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A Study to Assess the Effectiveness of Hands-on Training Programme on Knowledge and Practice Regarding Adult CPR among Non-Medical Professional Students of Selected Colleges at Kanpur

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Abstract: ***Background: "The world population in 2023 is 8 billion, with around 620 million people are living with heart disease globally". Each year around 60 million people develop a heart disease. So, it's important for each of us to save the life of person in emergency condition by knowing the sign of cardiac arrest and method to provide high quality CPR to improve survival rates and reduce mortality. Method: A Quasi - Experimental (Pre - Test and Post - Test Control Group Design) Study has conducted on to assess the effectiveness of hands - on training programme regarding adult CPR among non - medical professional students.100 B. Ed. First students are included in the study as sample.50 for experimental and 50 for control group by using non - random sampling technique. The data was collected by using knowledge questionnaire and standard checklist by American Heart Association. Sessions were conducted to impart knowledge via Power Point presentations and practice through demonstration. Result: This quasi - experimental study evaluates the effectiveness of a hands - on training program on adult cardiopulmonary resuscitation (CPR) knowledge and practice among 100 first year B. Ed. students at Abhinav Sewa Sansthan Mahavidyalaya Kanpur India. Using pre - test and post - test control group design 50 students receives training (experimental group) while 60 did not (control group). Data were collected via a knowledge questionnaire and an American Heart Association standardized checklist. Results showed significant improvement in the experimental group's mean knowledge score (from 12.72 to 22.18) and practice score (from 2.6 to 7.08) group. Statistical analyses, including paired and unpaired t - test tests, confirmed the training's efficacy (p=0.005). This study underscores the value of hands - on training for non - medical professionals in enhancing emergency response capabilities. Conclusion: According to the study its evident that there is huge improvement has found in knowledge and practice level among non - medical professional students after administration of session.***

Keywords: CPR (Cardiopulmonary resuscitation), knowledge, practice, non - medical professionals, training.

1. Introduction

As the core part of the circulatory system, the heart is responsible for pumping blood, supplying oxygen and nutrients, and removing metabolic waste such as carbon dioxide from all the tissues in the body. The heart and veins are comprising the cardiovascular system. The heart is a vital organ of the body; therefore, minute dysfunction or abnormalities in the heart may have drastic consequence on the human health. The smooth functioning of circulatory system is maintained by complex network of bold vessels that supply the blood throughout the body and return to the heart. When heart sudden and unexpectedly stops beating resulting diminished circulation throughout the body. [1] Up to 80% premature heart attack can be prevented. World has tools and knowledge to mitigate harms to cardiovascular health particularly with advance cardiovascular medicines and procedures. "There is no - one - size - fits - all approach to improving cardiovascular health globally. Every population is susceptible to different life styles, where they live. Sudden cardiac death causes almost 63% of deaths. Survival of these patients depend upon prompt and effective delivery of basic life support at site. [2]In 1960, a total of 14 patients were able to survive a cardiac arrest due to the implementation of closed chest cardiac massage and the introduction of rescue breathing. The initial cardiac resuscitation (CPR) guidelines were created by the American Heart Association in 1966 and have since been periodically revised. In today's day and age, basic life support involves not just CPR (Cardio Pulmonary Resuscitation) but also the use of automated external defibrillators for defibrillation. Recognition of signs of cardiac arrest (SCA), heart attack, stroke, and obstruction by foreign bodies are all part of basic life support. Cardiopulmonary resuscitation (CPR) and the use of a defibrillator. [3]

2. Material and Methods

Design: **Quasi - Experimental (Pre - Test and Post - Test Control Group Design)** as the study fulfills the criteria such as, manipulation of independent variables in the presence of control group.

Variables: Variables are the quantities, properties or characteristics of person and situation that change or vary. The variables mainly included in the study are independent and dependent variables.

Independent Variables: Hands on training programme on adult CPR (Cardiopulmonary resuscitation).

Dependent Variables: Knowledge and practice level of non - medical professionals.

Demographic Variables: In this study are age, gender, education, religion, residence area and source of information are included in the demographic variables.

Study Setting: Abhinav Sewa Sansthan Mahavidyalaya, Kanpur Uttar Pradesh for experimental group and control group.

Target Population: The Target population of this study was non - medical professional students of B. Ed. first year.

Accessible Population: Non - medical professional students of B. Ed. first year from Abhinav Sewa Sansthan Mahavidyalaya, Kanpur Uttar Pradesh for experimental group and control group.

Sampling

Sampling Technique: In this study there is non - randomization technique is used. **SAMPLING TECHNIQUE:** Purposive Sampling Technique is used in the study for the collection of data.

Sampling Criteria:

Inclusion Criteria:
- Students who are regularly attending the college.
- Students who are available at the time of data collection.

Exclusion criteria:
- Students who are unavailable due to unfavorable situation.
- Students who are irregular in terms of attendance in the class.

3. Procedure and Methodology

Data Collection and Procedure: After obtaining permission from the ethical committee, approached to the principal and director of Abhinav Sewa Sansthan Mahavidyalaya, Kanpur Uttar Pradesh for conducting the study. The purpose of the study was explained to the principal and gave brief introduction about the knowledge regarding Ault CPR. After obtaining the willingness, same I explained to the B. Ed. first students and then taken consent from each student for conducting the programme and I got the full cooperation from the department and personnels. Collection of the data has through structured knowledge questionnaire and practice checklist from the B. ED first year students of Abhinav Sewa Sansthan Mahavidyalaya, Kanpur Uttar Pradesh for experimental group control group.100 sample were selected for the study 50 for experimental group and 50 for the control group. Pre - test has done on **22.07.2024** Monday, for both the group (experimental and control) then hands on training programme has conducted only for the experimental group on same day, then after 1 week post - test has conducted on **29.7.2024, 30.07.2024, 31.07.2024 and 01.08.2024** from the experimental and control group to assess comparison in knowledge and practice from the respective groups and also to know the effectiveness of hands - on training programme among non - medical professionals.

4. Result

In experimental group pre - test and post - test knowledge, in which the knowledge level is divided into three parts **poor, average and good** so the frequency and frequency percentage of poor knowledge in pre - test is 14 (28%), for average 36 (72%), and in good there is no value. After hands - on training programme there is increased in knowledge and **post - test** level improved in positive aspects, the knowledge level of post - test is, none of any student got poor marks, where as in average 13 (26%) and in good 37 (74%) it demonstrates a marked increase in knowledge post - session.

Experimental group according to their pre - test and post - test practice level in which the practice level is divided into three parts inadequate, good and excellent so, the frequency and frequency percentage in pre - test, inadequate is 44 (88%), good 6 (12%) and in excellent there is no value. After hands - on training programme there is improvement in practice level and post - test level of practice has improved in positive aspects, the practice level of post - test is, none of any student got poor performance it means no belongs from poor the frequency of poor is 0 (0%), where as in good42 (84%) and in excellent 08 (16%) it indicates the massive improvement occurs after the session conducted.

Control group according to their pre - test and post - test knowledge in which the knowledge level is divided into three parts poor, average and good so the frequency and frequency percentage of poor knowledge in pre - test is 29 (58%), for average 21 (44%), and in good there is no value. Then in post - test of control group there is only few changes has occurred that are respectively for poor 36 (72%), and in average 21 (42%) and for good 0 (0%) it indicates there is no impact has found in control group.

Control group according to their pre - test and post - test practice level in which the practice level is divided into three parts inadequate, good and excellent so, the frequency and frequency percentage in pre - test, inadequate is 39 (78%), good 11 (22%) and in excellent there is no value found. Then the practice level of post - test is, the frequency of inadequate is 37 (74%), where as in good13 (26%) and in excellent 0 (0%). It indicates there not much improvement has occur in post - test.

The result of the study shows that the pre - test and post - test knowledge level of experimental group in which the pre - test knowledge mean, mean percentage and standard deviation is 12.72 (25.44%), 6.63 respectively. Then in the post - test the value has improved which is 22.18 (44.36%), 3.88. The value of paired “t” test is - 17.7, for df 2.009 and p value is 0.005.

The result of this study shows that the pre - test and post - test practice level of experimental group in which the pre - test knowledge mean, mean percentage and standard deviation is 2.86 (5.72%), 1.3266 respectively. Then in the post - test the value has improved that is 7.08 (14.16%), 1.8744. The value of paired “t” test is - 14.51, for df 2.009 and p value is 0.005.

This study result revealed that comparison of post - test knowledge between experimental and control group to know the impact of session. The knowledge level of experimental

group is, mean with mean percentage 22.18 (44.36%) and the standard deviation of experimental group is 6.63 and for the control group mean with mean percentage is 11.4 (22.28%), standard deviation is 4.04. That indicates positive impact of knowledge found in experimental group.

The result shows that comparison of post - test practice level between experimental and control group to know the impact of session. The practice level of experimental group is, mean with mean percentage7.08 (14.16%) and the standard deviation of experimental group is 1.8744, and for the control group mean with mean percentage is 3.08 (6.16%), standard deviation is 1.3266. That indicates positive impact of practice level found in experimental.

Table 1: Frequency and Percentage Distribution in Control Group According to Their Pre - Test and Post - Test Level of Knowledge among Non- Medical Professional Students, n = 50

S. NO	Knowledge Score	Frequency (%) Pre - Test		Frequecy (%) Post - Test		Mean
1.	Poor (0 - 10)	29	58%	36	72%	Pre – Test: 10.28
2.	Average (11 - 20)	21	42%	14	28%	Post – Test: 11.14
3.	Good (21 - 30)	0	0	0	0	

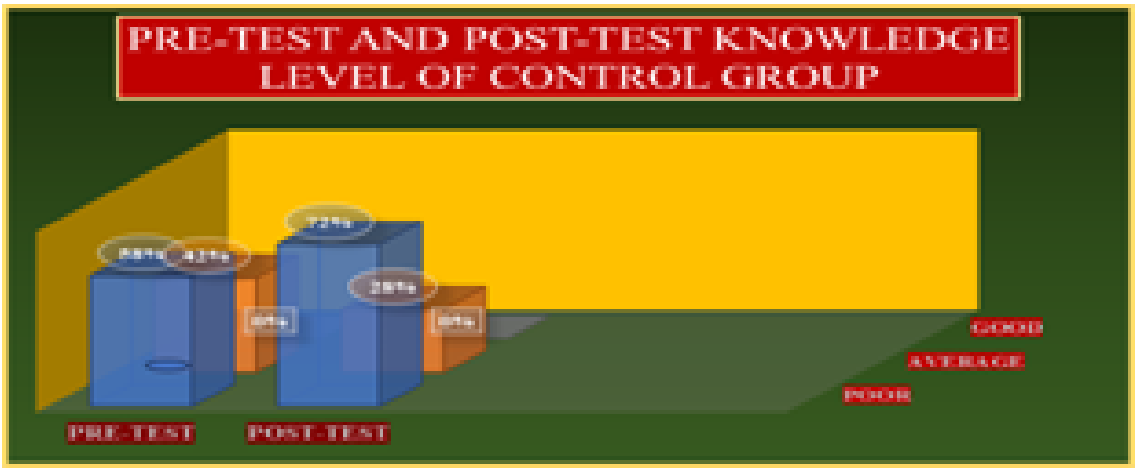

Figure 18: Frequency and percentage distribution of control group according to their pre - test and post - test knowledge level of knowledge

Table 2: Frequency and percentage distribution in control group according to their pre - test and post - test practice level of practice among non - medical professional students, n = 50

S. NO	Practice Score	Frequency (%) Pre - Test		Frequency (%) Post - Test		**Mean**
1.	Inadequate	39	78%	37	74%	**Pre – Test** 2.96
2.	Good	11	22%	13	26%	**Post – Test** 3.08
3.	Excellent	0	0%	0	0%	

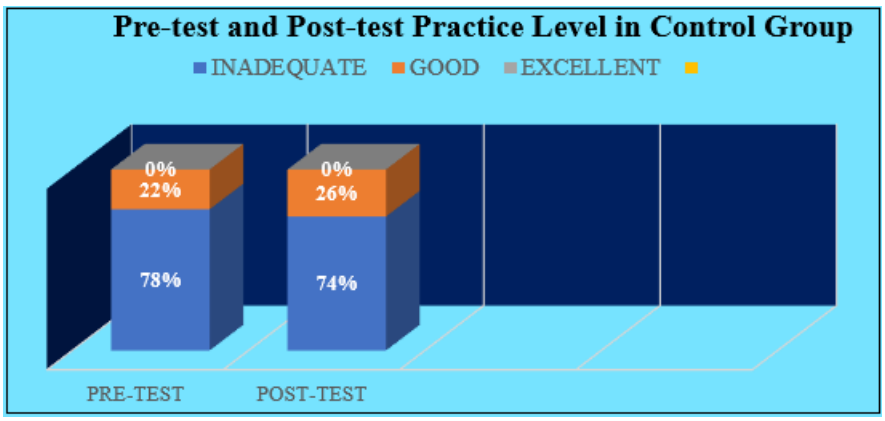

Figure 2: Frequency and percentage distribution of control group according to their pre - test and post - test level of knowledge

Table 3: Distribution of mean, standard deviation and "t" test values of significant difference between pre - test and post - test level of knowledge in experimental group among non - medical professional students.
n = 50 in each group

S. No	Knowledge Level	Mean	Mean%	Mean Enhancement	SD	Paired Test	df	P Value
1.	Pre - Test	12.72	25.44%	- 9.46 (18.92%)	6.63	- 17.37	2.009	0.05
2.	Post - Test	22.18	44.36%		3.88			

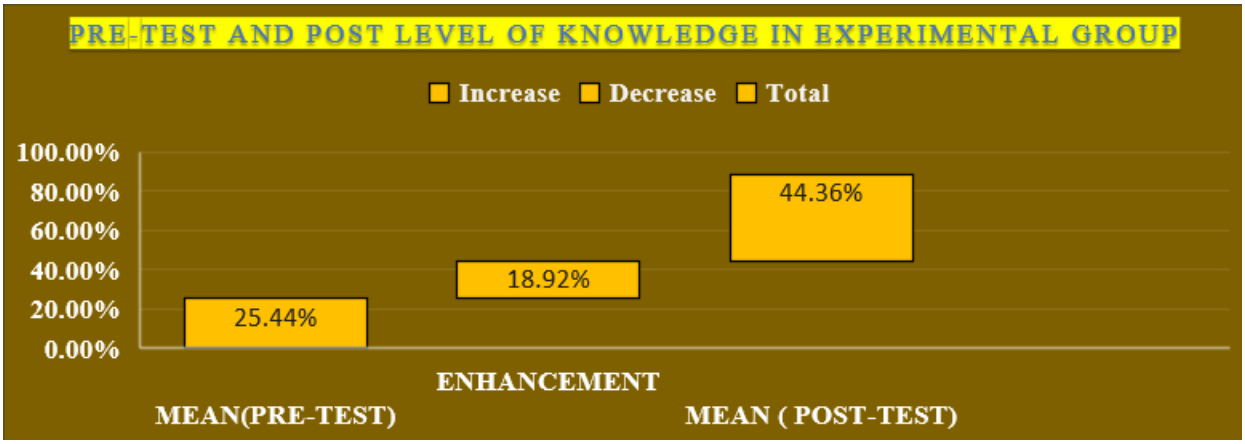

Figure 3: Distribution of mean of significant difference between pre - test and post - test level of knowledge in experimental group among non - medical professional students

Table 4: Distribution of mean, standard deviation and "t" test values of significant difference between pre - test and post - test practice level in experimental group among non - medical professional students, n = 50

S. No	Practice Level	Mean	Mean%	Enhancement	SD	Paired Test	df	P Value
1.	Pre - Test	2.86	5.72%	4.22 (8.44%)	1.3266	- 14.51	2.009	0.05
2.	Post - Test	7.08	14.16%		1.8744			

5. Discussion

It observed in the present study that in experimental group that there is no significant association between pre - test knowledge level with selected demographic variables such as age, gender, religion, education, residence area and source of information since the table value exceeded the calculated chi - square value.

- It observed in the present study that in control group knowledge that there is no significant association between pre - test knowledge level with selected demographic variables such as age, gender, religion, education, residence area and source of information since the table value exceeded the calculated chi - square value.
- It observed in the present study that in experimental group practice that there is no significant association between pre - test knowledge level with selected demographic variables such as age, gender, religion, education, residence area and source of information since the table value exceeded the calculated chi - square value.
- In present study of control group practice there is no significant association between pre - test knowledge level with selected demographic variables such as age, gender, religion, education, residence area and source of information in control group.
- Study result shows that there is significant association of between pre - test practice level with selected demographic variables such as age and the calculated value is **13.38*** and for residence area **57.74** both are higher than the table value.

H2: There will be significant association of pre - test knowledge level regarding Adult CPR with selected demographic variables among non - medical professional students at (P<0.05 level of significance) is accepted.

6. Limitations

1) The present study was on relatively on small sample which limit is generalization.
2) The study was limited to medical professional students of Abhinav Sewa Sansthan, Kanpur.
3) The study was limited to non - medical professional B. Ed. first year students.

7. Recommendation

1) A similar study can be undertaken with other non - medical courses.
2) The present study can be replicated in similar and different setting with large number of samples to validate and generate finding of the study.
3) Various other national and international modalities, which vary in content and method can be used to assess the effectiveness of Adult CPR among non - medical professionals.
4) The present study can be replicated for the medical and nursing students as well to identify their knowledge and skill ability regarding adult CPR.
5) The present study can be also use with registered nurses and doctors to identify the gap between knowledge and practice regarding adult CPR.

8. Conclusion

The finding of the study, concluded that the level of knowledge on effectiveness of Hands - on training programme on knowledge and practice regarding adult CPR among non - medical professional students of Abhinav Sewa Sansthan, Kanpur. Students was having **inadequate knowledge and practice in experimental and control group during pre - test, after intervention to the experimental group their knowledge practice level score has improved in very good way. Therefore, there is good statistical relationship between pre - test and post - test knowledge score**.

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