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Assessment of Knowledge and Attitude toward Basic Life Support (BLS) and Cardiopulmonary Resuscitation (CPR) Among First-Year Medical Students: A Cross-Sectional Study

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ABSTRACT

Background: Basic Life Support (BLS) and Cardiopulmonary Resuscitation (CPR) are essential emergency interventions that can significantly improve survival outcomes following sudden cardiac arrest. Assessing knowledge and attitude among medical students is crucial to identify training needs and promote early competence in life-saving skills. Hence, this study was done to assess the knowledge and attitude toward BLS and CPR among first-year medical students.

Materials and Methods: A cross-sectional study was conducted among 100 first-year MBBS students using a structured, pre-validated questionnaire comprising 20 knowledge-based items and 6 attitude-based Likert-scale items. Knowledge scores were categorized as poor (0–5), average (6–10), good (11–15), and excellent (16–20). Data were analyzed using descriptive statistics.

Results: Awareness of BLS was high (79.2%), but specific knowledge regarding CPR sequence and terminology (e.g., CPCR) was limited. While 68.7% of students scored in the good-to-excellent knowledge range, 31.3% had poor-to-average scores. Attitudes were strongly positive—over 70% were willing to undergo training, and 81.3% were eager to teach BLS to others. However, only 29.2% felt their current knowledge was sufficient, and 55.2% expressed confidence in performing CPR.

Conclusion: First-year medical students demonstrate strong motivation and positive attitudes toward BLS, but show critical gaps in knowledge. Early, structured, and hands-on BLS training should be incorporated into the undergraduate curriculum to improve competence and emergency preparedness.

Keywords: Basic Life Support, Cardiopulmonary Resuscitation, Medical Students, Knowledge, Attitude, India.

INTRODUCTION

Cardiopulmonary resuscitation (CPR) and Basic Life Support (BLS) are lifesaving interventions that significantly improve survival in cases of sudden cardiac arrest and other life-threatening emergencies. BLS includes a series of critical actions such as early recognition, activation of emergency services, high-quality chest compressions, and rescue breathing aimed at maintaining circulatory and respiratory function until advanced care is available [1]. Despite widespread awareness campaigns and guideline updates, survival rates after out-of-hospital cardiac arrest remain dismally low in many developing countries, including India [2].

Healthcare professionals are often the first responders in such emergencies, and their knowledge and confidence in performing BLS can make a vital difference. As future frontline caregivers, medical students must be trained early and adequately in CPR and BLS techniques. However, previous studies have indicated that medical students, especially in their early years, often lack adequate knowledge and practical competence in these critical skills [3,4]. A positive attitude toward learning and performing BLS, when combined with structured training, has been shown to improve preparedness and patient outcomes [5].

Given the critical nature of these skills and their underutilization, it becomes essential to assess both the cognitive (knowledge) and affective (attitude) domains related to BLS and CPR among first-year medical students. Understanding existing gaps can help tailor educational interventions and reinforce the inclusion of BLS training in undergraduate medical curricula.

This study was conducted to assess the level of knowledge and the attitude of first-year medical students toward BLS and CPR, and to determine the need for formal training in this cohort.

MATERIAL AND METHODS

Study Design and Setting: This cross-sectional observational study was conducted by Department of Physiology, C U Shah Medical College, Surendranagar, Gujarat, among first-year undergraduate medical students after approval from Institutional Ethics Committee and written informed consent from students.

Study Population: The study included all consenting first-year MBBS students. Participation was voluntary and anonymous.

Inclusion and Exclusion Criteria: The study included first-year MBBS students who voluntarily provided informed consent and were present during the data collection session. Students who did not consent to participate or had previously undergone certified training in Basic Life Support (BLS) or Cardiopulmonary Resuscitation (CPR) were excluded from the study.

Sample Size and Sampling Technique: A total of 96 students participated in the study as 4 students found to be absent on the day of study. Convenient sampling was used to include all eligible and consenting students available during the study period.

Data Collection Tool: A structured, pre-tested, self-administered questionnaire was used for data collection. The questionnaire used in the study comprised three distinct sections. The first section collected demographic information, including the participants' age, gender, and any prior exposure to Basic Life Support (BLS) or Cardiopulmonary Resuscitation (CPR) training. The second section assessed knowledge through 20 questions, focusing on fundamental concepts related to BLS and CPR, such as chest compression techniques, appropriate pulse check duration, rescue breathing, and the chain of survival. The third section evaluated attitudes using six statements rated on a 5-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree," aiming to gauge students' perspectives on BLS training, their confidence in performing CPR, and their willingness to either administer or teach it.

The questionnaire was developed based on standard BLS guidelines from the American Heart Association [6] and was validated by experts in medical education and emergency medicine.In the Knowledge section, each correct response was given a score of 1 and incorrect response was given a score of 0.

Data Analysis: The collected data were entered into Microsoft Excel and analyzed using SPSS. Descriptive statistics were used to calculate frequencies and percentages.

RESULTS

Most students showed good awareness of BLS concepts—over 75% correctly identified basic terms and actions like compression depth, rate, and purpose. However, critical gaps were evident: only 13.5% knew BLS is not limited to hospital settings, and none could expand the term "CPCR." Less than half correctly identified the BLS sequence and characteristics of high-quality CPR, indicating incomplete theoretical understanding (Table 1).

Table 1: Responses to Knowledge-Based Questions on BLS and CPR (N = 96)

Knowledge Question	Correct response		Incorrect response	
	n	%	n	%
Heard about the term "Basic Life Support (BLS)"	76	79.17	20	20.83
Able to expand the term "BLS"	75	78.13	21	21.88
Knows BLS is not limited to in-hospital settings	13	13.54	83	86.46
Able to expand the term "CPCR"	76	79.17	20	20.83
Knows the first link in Adult Chain of Survival	59	61.46	37	38.54
Knows recommended position for chest compressions	72	75	24	25
Knows what to do if an unresponsive person is in water	80	83.33	16	16.67

Understands purpose of chest compressions during CPR	65	67.71	31	32.29
Knows correct response to finding unresponsive adult in public	60	62.5	36	37.5
Knows ideal pulse check duration	52	54.17	44	45.83
Knows correct BLS sequence (CAB)	46	47.92	50	52.08
Knows ideal site for hand placement during compressions	64	66.67	32	33.33
Knows minimum depth of chest compressions	68	70.83	28	29.17
Knows recommended rate for chest compressions	66	68.75	30	31.25
Knows correct compression-to-ventilation ratio	52	54.17	44	45.83
Can identify incorrect feature of high-quality CPR	43	44.79	53	55.21
Knows how to check for response in an infant	52	54.17	44	45.83
Knows how to perform rescue breaths	50	52.08	46	47.92
Knows the correct airway-opening maneuver	57	59.38	39	40.63
Knows when to stop CPR	70	72.92	26	27.08

Attitudes were overwhelmingly positive. Over 70% were willing to undergo hands-on training and teach family members. A majority supported inclusion of BLS in the curriculum. However, only 29% felt their knowledge was sufficient, and 55% felt confident in performing CPR—suggesting motivation but low self-assessed readiness (Table 2).

Table 2: Responses to Attitude-Based Statements on BLS and CPR (N = 96)

Attitude Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel confident in performing CPR.	21	32	32	5	6
My knowledge about BLS is sufficient.	7	21	53	10	5
All healthcare workers should be trained in BLS.	56	30	4	3	3
Willing to attend BLS training with hands-on practice.	41	38	12	2	3
BLS training should be part of the medical curriculum.	44	32	13	0	7
Willing to teach BLS to family members once trained.	34	47	11	1	3

While 68.7% of students had good to excellent knowledge, 31.2% scored in the poor to average range. These findings highlight the need for early, structured BLS training to bridge knowledge gaps and build competence (Figure 1).

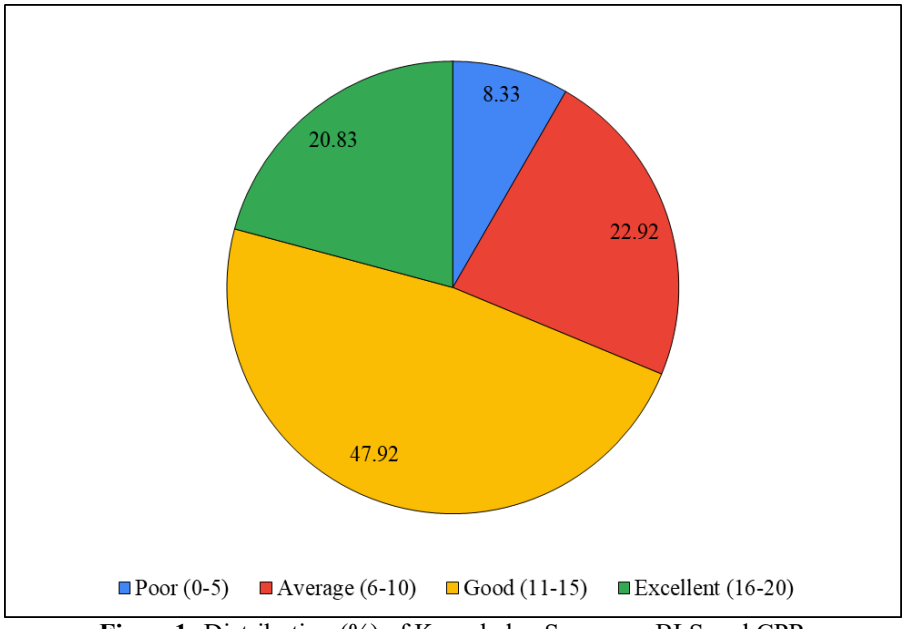

Figure1: Distribution (%) of Knowledge Scores on BLS and CPR

DISCUSSION

This study evaluated the knowledge and attitude toward Basic Life Support (BLS) and Cardiopulmonary Resuscitation (CPR) among first-year medical students. Although awareness about BLS was fairly high, detailed understanding—especially of essential CPR steps like sequence, CPCR expansion, and in-hospital applicability—was lacking. Only 47.9% of students knew the correct BLS sequence, and none could expand "CPCR," reflecting a gap in foundational training.

These findings are in line with previous studies that also reported suboptimal knowledge levels among early-year medical students. For instance, a study by Chandrasekaran et al. found that less than half of undergraduate students had sufficient knowledge of CPR procedures [4]. Similarly, a study conducted in North India revealed that only 40% of medical interns could correctly identify compression rates and ratios [7]. Similar findings were reported by Sangamesh et al., who observed that although awareness and attitude toward BLS were positive among medical, dental, and nursing students and faculty, the overall knowledge levels were suboptimal, underscoring the need to incorporate structured BLS training into the undergraduate curriculum [8].

Despite knowledge gaps, student attitudes in our study were highly encouraging. Over 70% were willing to undergo hands-on BLS training, and a majority supported its inclusion in the medical curriculum. Similar positive attitudes were observed by Roshana et al., who found that willingness to learn BLS was high among health professional students despite low confidence in practical application [5]. This reinforces the idea that structured training, especially early in the medical course, can harness this motivation and build skill-based competence. A study from Nigeria by Adewale et al. also reported high levels of awareness and a positive attitude toward CPR among final-year university students, although only a small proportion had received formal training, highlighting a global gap between interest and access to structured BLS education [9].

Notably, only 29% of our participants felt their knowledge was sufficient, and 55% expressed confidence in performing CPR. This mismatch between perceived importance and self-assessed competence highlights a critical area for curricular reform. Prior studies have shown that early BLS training significantly improves both skill performance and confidence [10-14].

Our findings support the growing consensus that BLS training should be formally introduced in the first year of medical education, using interactive, simulation-based methods to enhance both knowledge and practical skills.

However, this study was limited to a single institution and focused only on first-year students, limiting generalizability. Practical skill assessments were not included and should be addressed in future research.

CONCLUSION

The study revealed that while awareness about BLS and CPR among first-year medical students was relatively high, detailed knowledge of critical steps remained insufficient. A significant proportion of students lacked clarity on essential CPR components such as sequence, compression technique, and emergency response. Despite these gaps, the attitude toward learning BLS was overwhelmingly positive, with most students expressing willingness to undergo training and support its inclusion in the curriculum. The distribution of knowledge scores highlighted a clear need for structured BLS education early in medical training. Incorporating hands-on BLS training in the first year could substantially improve preparedness and confidence in managing life-threatening emergencies.

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