 3rd year, GNM 3rd year and 2nd year using stratified random sampling technique (fifteen from each class by lottery method). Before the closure of study, there was a dropout of one subject therefore analysis was done on 59 subjects.

Tool: Data collection was done using Knowledge Questionnaire to check the knowledge of nursing students on CPR and Observation Checklist was used to check skills of nursing students.

Data collection Process: It was done in multiple phases. In Phase I, pretest was taken

on day one followed by Training Program on next day in Phase II. Data collection was completed with Phase III in which Posttest was taken after 14 days of training program.

Scoring: With each correct response in knowledge questionnaire and with each correct step in practice checklist, one mark was awarded while no negative marking was done.

Reliability & Validity: For validity of content of tool and lesson plan it was given to nine validators for their opinion and suggestion regarding the appropriateness and relevance to ensure the content validity. The reliability of knowledge questionnaire was calculated by Split Half Method ($r = 0.89$) and reliability of observation checklist was calculated using Inter Rater Reliability. ($r = 0.926$).

Ethical Considerations: Formal administration written permission and ethical consideration was obtained before conducting study from the ethical committee. Written informed consent was obtained from each study participant after explaining the purpose of study.

Statistical Analysis of data: The data was analysed on the basis of objectives of the study using inferential and descriptive analysis by SPSS 22.0.

RESULT AND DISCUSSION

The data findings were organized, finalized and presented under the following sections:

Section I: Socio- demographic characteristics of study participants

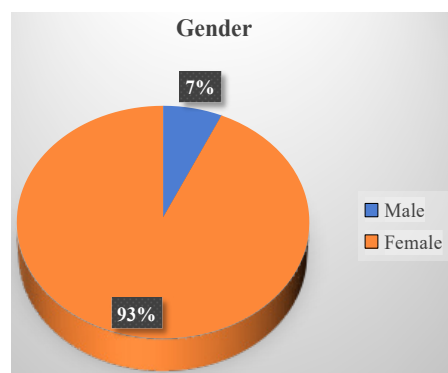


Fig. 1: Gender classification of subjects

Table 1: CPR Training status of subjects

Sl No.	Characteristics	Response	Frequency	Percentage (%)
1.	CPR Training Received	Yes	59	100
		No	00	0.0
2.	Performed CPR	Yes	00	0.0
		No	59	100

Sample characteristics concluded that majority of the participants were female (Fig. 1). Similar participation was seen in the study conducted by Reddy CHB, Jaiswal S, Bhardwaj G (2018) where equal strength of students was taken from GNM and B.Sc. Nursing.⁷

Findings of this study concluded that all the participants, received CPR Training earlier and none of the participants had ever performed CPR in real life situation (Table 1). Study conducted by Deepa PD (2017) presented the similar findings about the CPR training and performance of the participants.⁸

Section 2: Effectiveness of the CPR Training program

Study revealed that mean knowledge score increased from 20.59 to 33.54 (mean difference was 12.9). While practice scores mean difference was 9.20 (Fig. 2).

Effectiveness of the training program was also shown by the significance of 't' value

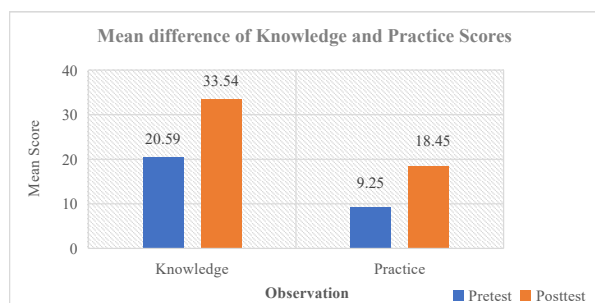


Fig. 2: Mean Difference of Knowledge and Practice Scores

Table 2: Mean, SD, df and t-value of Pre-test and Post-test Knowledge and Practice Scores

Observations	Mean \pm SD	t-value	df	Sig.
Knowledge	12.94 \pm 4.48	22.17	58	.00
Practice	9.20 \pm 3.15	22.40		

't' (58) = 2.00 *The result is significant at $p < 0.05$

at 0.05. Thus, accepting the research hypothesis (Table 2). Study findings were similar to the study conducted by Priyanka Chaudhary (2018), results revealed that the mean knowledge score increased from 17.13 to 27.03 and mean difference obtained was 9.9, thus, showing the effectiveness of study.⁹

Findings from another study conducted by Ajjappa AK, Babu CPS, Gowda SS, Shashikala P (2015) were consistent with this study, their result revealed that the mean pretest score was 75.09% which increased to 92.70% after training program with a mean difference of 17.6%.¹⁰

Data presented below (Fig. 3) shows areas of knowledge of nursing students in all the observations. Minimum score obtained by subjects was 23.7% and maximum score

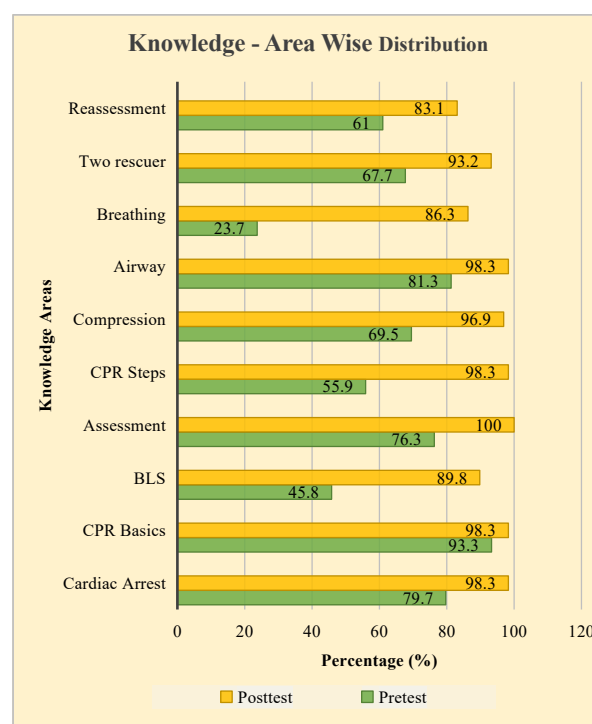


Fig. 3: Area wise distribution of Knowledge Scores

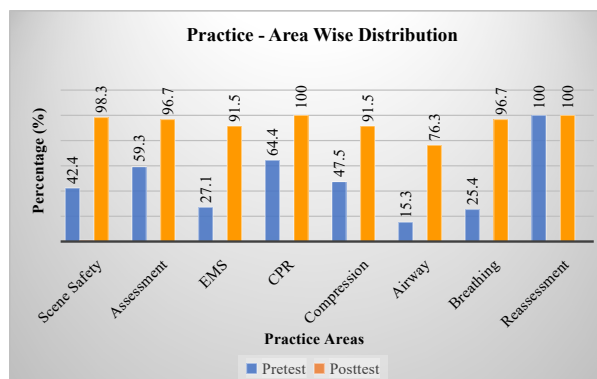


Fig. 4: Area wise distribution of Practice Scores

was 100%. As CPR is an important life saving measure, it was decided to give equal importance in teaching all the areas, irrespective of specific area knowledge inadequacy.

Finding shown above (Fig. 4) represents the areas of CPR skills where practice of students was assessed. Minimum score in pre-test was found 15.3% and maximum score was 100%.

Section 3: Correlation between the knowledge and practice of nursing students regarding CPR

Statistical analysis showed that in pretest, there was a weak positive correlation (0.41) between knowledge and practice of nursing student. While correlation between knowledge and practice in posttest (0.26) was found to be significant at 0.05 level, the values were 0.09, 0.26 and 0.30 respectively (Table 3).

These study findings were congruent with the study conducted by Eman AM (2017) where the study shows that there was positive correlation between score of knowledge and score of practices in pre-test as well as post-test.¹¹

Table 3: Correlation between Knowledge and Practice of Nursing Students

	<i>r Value</i>	<i>p Value</i>
Pre-test Knowledge and Practice	0.41	0.00*
Post-test Knowledge and Practice	0.26	0.04*

*The result is significant at $p < 0.05$

CONCLUSION

Cardiopulmonary Resuscitation is a life-saving technique. It increases survival rate of victims in fatal conditions like cardiac arrest, respiratory arrest and other life endangering conditions. Thus, it is essential for student nurses to be efficient in CPR skills. It was concluded from the study that knowledge and practice of nursing students were significantly good after the training program. The training program was effective and it not only improved the level of knowledge and skills but gave confidence to student nurses to perform the procedure as they will be competent in their skills.

Conflict of Interest: There was no conflict of interest for conducting this study

Source of Funding: This research study was self-funded

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