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KNOWLEDGE, ATTITUDE AND PRACTICE OF CARDIOPULMONARY RESUSCITATION AMONG HEALTHCARE PROFESSIONALS – A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: Cardiac arrest is the abrupt loss of heart function in a person who may or may not have diagnosed with heart disease. Majority cardiac arrest cases occur(72%) at home,(15%)in the workplace and (0.86%)in hospital.In a recent study, it revealed 6% of mortality in hospitals due to failure to recognize the cardiac arrest and initiation of cardiopulmonary resuscitation. **Objectives:** Present study aims to assess knowledge, attitude and practice of cardiopulmonary resuscitation effectiveness of training among healthcare professionals before and after training. **Methods:** A prospective observational study was conducted at the Emergency Medicine department of Rajarajeswari Medical College & Hospital, Bangalore, for a period of 5 months .Study participants are interns and Junior residents from various departments. Protocol includes first phase of 1 pre assessement test and one hour audio-visual based lecture at department then phase two involves , hands on training in skill lab and post assessment test. Statistical analysis carried by spss version 2022. **Results:** Out of 338 participants , 124 interns and 214 junior residents .There is no significance in gender distribution. Analysis revealed that participants performance pre test (12%) and post test(33%) with cutoff of score 80% which was found to be significant(p value 0.04).The overall assessment in interns and junior residents pre-training mean percentages are 59% and 61% compared to post training 81% and 77% respectively.(p-value is .043565). **Conclusion:** Cardiopulmonary resuscitation skill is essential for all healthcare professionals. We found training periodically to junior residents or health care workers will improve resuscitation skills.

INTRODUCTION

Cardiac arrest is a sudden cessation of cardiac activity, leading to a loss of effective blood circulation and, if untreated, irreversible brain damage and death. Cardiac arrest is one of the most common health emergencies can occur in and out of hospital environments, with a significant portion of cases being witnessed. Despite advancements in healthcare systems, the survival rates for cardiac arrest depends on timely intervention.

Cardiopulmonary resuscitation (CPR) is a critical, life-saving intervention to restore circulation, breathing and cardiac activity. CPR involves early recognisation of cardiac arrest followed by chest compressions, rescue breaths, and early defibrillation. Research has consistently demonstrated that immediate and high-quality CPR can increase survival rates in out-of-hospital cardiac arrest (OHCA) cases.

According to the American Heart Association (AHA), over 356,000 out-of-hospital cardiac arrests (OHCA) occur annually in the United States, with survival rates below 10% in many cases. However, in most developed healthcare settings in-hospital cardiac arrest (IHCA) affects an estimated 290,000 patients each year, with survival to discharge hovering around 25%. Studies from other regions, such as Europe and Asia, have reported similar or even lower survival rates, particularly in resource-limited settings.

Effective CPR training is pivotal in addressing these statistics. However, several studies have highlighted gaps in CPR knowledge, skill retention, and performance among healthcare professionals. For instance, a study by Nishiyama et al. (2014) found that CPR skill retention begins to decline as early as three months post-training, underscoring the need for continuous education and evaluation. Similarly, research by Andersen et al. (2018) revealed significant variability in the quality of CPR delivered during actual resuscitation efforts, even among trained professionals.

- The need for this study stems from these challenges. While CPR training is a cornerstone of medical education and emergency preparedness, the effectiveness of such programs is often evaluated only in terms of initial skill acquisition. Interns and Junior residents are primary responders and their action can impact survival and disability. Pretraining and post-training evaluations provide a unique opportunity to measure changes in knowledge, confidence, and technical proficiency, offering insights into the strengths and weaknesses of existing training methodologies and guidelines and also contribute to improving CPR education, ultimately enhancing survival outcomes in cardiac arrest scenarios.

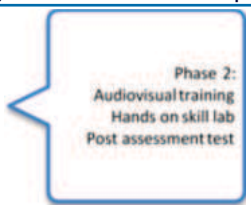
Objectives

1. To assess the knowledge of cardiopulmonary resuscitation among healthcare professionals.
2. To study the effectiveness of training in this study group and to frame the effective training protocols for further sessions.

MATERIALS AND METHODS

This is a cross-sectional study done in Rajarajeswari medical college and Hospital, Bengaluru. This was done over a period of 5 months from November 2023 to April 2024 with a sample size of 338. Interns and Junior residents of various departments were included with exclusion of anyone not willing to participate. Qualitative analysis with Mean, standard deviation and t-test were used and SPSS 23 version was utilised.

- **PROTOCOL:**



There are 24 pre-valid questionnaires used for pre and post test. Each question is allotted 1 mark where pre and post test above 80% considered as a pass percentage.

RESULTS

A total of 338 participants were included in the study, comprising 124(36.69%) interns and 214(63.31%) junior residents . Among junior residents majority are from general medicine(7.69%) and Anaesthesiology (6.21%). Gender distribution was equal and not found to be significant. Among interns, the mean pretraining percentage was 59%, which improved to 81% posttraining. Similarly, for junior residents, the mean percentage increased from 61% to 77%, with a statistically significant p-value of 0.043565.

The study identified an overall lack of awareness regarding the latest CPR guidelines, but training proved effective in addressing this gap. The mean pretraining pass percentage was 56%, with lower scores particularly observed in questions related to the use of drugs in advanced cardiac life support (ACLS) and the chains of survival. In contrast, participants demonstrated higher accuracy in questions regarding basic cardiac life support (BCLS) and defibrillator use.

Posttraining assessments revealed a substantial improvement, with the number of participants scoring above 20 points increasing from 44 to 117. However, knowledge regarding drugs, chains of survival, and advanced airway adjuncts showed less improvement compared to other topics.

Additionally, some reluctance was noted in practices such as the use of atropine in cardiac arrest, indicating areas requiring further emphasis in training program.

GROUP	Size	Participants %
Interns	124	36.69%
Junior Residents	214	63.31%
Total	338	100.00%

DEPARTMENT	SIZE	PARTICIPANTS
General Medicine	26	7.69%
Anaesthesiology	21	6.21%
Dermatology	19	5.62%
General surgery	15	4.44%
orthopaedics	15	4.44%
Pathology	13	3.85%
Radiodiagnosis	13	3.85%
Ophthalmology	12	3.55%
Paediatrics	12	3.55%
Others	68	20.12%

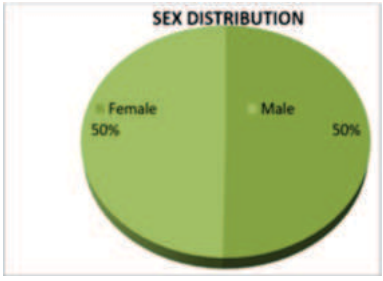
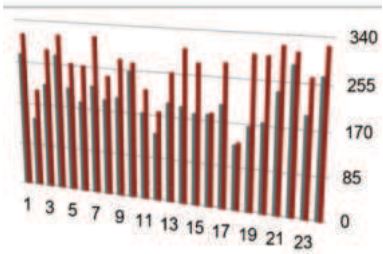
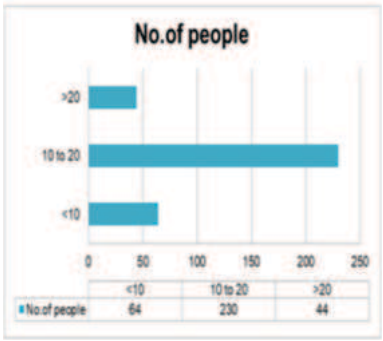


Fig3: PRE (grey) AND POST (Red)TEST RESULTS:



PRE TEST :



POST TEST

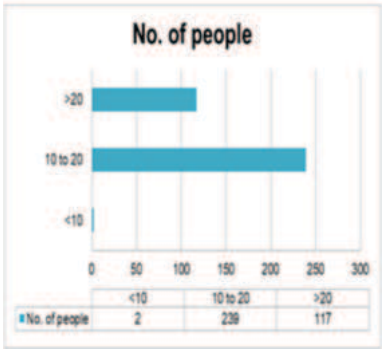


Fig6: EFFECTIVENESS OF TRAINING

CATEGORY	PRE TEST (MEAN)	STANDARD DEVIATION	POST TEST(MEAN)	STANDARD DEVIATION2
INTERNS	59%	18	81%	12
JUNIOR RESIDENTS	61%	19	77%	15

Confidence interval of 95% is taken. A T-test was done and came out to be 3.16228. The p-value is .043565. The result is significant at $p < .05$.

DISCUSSION

The findings of this study are consistent with prior research highlighting gaps in knowledge and skills related to cardiopulmonary resuscitation (CPR) and basic life support (BLS) among healthcare professionals. Several studies have emphasized the insufficient baseline knowledge of life-saving interventions and the potential for improvement through structured training programs.

For instance, a quantitative descriptive study by Gautam Prasad Chaudhary et al. (2023) on 95 healthcare workers in Nepal concluded that most participants lacked sufficient knowledge about BLS, mirroring the inadequate pretraining knowledge levels observed in our study. Similarly, Adel HamedElbaih et al. (2019) conducted an interventional study on 65 emergency department nurses and found poor baseline knowledge and experience in CPR, which significantly improved following training. These findings reinforce the critical role of training in bridging knowledge gaps.

The results of our study also align with the work of P.M. Suresh et al. (2017), who assessed neonatal resuscitation skills among 93 nurses and reported disappointing performance in both essential skills and basic neonatal resuscitation. This underscores the need for targeted training programs to

address deficiencies in specific areas, such as the use of advanced airway adjuncts and drugs in CPR, where improvement was limited in our study.

Furthermore, the study by Tadesse et al. (2022) on graduating health science and medical students at Dilla University revealed that although participants had theoretical knowledge of BLS, significant gaps existed in their practical skills and confidence. This finding is consistent with our observation that certain advanced practices, such as the use of atropine and chains of survival, were met with reluctance or limited improvement posttraining.

These studies collectively highlight the universal challenge of ensuring competency in life-saving interventions, even among trained healthcare professionals. While structured training programs are effective in improving knowledge, greater emphasis on practical skill development and periodic refresher courses is necessary to enhance both confidence and proficiency in performing CPR and BLS. Future training strategies should incorporate hands-on simulations, targeted reinforcement of advanced concepts, and assessments tailored to address identified weaknesses, ultimately improving patient outcomes in cardiac emergencies.

CONCLUSION

Knowledge among healthcare professionals was seen inadequate.Majority have good attitude towards the training and practice.Training on cardiopulmonary resuscitation found to be effective in health care professionals with more need of training modules for the junior residents. Emergency medicine is a new specialty which is conducting periodic training among healthcare professionals, supportive staff and in the community .National medical board has also recognised this need and made the training compulsory for all postgraduates.

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