

Research Article

Reviving Hearts in the Hills: Assessing Cardiopulmonary Resuscitation (CPR) Knowledge among Medical Officers in Himachal Pradesh

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Abstract: Background: Cardiovascular diseases (CVDs) pose a significant health threat globally, including the northern hilly state of Himachal Pradesh, India. Effective cardiopulmonary resuscitation (CPR) is crucial in responding to sudden cardiac arrests, given the challenging terrain and limited healthcare access. This study aimed to assess the CPR knowledge among medical officers in Himachal Pradesh.

Methods: A descriptive cross-sectional survey was conducted among 100 medical officers in Himachal Pradesh from April 2023 to July 2023. A Google Form questionnaire was used to collect data on CPR knowledge, and scoring was categorized as very good, good, fair, or poor. Data analysis was performed using Epi Info V7 software.

Results: The study revealed that 31% of medical officers had very good CPR knowledge, 37% had good knowledge, 22% had fair knowledge, and 10% had poor knowledge. While a substantial portion demonstrated proficiency, a notable proportion exhibited knowledge gaps in CPR techniques.

Conclusion: Although many medical officers in Himachal Pradesh displayed commendable CPR knowledge, disparities were evident, emphasizing the need for standardized training programs and regular refresher courses. Bridging knowledge gaps and enhancing CPR competence is essential for improving cardiac care and patient outcomes.

Keywords: Cardiovascular diseases, cardiopulmonary resuscitation, CPR knowledge, medical officers, healthcare access, Himachal Pradesh, India.

INTRODUCTION

Cardiovascular diseases (CVDs) remain a pervasive global health concern, accounting for a substantial burden of morbidity and mortality worldwide. In India, CVDs are a leading cause of death and disability, and the northern hilly state of Himachal Pradesh is no exception to this growing health crisis. Given the challenging terrain and limited accessibility to healthcare facilities in many regions of Himachal Pradesh, equipping healthcare providers, especially medical officers, with the knowledge and skills necessary for cardiopulmonary resuscitation (CPR) is of paramount importance. Prompt and effective CPR can be a lifesaving intervention in cases of cardiac arrest, which can happen suddenly and without warning.¹⁻³

Cardiac arrest is a critical condition in which the heart abruptly ceases to function effectively, leading to the cessation of blood circulation. It can occur due to various factors, including coronary artery disease, arrhythmias, or other underlying heart conditions. Immediate initiation of CPR can maintain blood flow to vital organs, particularly the brain, until more advanced care, such as defibrillation or cardiac medications, can be administered.^{4,5}

Medical officers, often serving as the first point of contact in healthcare delivery in Himachal Pradesh, play a pivotal role in responding to emergencies, including cardiac arrests. Their ability to provide effective CPR can make a substantial difference in patient outcomes. Therefore, evaluating their knowledge of CPR is crucial to ensure the readiness of the healthcare workforce in the state.

While CPR training is recommended for all healthcare providers, there may be variations in the quality and extent of training received across different regions and healthcare facilities. Factors such as the availability of training programs, resource constraints, and variations in the curriculum may influence the competence of medical officers in delivering effective CPR.^{6,7}

The objective of this study is to assess the knowledge of cardiopulmonary resuscitation (CPR) among medical officers working in the state of Himachal Pradesh. By evaluating their proficiency in CPR techniques, this research aims to identify potential gaps in training and areas where targeted interventions can enhance the quality of cardiac care in this challenging yet beautiful region.

Objectives of the Study

To evaluate the Knowledge of Cardiopulmonary Resuscitation (CPR) among medical officers working in the state of Himachal Pradesh.

RESEARCH METHODOLOGY

- Research Approach -Descriptive
- Research Design- Cross-sectional survey design
- Study area: Hilly state of Himachal Pradesh
- Study duration- between April 2023 to July 2023
- Study population: All medical officers working in the state of Himachal Pradesh for 12 months or more.
- Sample size- 100 medical officers assuming 50% have adequate knowledge regarding Cardiopulmonary Resuscitation, 10% absolute error, 95% confidence level, and 5% non response rate.
- Sampling Technique- convenience & snowball Sampling technique
- Study tool: A google form questionnaire consisting of questions regarding socio-demography and Cardiopulmonary Resuscitation was created. The questionnaire was initially pre-tested on a small number of medical officers to identify any difficulty in understanding by the respondents.
- Description of Tool-
 - a) Demographic data survey instrument: The demographic form elicited information on participants’ background: age, gender etc.

- b) Questionnaire: The questionnaire contains 10 structured questions regarding knowledge about Cardiopulmonary Resuscitation having multiple options. The participants have to choose right one. One mark was given for each correct answer and zero for incorrect answer. The maximum score was 10 and minimum score was zero in each category. Scoring was done on the basis of marks as >80% (9-10)=very good,60-79% (7-8) =Good,41-59% (4-6)=Fair,<40% (< 4)=poor

- Validity of tool - by the experts in this field
- Inclusive Criteria- who were willing to participate in the study.
- Exclusion Criteria: who were not willing to participate in the study
- Data collection- Data was collected under the guidance of supervisors. The google form questionnaire was circulated via online modes like e-mail and social media platforms like Whatsapp groups, Facebook, Instagram and LinkedIn among medical officers working in the state of Himachal Pradesh till the 100 responses were collected. Responses were then recorded in a Google Excel spreadsheet.
- Data analysis- Data was collected and entered in Microsoft excel spread sheet, cleaned for errors and analyzed with Epi Info V7 Software with appropriate statistical test in terms of frequencies and percentage.
- Ethical Considerations- Participants confidentiality and anonymity was maintained.

RESULTS

The present study was cross sectional descriptive study carried out to evaluate knowledge of Cardiopulmonary Resuscitation (CPR) among medical officers working in the state of Himachal Pradesh.

Table-1: Responses to the questions regarding Cardiopulmonary Resuscitation (CPR)

S. No	Questions	Options	Correct Answer	Correct Response
1.	CPR consists of which of the following components?	Chest compressions Airway Breathing All of the above	All of the above	82
2.	When beginning CPR, start with:	Rescue breathing Chest compressions Calling for help An AED	Chest compressions	81
3.	Single rescuers should use a compression-to-ventilation ratio of:	15 compressions to 2 breaths 90 compressions to 2 breaths 15 compressions to 1 breath 30 compressions to 2 breaths	30 compressions to 2 breaths	79
4.	At what rate should chest compressions occur?	60 to 70/min 90 to 100/min 100 to 120/min 180 to 200/min	100 to 120/min	78
5.	What is the correct chest	At least 2 inches	At least 2 inches	82

	compression depth for an adult?	At least one third the depth of the chest Half the depth of the chest At least 1 inch		
6.	After each compression:	Check the pulse Allow complete chest recoil Provide rescue breathing Yell for help	Allow complete chest recoil	81
7.	Interruptions in chest compressions should be limited to:	Less than 10 seconds 2 seconds 5 seconds There should never be interruptions in chest compressions	Less than 10 seconds	79
8.	When multiple rescuers are present, rescuers should switch compressors how often?	Every 20 cycles Every 15 cycles Every 10 cycles Every 5 cycles	Every 5 cycles	77
9.	What method should be used to open the airway of a victim with a suspected head or neck injury?	Head tilt-chin lift Jaw thrust Heimlich maneuver	Jaw thrust	81
10.	After an AED has been used, CPR is no longer necessary	True False	False	78

Table 2: Knowledge regarding Cardiopulmonary Resuscitation (CPR) among study participants

Category (Marks)	Frequency
V. Good (9-10)	31
Good (7-8)	37
Fair(4-6)	22
Poor(<4)	10
Total	100

In the present study, 31 study participants had very good knowledge (9-10 marks) regarding Cardiopulmonary Resuscitation , 37 had good knowledge (7-8 marks), 22 had fair knowledge (4-6 marks) and 10 had poor knowledge (<4 marks) regarding Cardiopulmonary Resuscitation .

DISCUSSION

Cardiopulmonary resuscitation (CPR) is a critical lifesaving skill, especially in regions like Himachal Pradesh, where challenging terrain and limited accessibility to healthcare facilities can delay emergency medical services. This study aimed to evaluate the knowledge of CPR among medical officers in Himachal Pradesh, shedding light on their preparedness to respond effectively to cardiac emergencies. The findings of this study offer insights into both strengths and areas that require attention in improving cardiac care.

In this study, a substantial proportion of medical officers demonstrated very good (31%) and good (37%) knowledge of CPR. These findings are promising and suggest that a significant number of medical officers possess the necessary knowledge and skills to initiate CPR effectively during cardiac emergencies. This may be attributed to their prior training and commitment to staying updated on CPR guidelines and techniques.

However, it is essential to recognize that a notable portion of medical officers exhibited fair (22%) or poor (10%) knowledge of CPR. These results highlight potential gaps in training and underscore the importance of targeted interventions to enhance CPR competence among healthcare professionals. Similar studies conducted in various regions have also identified variations in CPR knowledge among healthcare providers.^{6,7}

Comparing these findings with existing research reveals that the quality and extent of CPR training may vary across regions and healthcare facilities.⁸⁻¹⁰ Factors such as limited access to training programs, resource constraints, and variations in the curriculum can contribute to these disparities.

The study's results emphasize the need for standardized, high-quality CPR training programs for healthcare providers, particularly medical officers, who are often the first responders in cardiac emergencies. Addressing the identified knowledge gaps and enhancing CPR skills can significantly improve patient outcomes in Himachal Pradesh.

To bridge these knowledge gaps and enhance CPR competence, healthcare authorities in Himachal Pradesh should consider implementing the following strategies. Develop and implement standardized CPR training programs accessible to all medical officers, regardless

of their location or healthcare facility. These programs should adhere to international CPR guidelines and emphasize hands-on practice. Offer regular refresher courses to ensure medical officers maintain their CPR skills and stay updated on the latest guidelines and techniques. Resource Allocation: Allocate resources to ensure that healthcare facilities have access to essential CPR equipment, such as automated external defibrillators (AEDs). This can significantly improve the quality of care provided during cardiac emergencies. Continuously review and update the CPR curriculum to align with international best practices. Ensure that training materials are culturally sensitive and applicable to the local context. Conduct awareness campaigns among medical officers and the broader community to emphasize the importance of CPR and early intervention in cardiac emergencies. Collaborate with professional organizations, universities, and medical institutions to strengthen CPR training and certification processes.

CONCLUSION

In conclusion, while a significant number of medical officers in Himachal Pradesh demonstrate commendable knowledge of CPR, there are notable gaps that must be addressed to ensure that all healthcare providers are well-equipped to respond effectively to cardiac emergencies. Implementing standardized training programs and other supportive measures can significantly enhance the quality of cardiac care and improve patient outcomes in the state.

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