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ADULT CARDIOPULMONARY RESUSCITATION (CPR): KNOWLEDGE AND PRACTICES IN ADULTS

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INTRODUCTION

Background: United State, reported up to 325,000 OHCA cases every year.CAD and heart failure (poor LV function < 30%) detected as main etiology in OHCA. Cerebral cortex, hippocampus, thalamus, cerebellum, and basal ganglia neuron are selectively damaged as they are very most susceptible to have hypoxic-ischemic injury. The overall survival rate, post OHCA was reported very low that is 1.4%. 5.3% survival rate in witnessed arrest. A study from Denmark, reported that every year around 5000 people suffered from OHCA. Their survival depends on time spend between collapse and receiving resuscitation. In 2020, sudden cardiac arrest mortality in the US was 436,852. Survival chance will be increased by double or triple, if resuscitation efforts taken instantly after cardiac arrest. AHA has released *Heart and Stroke Statistics - 2022 Update.* According to the report, cardiac arrest remains a public health crisis. Annually in US more than 356,000 OHCA are reported. OHCA mortality remains high all over the world. To improve survival rate in OHCA, general population should be trained adequately who will be capable to provide quality CPR.

Methods: This was an interventional study, used evaluative approach and conducted at Buldhana and Satara city of Maharashtra amongst 350 adults by Purposive sampling method during the period of April 2023 to May 2023. Pretest and posttest knowledge and practices regarding Adult CPR were assessed through 20 questions and practices were assessed by 15 statements. Video-assisted teaching programme was provided after pretest data collection.

Results: Majority (79.43% of them) of the young adults are between 18-24 years were, 46.86% of the young adults are males and 53.14% of the young adults were females.86.00% are studied up to graduation level of education and 91.14% of them were students, 89.43% are having no family history and 62.29% are having not having previous Knowledge. In pretest, mean SD knowledge score was 10.59 and in posttest was 16.76 and so the difference is 6.17, Pretest practice means SD was 6.36 and posttest mean SD was 12.78 practice score, so the difference was 6.42, this difference was large and it is statistically significant difference found which was calculated using Student's paired t-test. In posttest there was association found between gender -males, education- post graduates and Previous Knowledge about CPR and significant, positive, moderate correlation found between in posttest knowledge and practice score.

Conclusion: This study concluded that it clearly indicates, there is the need for appropriate skill-based CPR education and demonstration for enhancing young adults 'knowledge and improve practices about CPR.

Keywords: Cardiac Arrest, OHCA (Out of Hospital Cardiac Arrest), CPR (Cardio-Pulmonary Resuscitation), Heart Failure, Cerebral cortex, Survival Rate.

INTRODUCTION

In the year 1950, the average life expectancy of Indian was 35 years. By 1995,it had risen to 60 years, and it now stands at 70 years as a result of numerous medical and healthcare advancements and better diets. But deaths are increased from 2014 (18307) to 2019 (28005). [**1**] Crude death rate of India was

Vol. 25, No. 1. (2025)
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7.27 in 2011, which was increased 2021, 9.45 deaths per 1,000 inhabitants. Causes were Post Pandemic complications, Cardiovascular Disease (CVD) and Sudden Cardiac Arrest (SCA), incidence rate of (Sudden cardiac Death)SCD was around 7lakhs in India, in southern Indian population 10.3% overall mortality caused by cardiac arrest. [2]. In United States, people die due to cardiac arrest is ranging from 184,000-462,000 annually. In 2012 study reported that the In India mean age of death caused by SCA was significantly lower as compare to western countries. SCD caused by cardiovascular (Congenital cardiac disease and cardiac failure) or non cardiovascular etiologies is considerable and treatment of underlined disease is vital. SCD is an unexpected death, happening within 1hr of symptoms due to sudden disruptions in heart function leads rapid decrease in cardiac output and cerebral blood flow. SCD causes over 7 million of deaths per year worldwide; around 35% of natural deaths are SCD. [3] SCA means absence of central carotid pulse, breathing and loss of consciousness secondary to cerebral ischemia due to failure of heart to generate cardiac output. As per National Crime Records Bureau (NCRB) death rate due to cardiac arrest is increased 12.5% from the year 2021 to 2022. SCD rate also rises from 50,734 to 56,450 subsequently from 2021 to 2022. Cardiac arrest that takes place outside a hospital is referred as OHCA, caused by cardiac (Ventricular fibrillation and ventricular tachycardia) or unknown and other medical emergencies-anaphylaxis, asthma or gastrointestinal bleeding, traumatic, drug overdose, drowning, electrocution or external asphyxia.

NEED OF THE STUDY

Sudden cardiac arrest can occur anywhere any place, mostly public places, office, out of that 88% occurs at home. In cardiac arrest person collapse suddenly, become unconscious and not responding to any stimulus, there is immediate stoppage of cardiac functioning and there is abnormal breathing or no breathing recorded. Early identification of signs of SCD and quick response of Emergency services and initiating cardiopulmonary resuscitation, and appropriate utilization of Automated External Defibrillator (AED) will defiantly improve survival chances in OHCA.

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OHCA is alife-threatening medical emergency that requires prompt detection and immediate intervention with high quality cardiopulmonary resuscitation (CPR), which will improve the chance of survival. CPR is an emergency technique which helps to bring the victim life back. However, survival rate after receiving CPR is varying upon countries and hospitals and it depend on the availability and promptness of EMS services and knowledge, awareness, skill of bystanders in witnessed OHCA.

AIMS OF THE STUDY

To identify previous knowledge and practices and enhance knowledge and practices of adults regarding CPR. To prepare the adults to handle emergency situation (Cardiac arrest) and train to take immediate action.

RESEARCH METHODOLOGY:

Objectives:

1. To assess the existing knowledge score regarding Adult Cardiopulmonary resuscitation (CPR) among young adults living in selected cities of Maharashtra state.
2. To assess the existing practices of young adults regarding Adult Cardiopulmonary resuscitation (CPR) living in selected cities of Maharashtra state.
3. To develop video assisted teaching program regarding Adult Cardiopulmonary resuscitation (CPR) among young adults living in selected cities of Maharashtra state.
4. To evaluate the effectiveness of Video-assisted teaching program on knowledge and practices regarding Adult Cardiopulmonary resuscitation (CPR) among young adults living in selected cities of Maharashtra state.
5. To discover the association between pretest knowledge and practices score of young adults living in selected cities of Maharashtra state and selected demographic variables.

Research Type: Quantitative research approach, evaluative research

Research Design: Quasi experimental one group pretest and posttest design

Variables: the independent variable was video-assisted planned teaching programme regarding Cardiopulmonary resuscitation, dependent variables were learning need of young adults (knowledge and practices) regarding young adults.

Sample and Size: 350 Adult (18yrs to 45yrs)

Sampling technique: In current study non-probability purposive sampling method was used.

Tool description:

Section I- Demographic data Performa which consisted of personal data of young adults, a total 7 items were included in this section. like age, gender, education, occupation etc.

Section II-Structured questionnaires regarding knowledge and practices, total 20 and 15 items (MCQ) included respectively.

Reliability: Test-retest method was used by assessing reliability of the tool, reliability of knowledge was (0.82) practice was (0.87). Hence it is interfering that the prepared tool was useful for assessing effectiveness of video-assisted teaching program on knowledge and practices regarding cardiopulmonary resuscitation among young adults

Pilot study: A pilot study is a small-scale study doen to check feasibility. The pilot study was conducted from 28/03/2023 to 07/04/2023 on 50 selected young adults. In Multipurpose Hall of Pankaj Laddhad College of Information and Technology, Buldhana. Pretest was given on 28/03/2023 to the samples, followed immediately by video assisted teaching programme. Queries were clarified. After that post test was conducted after 10^{th} day i.e. on 07/04/2023 on the same samples. 60% of them don't have previous knowledge about CPR. Pretest result shows that 56% had inadequate, 36% had moderate and 8% had adequate knoweldge score. About practice score 70% had poor, 30% had moderate. This result interprets that knowledge and practices gap seen in pretest and posttest.

RESULT

Majority (79.43% of them) of the young adults are between 18-24 years were, 46.86% of the young adults are males and 53.14% of the young adults were females.86.00% are studied up to graduation level ofeducationand11.14%were studied upto postgraduate level of education, and 91.14% of them were students, 89.43% are having no family history and 62.29% are having not having previous Knowledge.

Vol. 25, No. 1. (2025)
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Association between demographic variables and pretest knowledge and practice score-there was no association found between demographic variables and pretest knowledge and practice score, but in posttest there was association found between gender -males, education- post graduates and Previous Knowledge about CPR and knowledge and practice score as these demographic variables were gained more knowledge and practice score in posttest. Statistical significance was assessed using Chi-square test.

Factors influencing gaining practice score: Univariate analysis identifies males, post-graduates and, previous knowledge about CPR having young adults were gained more practice score than others. Males were 1.88 times than females, postgraduate were 3.42 times more than UG and Previous knowledge about CPR having adults were having 1.91 time more practice than no previous knowledge adults.

Correlation: There was no significant positive but poor correlation found between pretest knowledge and practice score. It means knowledge increases their practice score. There was significant, positive, moderate correlation found between in posttest knowledge and practice score. It means knowledge increases their practice score also increases moderately.

TABLE 1: PRETEST AND POSTTEST LEVEL OF KNOWLEDGE SCORE

Level	**Pretest**		**Posttest**		**McNemar's test**
	n	%	n	%	
Inadequate	159	45.43%	0	0.00%	**$\chi 2=295.62$ P=0.001*** (S)**
Moderate	191	54.57%	76	21.71%	
Adequate	0	0.00%	274	78.29%	
Total	350	100.00%	350	100.00%	

Table no- 1 shows the pretest and posttest level of knowledge score of young adultsBefore intervention, 45.43% of them are having inadequate level of score, 54.57% of them having moderate level of score and none of them are having adequate level of score. After intervention, none of them are having inadequate level of score, 21.71% of them having moderate level of score and 78.29% of them are having adequate level of score. Statistical significance was calculated using Extended McNemar's test.

Table 2 PRETEST AND POSTTEST LEVEL OF PRACTICE SCORE

Level	Pretest		Posttest		McNemar's test
	n	%	n	%	
Poor	256	73.14%	0	0.00%	**$\chi 2=293.82$ P=0.001***(S)**
Moderate	94	26.86%	72	20.57%	
Good	0	0.00%	278	79.43%	
Total	350	100.00%	50	100.00%	

Table no 2 shows the pretest and posttest level of practice score of young adults. Before intervention, 73.14% of them are having poor level of score, 26.86% of them having moderate level of score and none of them are having good level of score. After intervention, none of them are having poor level

of score, 20.57% of them having moderate level of score and 79.43% of them are having good level of score. Statistical significance was calculated using Extended Mc Nemar's test.

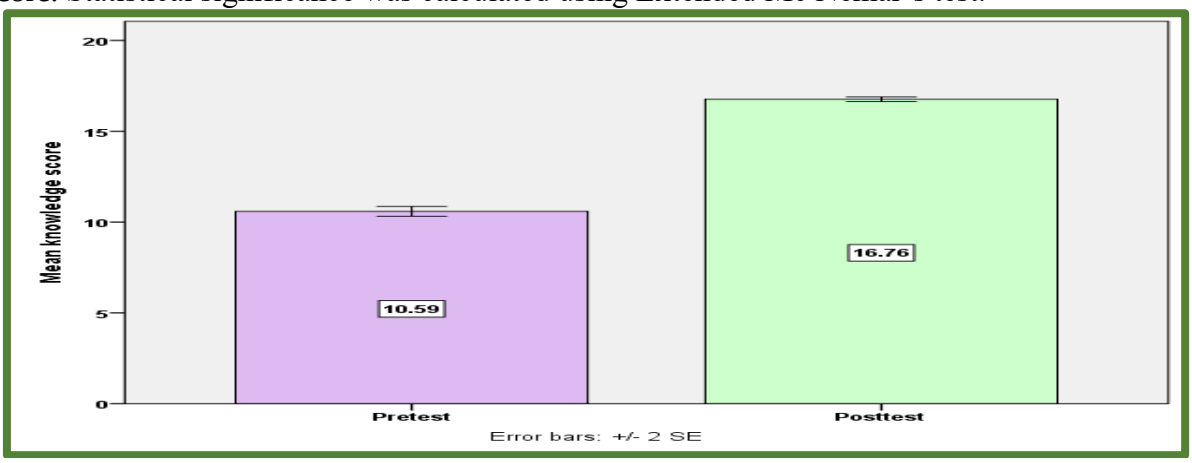

FIGURE NO: 01 Comparison of Mean Pre and Post Test Knowledge Score of Young Adults.

Fig No: 01 show that in pre test, young adults are having 10.59 knowledge score and in post test they are having 16.76 knowledge score, so the difference is 6.17, this difference is large and it is statistically significant difference.There is a significant difference between pre test and post test knowledge score regarding Cardiopulmonary resuscitation among young adults.

DISCUSSION

Gao H. reported, 67.4% of general public had good understanding, 92.8% had good practices and positive correlation found between knowledge, attitude, practices, and self-efficacy. In present study in post test 78.29% of young adults had adequate knowledge score, and 79.43 had good practice score and positive, moderate correlation seen between post test knowledge score and post test practices **[4]**

A similar study conducted by Deepika et al, on layperson about Compression-Only Life Support (COLS) Training; Pretest knowledge score was 32, attitude score was 57.33 and skill score was 8 which increased in post test 81.33, 82.67 and 75 subsequently [**5**] Present study mean score of pretest and post test on knowledge variable were 10.59 to 16.76 and practice mean score was 6.36 to 12.78, which indicate that effectiveness of study.

Sweta Kumari et al, done similar study among students, findings revealed that majority 73% participants was belongs to age group of (20-22) years, Majority 53% were female, 80 % not having previous knowledge about CPR. [**6**] In present study 53.14 % were female, 79. 43% were in the age group of 18-24yrs and 62.29% were didn't have previous knowledge about CPR.

In Kerstin Lerjestam et al, study 89.6% laypeople didn't had previous training regarding CPR, and majority (69%) were male. Similarly in present study 62.29 % had no previous knowledge of CPR. [7]

G. Bhuvaneshwari study had supported to my research study, findings shows that only 7% of samples had previous knowledge about CPR. 87% had insufficient knowledge regarding CPR.[**8**]In preset study, only 37.71% had previous knowledge about CPR, only 54.57% had moderate. In Bayu Fandhi Achmad study result shows that pretest mean score was 56.04, SD 16.89, After intervention mean score was 89.82, SD 9.81 which showed statistically significant improvement (p=0,000) in knowledge after providing CPR training.[9] In present study also mean score was 10.59 which was improved in post test by 16.76.

Vol. 25, No. 1. (2025)
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Harish Kumar Kumawat et'al, study findings shows that positive correlation (r-0.58) seen in knowledge and practices. In present study positive, moderate correlation found between posttest knowledge and practice score.[10]

CONCLUSION

Video assisted teaching (VAT) about CPR was conducted to evaluate the existing knowledge and practices and efficacy of it. Before VATP mean knowledge, score was 10.59 after intervention it was increased to 16.76. Mean difference between pre test and post test knowledge is 6.17. Mean practice score in pretest was 6.36 which improve in post test by 12.78 and Mean difference between pre test and post test practice is 6.42, which is compared by student's paired' test and it is statistically significant. Hence, it is interpreted that though, there is knowledge and skill gap found in pre-test, VATP is useful in enhancing knowledge and practices of young adults. A positive moderate correlation was seen in the post test knowledge and practice score, it reflects increasing knowledge can improve practices. Statistically substantial association found in Male, post graduation, urban area and previous knowledge about CPR and post test knowledge and practices. This study concluded that to improve survival rate and prevent complications such as brain damage in OHCA, bystander CPR is essential to initiate by layperson and it possible only after creating awareness, providing knowledge and skill to layperson.

CONFLICT OF INTEREST

The author doesn't have any involvement in any organization or entity with nay financial or non-financial interest in the subject matter or material.

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