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Awareness of Cardiopulmonary Resuscitation Among Young Trekkers

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Abstract

Background: Cardiopulmonary Resuscitation (CPR) is an emergency lifesaving procedure performed when the heart stops beating. It consists of chest compressions with artificial ventilation or mouth to mouth effort to restore blood circulation and breathing in a person who is suffering from cardiac arrest. Trekking involves physical exertion, altitude changes and environmental risks thus raising chances of cardiovascular complications. As per as trekking is concern there is lack of medical resources available at the time of trekking that is why it is necessary to create awareness of CPR in young trekkers in order to make the trekking environment safe.

Objective: To assess the level of awareness about cardiopulmonary resuscitation among young trekkers and identify the need of CPR training and education among young trekkers.

Methodology: A self-made questionnaire was used for survey-based study design with convenient sampling of 100 trekkers in and around Pune.

Results: Result were analyzed for 100 trekkers aged between 18-35years participated in the study, of which 55% were Males and 45% were Females.73%-76% trekkers are aware about cardiopulmonary resuscitation but formal training and confidence are lacking. AED knowledge and usage are especially low.

Conclusion: This study represents that the general awareness of CPR among young trekkers is high, there are gaps in formal training, confidence, and preparedness. The study strongly supports the need for mandatory CPR training and better access to CPR resources for trekkers to improve safety in remote and high-altitude environments.

Keywords: Awareness, Cardiopulmonary Resuscitation, Trekkers, Questionnaire

Introduction:

Cardiopulmonary Resuscitation (CPR) is a critical emergency procedure used when a person's heart stops beating. Administering CPR immediately can significantly increase the likelihood of survival following sudden cardiac arrest. The procedure involves chest compressions along with artificial ventilation or mouth-to-mouth breaths to restore blood flow and breathing in individuals experiencing cardiac arrest. [1] Cardiac arrest, also known as circulatory arrest or cardiorespiratory arrest, occurs when blood flow ceases due to ineffective heart contractions. [2] This emergency condition can affect people of all ages and often occurs unexpectedly. It is a major cause of death worldwide, with nearly 3.8 million cases of out-of-hospital cardiac arrest occurring each year; 60-80% of these individuals do not survive long enough to reach a hospital. [3]

The American Heart Association and European Respiratory Care frequently revise their guidelines for emergency cardiovascular care and CPR to enhance survival outcomes. CPR should begin with C-A-B (chest compressions - airway - breathing) for any unresponsive victim. [4]

Mountain trekking is a widely enjoyed recreational pursuit around the globe, offering a mix of physical challenge and mental rejuvenation. [5] Trekkers navigate various terrains, including traversing narrow ridges, crossing glaciers, and scaling rocky surfaces. [6] This activity primarily involves long-distance walking, both uphill and downhill, over uneven and rugged landscapes, which present numerous challenges. [7]

Trekking at high altitudes poses additional difficulties due to lower oxygen levels and challenging environments. [8] The decreased air pressure found at higher elevations leads to lower concentrations of oxygen. Trekkers may also face extreme weather changes that elevate the physical demands of their expedition, which can result in reduced oxygen intake and altitude sickness. [9] However, studies suggest that trekkers should be adequately equipped and prepared with a first-aid kit, proper backpacking gear, and sufficient knowledge of wilderness medicine. [10] An increasing number of individuals with cardiovascular issues are attempting to climb to high altitudes.

Prompt cardiopulmonary resuscitation (CPR), ideally followed by the application of an automated external defibrillator (AED), is crucial for ensuring neurological survival. AEDs are becoming more accessible in mountainous areas such as lodges, cable car stations, and lift stations. [11] Efforts by medical organizations, emergency services, and mountain rescue teams are enhancing awareness regarding the importance of performing CPR and using an AED during cardiac arrest, although performing CPR at higher altitudes can be even more physically taxing. [12] Therefore, it is essential to gauge the level of awareness about CPR among young trekkers.

Need of the study:

Survival after sudden cardiac arrest is often low. It depends on quick action, good cardiopulmonary resuscitation (CPR) and fast defibrillation.[13] Trekking involves physical exertion, altitude changes and environmental risks thus raising chances of cardiovascular complications. As per as trekking is concern there is lack of medical resources available at the time of trekking that is why it is necessary to create awareness of CPR in young trekkers in order to make the trekking environment safe.

Aim and Objective:

Aim: The aim of the study is to find out the awareness of cardiopulmonary resuscitation among young trekkers.

Objective: To assess the level of awareness about cardiopulmonary resuscitation among young trekkers and identify the need of CPR training and education among young trekkers.

Methodology and Materials:

1. **Inclusion-** Young trekkers from Maharashtra of age group between 18-35years both males and females having minimum 1year of experience of trekking.
2. **Exclusion-** Young trekkers who do not have the required experience of trekking, do not fit in the age group.

Sample Size- 100 trekkers
Study design: Cross sectional study
Study duration: 6 months
Materials used:
1. Pen and paper
2. Self-based questionnaire
3. Consent form & laptop

Procedure:
1. Permission was taken from the institutional ethical committee.
2. Tailored made questionnaire was prepared.
3. Questionnaire was faced validated from the experts.
4. The questionnaire was converted into google forms and consent has been taken.
5. The Need of study was explained to the trekkers.
6. The form was filled by trekkers aged between 18-35yrs, wherein set of questions about purpose of CPR, basic steps of CPR, signs of cardiac arrest, safety measures during trekking.

Data Analysis & Interpretation: The collected data was analyzed by using SPSS 16 software and descriptive statistics including tables, frequencies, percentages and presentation rates.

Graph 1: What does CPR stands for ?

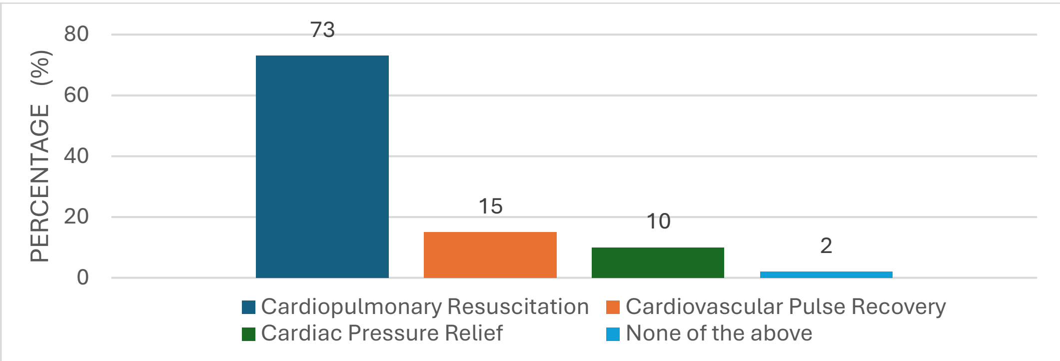

Table 1:

What does CPR stands for ?			
Cardiopulmonary Resuscitation	**Cardiovascular Pulse Recovery**	**Cardiac Pressure Relief**	**None of above**
73	15	10	2

Interpretation:
The majority 73% of respondents answered "Cardiopulmonary Resuscitation." 15% choose "Cardiovascular Pulse Recovery,10% selected "Cardiac Pressure Relief" and 2% answered "None of the above."

Graph 2: What is the primary purpose of CPR?

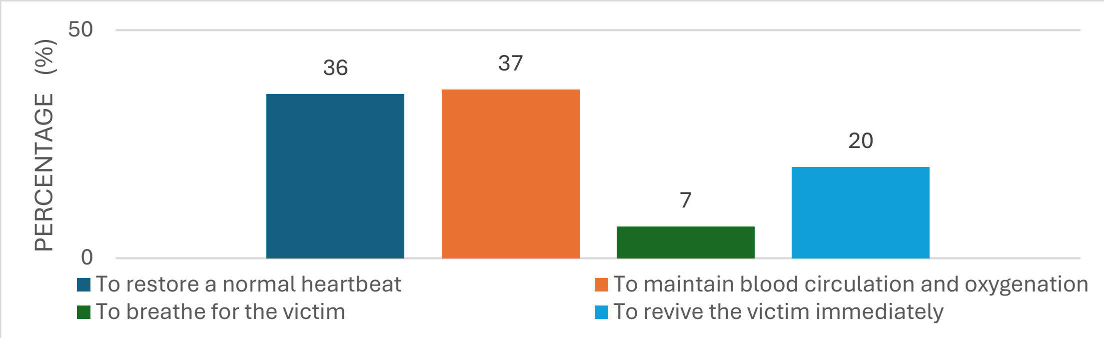

Table 2:

What is the primary purpose of CPR?			
To restore a normal heartbeat	**To maintain blood circulation and oxygenation**	**To breathe for the victim**	**To revive the victim immediately**
36	37	7	20

Interpretation: The primary purpose of CPR is actually to maintain blood circulation and oxygenation to the brain. So, the most popular answer (37%) aligns with the correct medical understanding of CPR's primary purpose.

Graph 3: What are the typical signs of cardiac arrest?

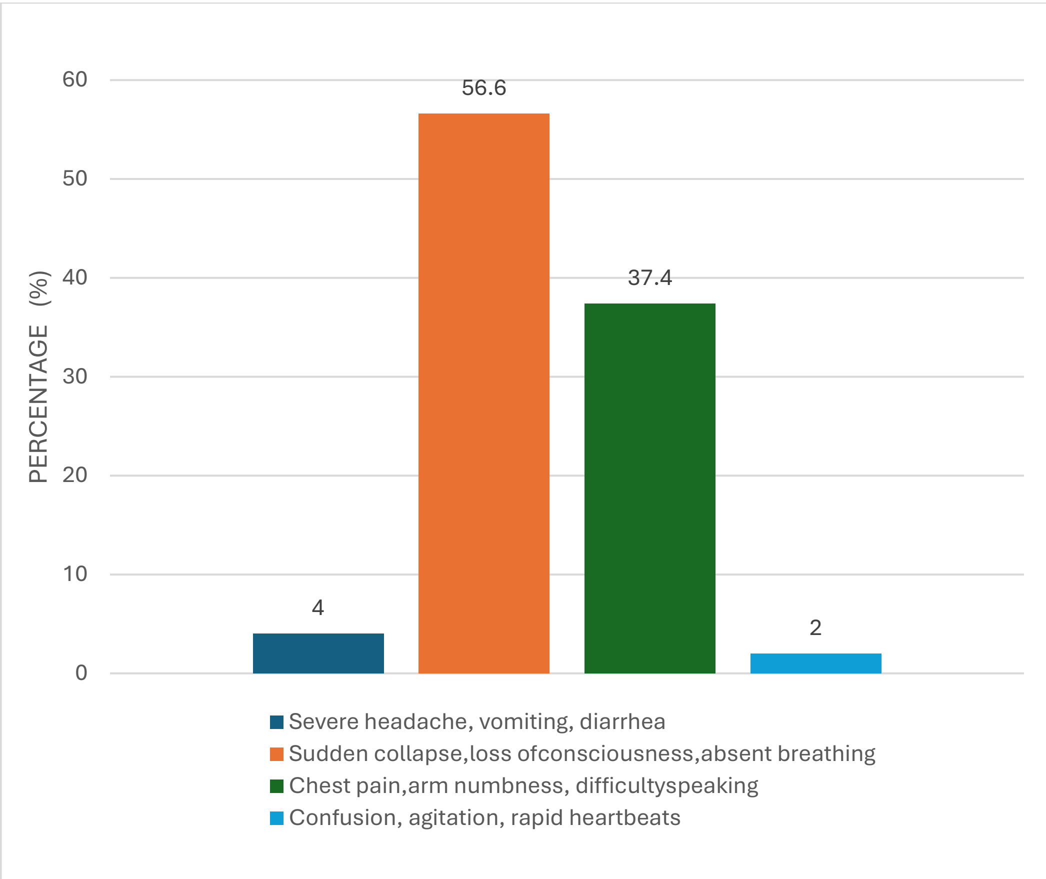

Table 3:

What are the typical signs of cardiac arrest?			
Severe headache, vomiting, diarrhea	**Sudden collapse, loss of consciousness, absent breathing**	**Chest pain, arm numbness, difficulty speaking**	**Confusion, agitation, rapid heartbeats**
4	56.6	37.4	2

Interpretation: The majority of respondents (56.6%) correctly identify the typical signs of cardiac arrest as sudden collapse, loss of consciousness, absent breathing. Another 37.4% think the typical signs are chest pain, arm numbness, difficulty speaking. Only 4% chose severe headache, vomiting, diarrhea, and 2% choose confusion, agitation, rapid heartbeats.

Graph 4. What is the correct compressions rate for an adult CPR?

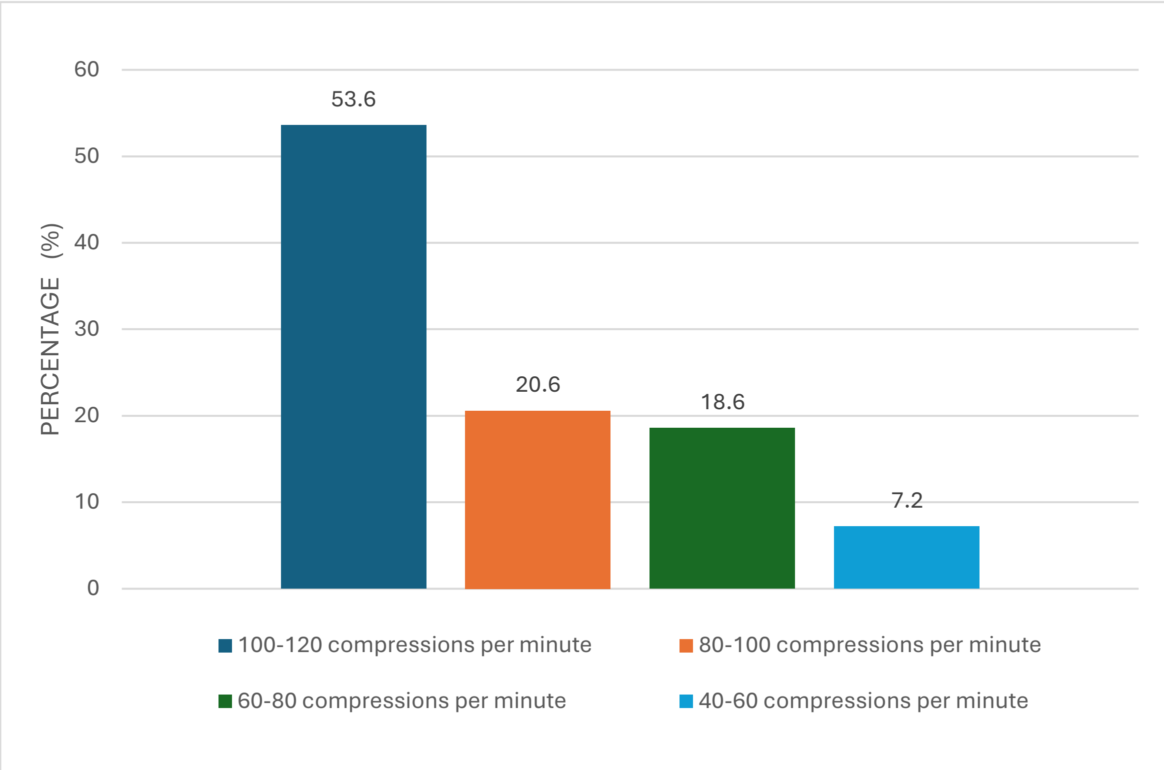

Table 4:

What is the correct compressions rate for an adult CPR?			
100-120 compressions per minute	**80-100 compressions per minute**	**60-80 compressions per minute**	**40-60 compressions per minute**
53.6	20.6	18.6	7.2

Interpretation: Majority Response (53.6%):100-120 compressions per minute and Other Responses:

- 80-100 compressions per minute: 20.6%
- 60-80 compressions per minute: 18.6%
- 40-60 compressions per minute: 7.2%

Graph 5. What are the steps involved in performing CPR?

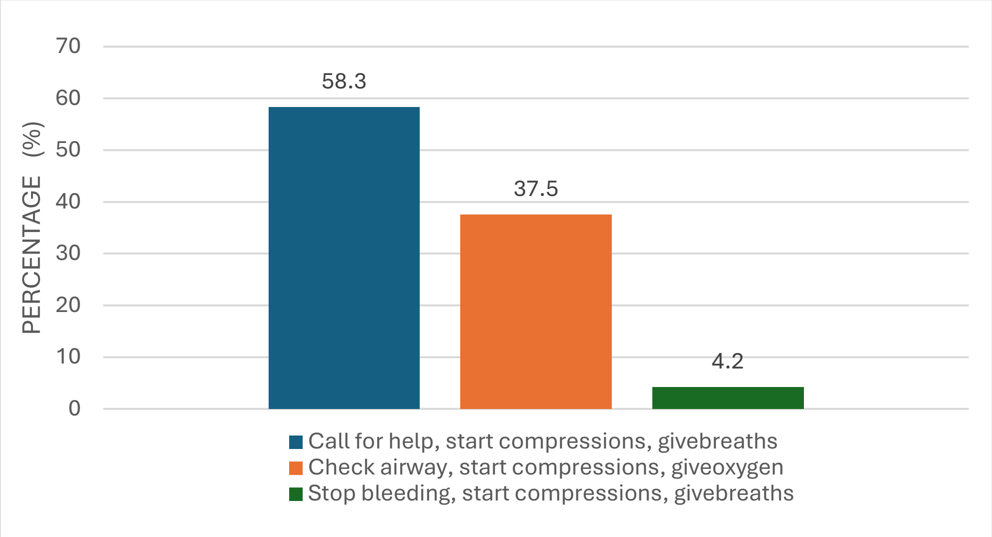

Table 5:

What are the steps involved in performing CPR?		
Call for help, start compressions, give breaths	**Check airway, start compressions, give oxygen**	**Stop bleeding, start compressions, give breaths**
58.3	37.5	4.2

Interpretation: Most of them answered correctly (58.3%) as call for help, start compressions, give breaths. Another (37.55%) respondent check airway, start compressions, give oxygen while (4.2%) respondent stop bleeding, start compressions, give breaths.

Result:

A total of 100 trekkers aged between 18-35years participated in the study, of which 55% were Males and 45% were Females. High awareness of CPR exists, but formal training and confidence are lacking. AED knowledge and usage are especially low. Most trekkers are willing to learn and believe CPR training should be mandatory. There's a strong case for integrating CPR education into trekking culture and outdoor safety programs.

Discussion:

The research aimed to evaluate the understanding of CPR among young trekkers, revealing a relatively high level of awareness; however, significant deficiencies exist in training, readiness, and self-assurance regarding the application of CPR in actual trekking situations.

Cardiopulmonary resuscitation can be executed in two main types—traditional cardiopulmonary resuscitation, which includes both compressions and ventilations, and compression-only cardiopulmonary resuscitation, which is endorsed by the American Heart Association. Prior studies indicate that over half of the participants in the study achieved a Good awareness score (59.9%). Nevertheless, there is a lack of knowledge concerning a critical aspect of the BLS protocol, the Automated External Defibrillator (AED).

The current research aimed to assess young trekkers' knowledge of cardiopulmonary resuscitation (CPR) within the age range of 18 to 35 years. A sample of 100 trekkers was examined, consisting of 55 males and 45 females. Among these participants, 45% trek infrequently (only once a year), 28% trek frequently (more than two times a year), 21% trek sometimes (twice a year), and 6% trek every weekend. The findings of the study revealed that 73% to 76% of trekkers have an awareness of cardiopulmonary resuscitation, while the remaining trekkers are somewhat unaware of CPR.

Graph 2 illustrates that the primary purpose of CPR aligns with the correct medical understanding, as 37% of respondents acknowledge that CPR provides artificial circulation and ventilation until advanced cardiac life support can be administered and spontaneous cardiopulmonary function is regained. Graph 3 indicates that a majority of trekkers, at 56.6%, can accurately recognize the typical signs of cardiac arrest, which include sudden collapse and loss of consciousness. According to the American Heart Association and the American College of Cardiology, cardiac arrest is described as the abrupt cessation of heart activity, leading to unresponsiveness, lack of normal breathing, and absence of circulation. Without immediate corrective measures, this condition can swiftly progress to sudden death.

Graph 4 details how guidelines have enhanced the quality of CPR by altering chest compression techniques. The most recent adult CPR guidelines include: (a) push the chest rapidly (100–120 compressions per minute), (b) compress sufficiently (5–6 cm), (c) allow for complete chest recoil, (d) minimize interruptions in compression, and (e) avoid excessive ventilation.

Based on the strength of the existing evidence, there was collective agreement on the need to consistently prioritize high-quality CPR that includes compressions of sufficient depth and rate, enables full chest recoil, reduces interruptions in chest compressions, and avoids over-ventilation. High-quality CPR forms the foundation of a care system that can enhance outcomes beyond the return of spontaneous circulation (ROSC). In summary, the results highlight the significance of incorporating CPR training into trekking culture.

Conclusion:

This study represents that the general awareness of CPR among young trekkers is high, there are gaps in formal training, confidence, and preparedness. The study strongly supports the need for mandatory CPR training and better access to CPR resources for trekkers to improve safety in remote and high-altitude environments.

Limitation:

1. The study was conducted on a small sample size of 100 trekkers, which may not fully represent the broader trekking population.
2. The level of trekking was within Maharashtra, which limits other levels such as Himalayan ranges.
3. The study indicated Age restriction (18-35) years old whereas more than 35yr old trekkers also participated.

Recommendation for future scope:

1. Conducting a longitudinal study with larger and more diverse sample size.
2. Similar studies can be conducted in various health care professionals and also assess the practical or hands on skills involved in Basic Life Support training.

3. Develop and implement CPR workshops specifically tailored for trekkers, including AED usage and wilderness emergency response. Explore mobile apps or wearable devices that guide CPR steps and locate nearby AEDs during treks.

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