

ASSESS THE KNOWLEDGE REGARDING CARDIOPULMONARY RESUSCITATION AMONG UNDERGRADUATE STUDENTS

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Abstract

Background: Cardiopulmonary resuscitation (CPR) is a lifesaving emergency procedure used to restore breathing and circulation during cardiac arrest. Adequate knowledge and awareness of CPR among nursing students are essential to improve patient survival rates and ensure timely emergency care. This study was conducted to assess the level of knowledge regarding CPR among nursing students.

Methodology: A descriptive cross-sectional study was conducted at Peoples University of Medical and Health Sciences for Women (PUMHSW), Nawabshah (New Campus). A total of 280 undergraduate students from different academic programs, including BS Nursing, DPT, Pharm-D, and BSPH, were selected using a non-probability convenience sampling technique. Data were collected using a structured, self-administered questionnaire designed to assess participants' knowledge regarding cardiopulmonary resuscitation. The collected data were analyzed using Statistical Package for Social Sciences (SPSS). Descriptive statistics, including frequencies and percentages, were used, and results were presented in the form of tables and figures.

Results: The findings revealed that the majority of participants had a moderate level of knowledge regarding CPR. More than half of the students correctly identified key components of CPR, including the correct site of chest compression, compression depth, compression rate, and the compression-to-ventilation ratio. However, gaps were observed in knowledge related to the use of automated external defibrillators (AEDs) and emergency response sequence. Students who had previous exposure to CPR training demonstrated better knowledge compared to those without training.

Conclusion: The study concludes that although undergraduate students possess basic knowledge of cardiopulmonary resuscitation, significant gaps still exist, particularly in practical application and AED usage. Regular CPR training programs, hands-on practice sessions, and inclusion of CPR certification in undergraduate curricula are recommended to enhance knowledge, skills, and preparedness for emergency situations.

INTRODUCTION

Cardiopulmonary resuscitation (CPR) is a vital life-saving emergency procedure performed to restore and maintain circulation and breathing in individuals experiencing cardiac arrest. Sudden cardiac arrest (SCA) is a major global public health concern and remains one of the leading causes of mortality worldwide. CPR can double or even triple survival rates and significantly improve neurological outcomes. Therefore, timely recognition of cardiac arrest and immediate delivery of effective CPR are crucial determinants of survival. Despite advances in emergency cardiovascular care, survival rates from out-of-hospital cardiac arrest remain low, particularly in low- and middle-income countries. One of the most critical factors contributing to poor survival outcomes is the lack of immediate bystander CPR. This deficiency is often attributed to inadequate knowledge, insufficient training, fear of causing harm, and lack of confidence among potential responders. Undergraduate students represent an important population group, as they are frequently present in community settings and, particularly in health-related disciplines, are expected to respond effectively to medical emergencies. Knowledge regarding cardiopulmonary resuscitation includes understanding the basic life support (BLS) sequence, recognition of cardiac arrest, correct hand positioning, compression depth and rate, compression-to-ventilation ratios, and appropriate use of automated external defibrillators (AEDs). Adequate CPR knowledge not only enhances technical competence but also promotes positive attitudes and willingness to intervene during emergencies. However, multiple studies have reported insufficient CPR knowledge among undergraduate students, even among those enrolled in medical and allied health sciences programs. International resuscitation councils, including the American Heart Association (AHA) and the European Resuscitation Council (ERC), strongly recommend structured CPR training and periodic refresher courses to maintain competency. Recent guidelines emphasize high-quality chest compressions, early defibrillation, minimal interruption of compressions, and the

use of simulation-based education to improve skill retention. However, implementation of these recommendations within undergraduate curricula remains inconsistent across institutions and regions. In low- and middle-income countries such as Pakistan, CPR training is often not mandatory at the undergraduate level, leading to substantial knowledge gaps among students. Studies conducted in South Asia have demonstrated poor awareness of CPR guidelines, limited exposure to hands-on training, and low confidence levels among undergraduate students. These limitations are particularly concerning in settings where emergency medical services may be delayed or unavailable. Healthcare-related undergraduate students, including those studying medicine, nursing, pharmacy, and allied health sciences, are expected to possess fundamental CPR knowledge as part of their professional responsibility. Given the high global burden of cardiac arrest and the proven effectiveness of early CPR, there is a compelling need to evaluate CPR knowledge among undergraduate students. This assessment can support the development of evidence-based educational strategies aimed at improving emergency response capabilities and ultimately reducing mortality associated with sudden cardiac arrest.

The knowledge regarding cardiopulmonary resuscitation (CPR) among undergraduate students, as CPR is a vital life-saving skill required during medical emergencies such as cardiac arrest. Adequate knowledge and timely performance of CPR can significantly improve survival outcomes; however, many undergraduate students lack proper training and confidence to perform effective resuscitation. By evaluating the existing level of CPR knowledge, this study aims to identify gaps in understanding and highlight the need for structured training and educational programs.

MATERIAL & METHODS

This study was conducted using quantitative cross-sectional study design at people's university of medical and health sciences new campus. The duration of study was two months from 17

November to 17 January 2026 after approval of Institutional Review Board (IRB), sample of 280 selected from different departments DPT, BSN, BSPH and PHARM-D, a non-probability convenience sampling technique was used to select participants. The inclusion criteria included University students enrolled in allied

sciences (DPT, Pharm-D, BSPH, BS Nursing) student's Age 18 years and above. Students who were willing to participate and provide informed consent and the exclusion criteria included students who declined to participate and students who were unavailable during the data collection period.

RESULTS

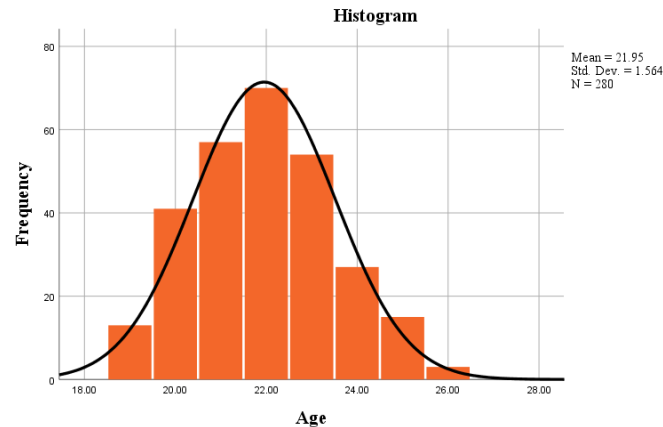


Figure 1: Age of Respondents

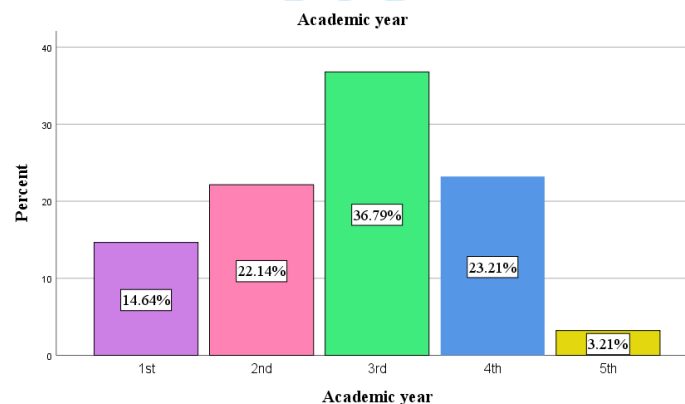


Figure 2: Academic Year

Table 1: Socioeconomic Status Of The Participants

Socioeconomic status	Frequency	Percentage%
Poor	22	7.9%
Middle	227	81.1%
Rich	31	11.1%
Total	280	100.0%

Table 2: Showing abbreviation of BLS

What is the abbreviation of BLS is stand for	Frequency	Percentage%
Best life support	69	24.6%
Basic lung support	24	8.6%
Basic life support	175	62.5%
Basic life service	12	4.3%
Total	280	100.0%

Table 3: Showing a scenario

You find your friend in the middle of the road he is unconscious does not react and does not breath properly what do you first	Frequency	Percentage%
I clear his airway	92	32.9%
I make sure we are both safe	69	24.6%
Begin to give him chest compression	102	36.4%
I give him to rescue breathe	17	6.1%
Total	280	100.0%

Table 4: Showing when victim does not react what will you do next

Having confirmed that the victim does not react even to strong stimuli such as shaking or loud shouts for help what will you do next	Frequency	Percentage%
Call an ambulance	130	46.4%
Perform cardiovascular resuscitation	82	29.3%
Place him in the recovery position	45	16.1%
Continue observation	23	8.2%
Total	280	100.0%

Table 5: Correct place of compression in adults

The correct place for the compression of the chest in an adult is	Frequency	Percentage%
The left side of the chest	46	16.4%
The ride side of the chest	30	10.7%
The centre of the chest	179	63.9%
The xiphoid process	25	8.9%
Total	280	100.0%

Table 6: Correct place of compression in an infant

The correct place for the compression of the chest of in an infant is	Frequency	Percentage%
Two fingers placed on the bottom part of the sternum	59	21.1%
Two fingers placed in the area of the xiphoid process	61	21.8%
Two fingers placed in the central part of the sternum on the breast line	153	54.6%
Two fingers placed of the top part of the sternum	7	2.5%
Total	280	100.0%

Table 7: Showing correct depth of chest compression in children

The correct depth for chest compression in children during BLS is	Frequency	Percentage%
1/3 of the chest depth	161	57.5%
1 and a half of the chest depth	48	17.1%
1/2 of the chest depth	50	17.9%
2 and a half of the chest depth	21	7.5%
Total	280	100.0%

Table 8: Showing correct frequency of chest compression

The correct frequency of chest compressions during CPR for adults and children is	Frequency	Percentage%
At least 100 compressions per minute	148	52.9%
More than 100 compressions per minute	52	18.6%
80 compressions per minute	35	12.5%
120 compressions per minute	45	16.1%
Total	280	100.0%

Table 9: Showing abbreviation of AED

What does the abbreviation AED stand	Frequency	Percentage%
Automated external defibrillator	102	36.4%
Automated electrical defibrillator	116	41.4%
Advanced electrical defibrillator	42	15.0%
Advanced external defibrillator	20	7.1%
Total	280	100.0%

Table 10: Showing pulse we check

We check for a pulse in an adults on the	Frequency	Percentage%
Carotid artery	195	69.6%
Brachial artery	52	18.6%
Femoral artery	19	6.8%
Temporal artery	14	5.0%
Total	280	100.0%

Table 11: Showing ratio of chest compression during CPR

The ratio of chest compressions to breaths during CPR in adults is	Frequency	Percentage%
15:2	34	12.1%
15:1	30	10.7%
30:1	25	8.9%
30:2	191	68.2%
Total	280	100.0%

DISCUSSION

The mean age of participants was 21.95 ± 1.564 years, indicating that the sample predominantly consisted of young adults. Younger age groups are

generally considered more receptive to training and adopting new skills, including CPR techniques. Socioeconomic status appeared to play a role in access to CPR education and

resources. The majority of participants belonged to the middle class (81.1%), with smaller proportions in the poor (7.9%) and rich (11.1%) categories. Accommodation type (hostler 48.93%, locker 51.07%) did not significantly influence CPR knowledge, reflecting that on-campus living arrangements had minimal effect on participants' exposure to CPR training. Similarly, representation across programs was evenly distributed (BSN 25%, DPT 25%, Pharm D 25%, BSPH 25%), and participants from all academic years demonstrated varied levels of CPR knowledge, with third-year students (36.79%) showing the highest representation, potentially due to increased clinical exposure and practical training opportunities. Regarding CPR knowledge, most participants correctly identified BLS (Basic Life Support) with 62.5% selecting the correct abbreviation. However, misconceptions persisted, as 24.6% selected "Best Life Support" and smaller percentages chose incorrect options. When presented with an emergency scenario involving an unconscious friend, 36.4% of participants chose to begin chest compressions first, while 32.9% prioritized clearing the airway. Only 6.1% initiated rescue breaths immediately. Participants demonstrated strong awareness of proper chest compression techniques. Most correctly identified the centre of the chest (63.9%) as the correct site for adult compressions and the central part of the sternum on the breast line (54.6%) for infants. Similarly, the majority (57.5%) knew the correct depth of compression in children (one-third of chest depth) and the appropriate frequency of at least 100 compressions per minute (52.9%). Most participants correctly identified the carotid artery (69.6%) as the site to check the pulse in adults, indicating satisfactory knowledge of vital assessment during resuscitation. Additionally, the majority understood the correct ratio of compressions to breaths for adults (30:2, 68.2%), further demonstrating knowledge of CPR guidelines. Overall, the study demonstrates that while theoretical understanding of CPR is generally acceptable among healthcare students, knowledge gaps remain in certain areas, such as the correct sequence of actions in emergencies,

AED abbreviation and usage, and nuances of paediatric resuscitation.

CONCLUSION:

The study concluded that undergraduate students demonstrated a generally adequate theoretical understanding of cardiopulmonary resuscitation (CPR), including recognition of cardiac emergencies, the appropriate site and depth of chest compressions, and the recommended compression-to-breath ratios for both adults and children. Despite this foundational knowledge, the students' practical competence and confidence in performing CPR were insufficient, particularly when faced with real-life emergency scenarios. Notable gaps were observed in essential areas such as the correct sequence of actions during cardiac arrest, the use and function of automated external defibrillators (AEDs), and specific paediatric resuscitation procedures. Most participants were able to correctly identify the abbreviation of BLS (Basic Life Support), the proper sites for chest compressions in adults and infants, the recommended compression-to-breath ratios, and the correct depth and frequency of chest compressions. These results suggest that students have received basic instruction on CPR principles and are familiar with the standard guidelines outlined by international resuscitation councils. The widespread awareness of CPR concepts among the participants reflects the effectiveness of knowledge necessary for emergency care.

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