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Original Research Article

Knowledge and attitude of youth of India towards cardio pulmonary resuscitation: a cross-sectional study

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ABSTRACT

Background: Sudden cardiac arrest is a major global cause of mortality, with out-of-hospital cardiac arrest (OHCA) accounting for nearly 10% of all deaths. Early Cardiopulmonary Resuscitation (CPR) and defibrillation can significantly improve survival, yet bystander CPR rates remain low, especially in India. Existing research largely focuses on healthcare professionals. Given India's predominantly young demographic, evaluating CPR knowledge in this group is crucial.
Methods: A cross-sectional survey was conducted among 583 young adults (18–35 years) from urban India. Participants were recruited through snowball sampling; those with medical backgrounds or involved in roles such as military, lifeguards and flight attendants were excluded. A validated 24-item questionnaire (CVI=0.8) assessed demographics, CPR knowledge and attitudes. Data were analyzed using descriptive statistics in Microsoft Excel.
Results: Of 583 individuals included in the analysis, only 101 participants had previously received CPR training. Knowledge levels were low: 73% could not identify the correct chain of survival. Only 28% had heard of the AED. In contrast, attitudes of the youth towards CPR were positive: 87% were willing to assist an unconscious victim, 94% believed CPR should be taught to the general population and 95% supported CPR training in schools and colleges.
Conclusions: A strong willingness to help exists among youth, but major gaps in CPR and AED knowledge might limit effective bystander response. Implementing practical, skill-based CPR education in schools and colleges is essential to strengthen youth competence and improve survival in cardiac emergencies.

Keywords: Automated external defibrillator, Cardiopulmonary resuscitation, Out-of-hospital cardiac arrest, Youth population

INTRODUCTION

Cardiovascular diseases remain a major global health burden, with sudden cardiac death being a leading cause of mortality. According to the American Heart Association, cardiac arrest is a medical emergency characterised by the absence of signs of circulation, leading to a critical need for immediate resuscitation. (different from a heart attack, which involves restricted blood flow to the heart but does not always result in arrest).[1,2] Due to lifestyle changes and urbanisation, OHCA has become a common cause of death worldwide, accounting for nearly 10% of global mortality and 50% of cardiovascular deaths.[3,4] While both in-hospital and out-of-hospital cardiac arrest require urgent medical attention, the differences in their settings and management strategies highlight the need for tailored approaches in clinical practice. Cardiopulmonary resuscitation- invented in 1960 by William Bennet Kouwenhoven, is an emergency lifesaving procedure that allows almost anyone to sustain life in the early critical minutes after cardiac and respiratory arrest along with many other

medical emergencies such as drowning, electrocution injuries, suffocation, epilepsy and road traffic accidents.[2,5-7] CPR alone is unlikely to restart the heart; however, it can buy time for the patient by producing enough blood flow to the central nervous system and the cardiac tissue to maintain temporary viability. Timely CPR improves the likelihood of survival by two to four times after cardiac arrest and helps in preventing sudden cardiac deaths (SCD). About 50% of patients can be saved by performing CPR within the first five to six minutes after they pass away from a SCA. Every minute decreases the chances of survival by 7–10%.[8-10] Along with CPR, early defibrillation is effective in saving lives. Automated external defibrillators (AEDs) are portable, life-saving devices that can increase the chance of survival by 50–70 per cent if initiated within the first few minutes. However, early defibrillation remains the cornerstone for ventricular fibrillation and pulseless ventricular tachycardia.[11-13]

According to several studies conducted in different countries around the world, approximately 70% to 75% of cases of OHCA are witnessed by nonmedical people who did not perform CPR in response to the situation due to the lack of sufficient understanding of acting in such critical cases.[14-19] OHCA remains a leading cause of death in India, with an estimated survival of less than 10% due to only 1.3%–9.8% bystander CPR rate.[20-22] Patients' chances of survival are greatly influenced by the prompt diagnosis of OHCA, the dispatch of emergency medical services (EMS) and the administration of bystander CPR. Effective bystander CPR depends entirely on the knowledge, attitude and actions of the bystanders.[14,15]

The existing literature has largely focused on healthcare professionals, leaving a gap in understanding CPR-related knowledge within the general youth population. India, being a predominantly young nation, possesses a population that is both physically capable and emotionally responsive, making this exploration particularly relevant.[23] The current study ventures into this gap by exploring the knowledge of CPR among young individuals not involved in healthcare and assessing their willingness to perform it.

METHODS

The cross-sectional survey was conducted among 583 young adults across various cities in urban India. This study was conducted over a period of 10 months, from January 2025 to October 2025. After approval from the institutional review board/ institutional ethical committee, the survey questionnaire was distributed among the eligible participants. Males and females in the age group of 18-35 years with a minimum educational qualification of 12th pass or equivalent were the inclusion criteria. Medical professionals and allied health professionals, individuals employed in roles such as military personnel, lifeguards and flight attendants, were excluded due to their potential advanced knowledge and training in CPR. The participants were recruited using snowball sampling. The sample size was estimated at approximately 1,000 using the formula n=Z2p (1−p)/d2, assuming 95% confidence, p=0.5 and a precision of ±3%. A total of 754 responses were obtained.

After excluding incomplete responses and applying inclusion criteria, 583 valid forms were analysed (effective response rate: 75.4%). The achieved sample size yields an approximate precision of ±4% at 95% confidence, which remains adequate for descriptive inference. Informed consent was obtained from all the participants.

A questionnaire consisting of 24 questions was used as the main outcome tool in the survey. The questionnaire was content validated by four subject experts before administration, with a content validity index of 0.8. The questionnaire included: 6 questions on participant-related information, 15 questions related to knowledge about CPR and 3 questions related to attitude towards CPR. The data were analysed using Microsoft Excel. Descriptive statistics through frequency distribution and calculation of percentages were used.

RESULTS

The online survey questionnaire, using a Google form, was circulated to 1000 young adults across various cities in India, out of which 754 responded (Response rate=75.4%). After applying the inclusion and exclusion criteria, 583 forms were analysed. The mean age of the respondents was 24.1±4.52 years. Table 1 shows the demographics of these participants. Out of 583, only 101 participants received CPR training at schools, colleges, NGOs or workplaces.

Knowledge related to cardiopulmonary resuscitation

Fifteen knowledge-related questions assessed knowledge about the signs of cardiac arrest, the correct sequence of CPR steps and the use of an AED. Although 71% respondents could correctly phrase the full form of CPR, only 12% could identify the correct signs of cardiac arrest (loss of consciousness with pulselessness and no breathing); 54% could not identify ‘no pulse-no breathing’ as an indication to CPR. 73% respondents could not list the correct steps of the chain of survival for OHCA. 35.8% knew that pulse should be checked at the neck, 44.95% knew that compressions should be given at the centre of the chest. AED is life-saving in patients of cardiac arrest; only 28% had ever heard of it.

Figure 1 illustrates the proportion of participants who demonstrated correct awareness (“Present”) versus lack of awareness (“Absent”) across four key domains: recognition of signs of sudden cardiac arrest, correct sequence of CPR (compression–airway–breathing), familiarity with AEDs and knowledge of appropriate action when no medical help is available. Data are

presented as horizontal grouped bars with percentages on the x-axis.

This stacked horizontal bar graph depicts positive, neutral and negative attitudes of participants across three domains: willingness to assist an unconscious person, agreement that CPR training should be provided to the general population and support for incorporating CPR training at school and college levels. The bars display percentage distribution across the three attitudinal categories (Figure 2).

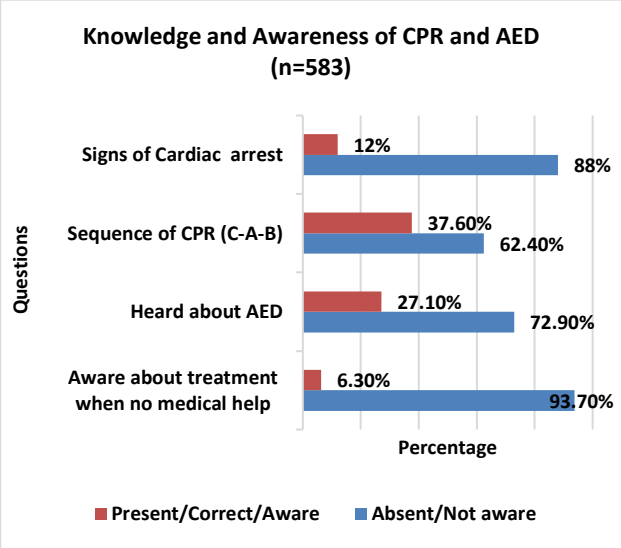

Figure 1: Knowledge and awareness of CPR and AED among youth (n=583).

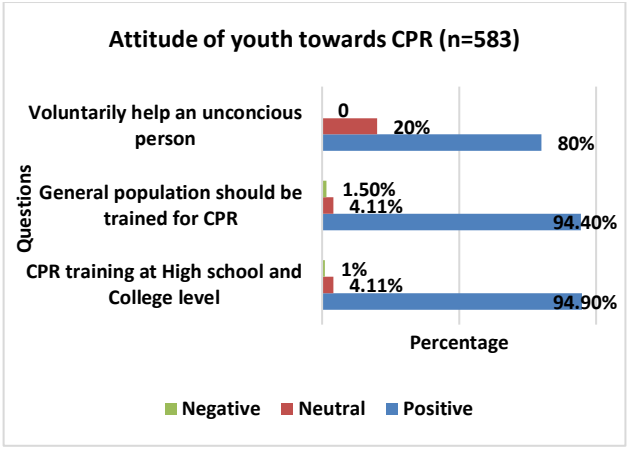

Figure 2: Attitude of youth toward performing CPR and supporting CPR education (n=583).

Attitude related to cardiopulmonary resuscitation

Three questions assessed attitude related to CPR (Figure 2). 508 respondents (87%) were willing to voluntarily help an unconscious victim; 94% agree that CPR should be formally taught to common people; 95% agree that CPR-related training can be given at schools and colleges. There was overwhelming support for broader CPR training; 94.4% of participants agreed or strongly agreed that the general population, alongside healthcare professionals, should be trained in CPR. Similarly, a large majority (94.9%) felt that CPR training should be incorporated at the high school and college levels, highlighting youth recognition of the importance of early education on this life-saving skill.

Table 1: Participant demographics (n=583).

Characteristics		N	%
Gender	Male	269	46
	Female	314	54
Qualification	Higher secondary	204	35
	Under graduation	316	54.2
	Post graduation	63	10.8
Occupation	Student	435	74.6
	Working	124	21.2
	No occupation	24	4.2
Trained for cardio pulmonary resuscitation	Training received	101	17
	Training not received	482	83

DISCUSSION

One of the essential factors in surviving OHCA is the immediate actions of bystanders, including performing CPR. According to most sources, fewer than half of the people present during such emergencies actually provide CPR and this rate varies greatly between different countries, even though some recent studies suggest higher levels of involvement.[24] The purpose of this study was to understand the knowledge and attitudes of young people regarding CPR. The results showed that young adults in India demonstrated willingness to learn about and provide CPR if needed, but their current knowledge is significantly limited, with only 17% reporting any formal training in CPR. There were a few previous attempts made to understand knowledge related to cardiac arrest in other countries. In Norway, only 11.5% of non-professionals could identify the signs of cardiac arrest.[26] In Saudi Arabia, 31% of university students had no prior CPR information and among those who had some

knowledge, 85% felt their understanding was insufficient.[27] The data provided by the cardiological society of India (CSI) reported that less than 2% of the population has received CPR training formally, which is well below the global standard.[25] Statistics from rural India are even worse. Zhilarasi et al found that 81.4% of adults in rural Bangalore had an inadequate understanding of cardiopulmonary resuscitation.[28]

This study, while focusing on youth, found that only 17% had undergone CPR training slightly better than the national average but still far below global standards. Globally, the rates of bystander CPR vary, ranging from as low as 1.3% to as high as 72%.[30] Given that bystander CPR significantly improves survival chances, as shown by a meta-analysis involving over 142,740 OHCA patients, there is a clear need to increase CPR training.[31] Previous work depicts low awareness and use of AEDs, with numbers better in Western countries as compared to the rest of the world.[33] According to a systematic review published in 2023, Prompt bystander action and wider availability of AEDs in public spaces play a crucial role in improving survival outcomes in out-of-hospital cardiac arrest.[34]

The findings indicate that training opportunities remain insufficient. While educational institutions accounted for the majority of CPR exposure (77% of those trained), overall training prevalence was only 17%, underscoring a significant gap between willingness and capability. Embedding structured CPR training within school and college curricula represents a sustainable strategy to bridge this gap and ensure early acquisition of life-saving skills. According to a Slovenian study, when CPR education was integrated into early education, students showed improved knowledge, attitudes and self-efficacy following structured training.[35]

In India, CPR training is mostly not part of the standard curriculum and is often voluntary. The very low rate of CPR training in the workplace (5%) indicates a potential area for improving adult education. Widespread initiatives such as hands-on workshops, simulation-based training and public demonstrations are urgently needed to turn positive attitudes into effective actions, thereby enhancing community response during cardiac emergencies.

The current study observes positive attitudes toward CPR practice and education, suggesting a strong foundation for implementing widespread training programs, though addressing the fears that prevent some from acting remains essential. The strong willingness to learn about CPR reflects an openness and readiness among young individuals to contribute effectively to emergency response.[35] Such a favourable attitudinal base provides a solid foundation for targeted policy interventions in India, including mandating CPR education in national school curricula and promoting workplace-based training programs to enhance community preparedness as recommended by the World Health Organisation (WHO) and American Heart Association.[36,37] The fear of causing harm or being held responsible remains a barrier for some, indicating the need for not only technical training but also legal and ethical awareness regarding Good Samaritan laws and the importance of prompt action in emergencies.

These findings highlight a critical educational gap: although youth demonstrate a strong willingness to help during cardiac emergencies, inadequate knowledge and lack of hands-on skills may hinder effective intervention. This supports previous research indicating that awareness alone does not guarantee readiness to act, particularly when confidence and procedural clarity are lacking. This study has limitations, including possible response bias from self-reported data and the constraints of a cross-sectional design. The predominantly urban youth sample also limits generalizability. Future research should include more diverse populations, incorporate skill-based and mixed-method assessments and use longitudinal or intervention designs to evaluate training effectiveness and long-term retention.

CONCLUSION

There is a clear mismatch between youths' strong willingness to help during cardiac emergencies and their limited CPR knowledge. Despite positive attitudes, major gaps persist in recognising cardiac arrest, performing the correct CPR sequence and using an AED effectively.

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