



Emergency Medicine

PULSE OF READINESS - FROM KNOWLEDGE TO ACTION! EXPLORING THE LIFE SUPPORT LITERACY & ATTITUDE AMONG HEALTH SCIENCE STUDENTS OF TELANGANA

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ABSTRACT

A cross-sectional study was conducted to assess the understanding and perspectives of Indian health science students regarding Basic Life Support (BLS) through a validated 30-question online questionnaire, which reached approximately 10,000 students via social media and received 600 responses. The majority of participants were MBBS (77%), BDS (6%) students, BPT Physiotherapy (3%) followed by BSc Nursing (9%), GNM General Nursing and Midwifery (5%). The results revealed that Indian students generally maintained a favourable attitude towards BLS, with 90% demonstrating sufficient knowledge, as they passed the evaluation. However, significant variations in scores were noted based on the students' field of study, although no significant correlation ($p > 0.05$) was identified between knowledge sufficiency and course. Importantly, students who had previously received BLS training displayed significantly enhanced knowledge and attitudes ($p < 0.001$). Additionally, a considerable number of students indicated their readiness to engage in BLS courses and to instruct non-medical members of their communities if needed. The study also provided participants the opportunity to articulate challenges encountered while learning BLS and suggest remedies for improvement. The authors advocate for the establishment of more accessible and well-equipped training programs and highlight the necessity for further research in Emergency Medicine to evaluate measurable outcomes following educational interventions.

KEYWORDS : CPR – Cardio Pulmonary Resuscitation, BDS – Bachelor of Dental Surgery, BLS – Basic Life support, AHA– American Heart Association

INTRODUCTION:

Basic life support (BLS) is the number one frontline defence against life-threatening illnesses and injuries, catering to victims across all age groups. Proficiency in cardiopulmonary resuscitation (CPR), using of automated external defibrillators (AEDs), airway management, and treatment of respiratory arrest constitute fundamental components of BLS^(1,2). Survival rates following cardiac arrest depend upon timely interventions, such as high-quality (CPR), prompt defibrillation, and the seamless integration of the chain of survival alongside the availability of emergency services⁽³⁾.

Remarkably, even non-medical professionals, if adequately trained, can implement BLS protocols, due to its universal applicability. Yet, while the importance of BLS is indisputable, it is not widely accessible, nor is its proficiency common. It is the need of the hour, particularly in developing countries like India.^(3,4)

This study aims to find out their level of knowledge, their perception, and what challenges they face in learning BLS effectively. Since most incidents of cardiac arrest are witnessed, any effort to increase survival must include prompt delivery of proven care from bystanders⁽⁷⁾. CPR is the required life saving measure, and a crucial factor in survival from in-hospital and out-of-hospital cardiac arrest⁽¹⁾.

Hands-only-CPR is a term formulated by the American Heart Association (AHA) and high quality CPR is considered the foundation of resuscitation care^(3,6).

This study aims to be a preliminary step to explore the level of knowledge and attitude towards BLS and to determine knowledge gaps in healthcare professionals at the start of their career.

AIMS AND OBJECTIVES:

The following specific objectives were pursued:

- To evaluate the knowledge and attitude of Indian health science students towards basic life support and resuscitation skills.
- To determine if there was any difference in perception and adequacy of knowledge among the students based on their course of study.
- To evaluate the willingness to attend Basic Life Support training programs
- To compare the knowledge of and attitude towards Basic Life Support between trained and untrained students.

Along with the above, our aim was to increase the awareness of BLS and CPR among Indian students. The BLS questionnaire exposed

untrained students to this concept and gave the trained students a way to test themselves. This generated interest so that more students will request their colleges to give importance to life support courses.

MATERIAL AND METHODS:

Study Design: A cross sectional survey-based study in Health Education

Study Population: Students of health sciences that study in India

Study Tool: An online, 30-question survey developed specially for this study and internally validated.

Subject Area: Emergency Medicine, Trauma and Allied sciences.

A cross sectional study was conducted among health science students of medicine, nursing, physiotherapy and dental, with an estimated population size of 5,00,000. The data was collected via an online, structured and self-administered questionnaire, distributed on the internet via social media and texting applications reaching approximately 10,000 students in two months. Considering a confidence level of 95% and margin of error 5%, the minimum required responses were estimated to be 384, and we received 600. survey.

The dependent variables that were considered are the knowledge and attitude towards Basic Life Support training and the independent variables are location, course of study- nursing, dental, physiotherapy, and among medical students and allied sciences. Another important independent variable we considered is the students' BLS training status.

The questionnaire is novel and developed only for this study. It was internally validated and reviewed with subject experts, and a pilot survey with thirty two responses was conducted.

Operational Definition:

Adequate Knowledge/ Pass: respondents who answered 8 out of 15 (>50%) of the total knowledge questions, correctly

Positive Attitude: the responses were separated into three percentile groups, the top two thirds were considered to have a positive attitude.

The first five questions consisted of demographic questions and addressed the independent variables. The knowledge based questions each carried a score of one, with the highest possible score being 15 points. At least 50%, that is 8 correct answers in the survey, is

considered a passing score as per BLS course testing guidelines, and a score below 50% indicates inadequate knowledge and requires further training and remediation. The answers are in accordance with the American Heart Association's BLS Provider Manual. The correct answers to the knowledge-based section of the questionnaire were displayed after the survey, with the intention of serving as an educational tool to meet immediate needs.

In the questions assessing attitude, participants were asked to rate their opinion on a scale of 1-5 with 1 being "strongly agree" and 5 being "strongly disagree" for positively worded statements. The option '3' corresponded to the student having a neutral opinion. Negatively worded statements from the questionnaire were scored in the reverse order.

The lowest score, ie the one with the best attitude was 8 points, and the most undesirable attitude was 40 points. It indicated a need for more education.

Quality control of the survey responses was ensured via the negatively worded questions.

The last few questions aim to determine the attitude of students towards basic life support and newly updated guidelines on mouth-to-mouth ventilation.

Statistical Analysis:

Statistical Package for the Social Sciences (SPSS) version 24 was used for all statistical analysis. Descriptive statistics like mean, median, standard deviation were used for knowledge and attitude scores. Proportions for quantitative and qualitative variables.

T test for normally distributed quantities, but our values were not normally distributed. Chi square test was used to study association between variables. P value at ≤ 0.05 was considered statistically significant.

RESULTS

We reached over 10,000 medical and paramedical students over social media sites eg WhatsApp, Telegram etc in their college groups. We received 600 responses.

Demographics-

the responses were from all across India, the majority were from South India. In terms of their level of education, over half were still students of their undergraduate degrees, a little over a third were interns, and the rest were in various early stages of their careers after graduation from undergraduate degrees (practicing, PG, superspeciality, etc.) See Figure I below.

The majority of the participants were students of MBBS colleges, followed by BSc Nursing, then BDS, GNM (general nursing and midwifery) and least responses from BPT. See Figure II below for the exact proportions.



Fig 1: Pie diagrams depicting the participants course of study, their proportions and competency in life support courses respectively.

The majority of the participants were made aware of Basic Life Sciences at college (82%), and some found out about it through entertainment media (8.2%) and some via other sources, including workshops (3.3%). However, 6.5% of the participants had never heard of it before.

Knowledge Scores-

the mean knowledge score was 11.28 points, median was found to be 12 points, (Figure II). The range of scores we received was 3 to 15 points. Figure V shows the distribution of the scores.

Out of 600 responses, 535 (89.2%) passed and 65 (10.8%) failed.

The scores of the knowledge quiz significantly varied between students of different courses ($P=0.015$). However, if we consider it as pass/fail, with scores of 8 points or higher being the pass mark

(adequate knowledge), there was no significant association with the course of study (P value >0.05) Refer Table I for the adequate and inadequate counts found by course.

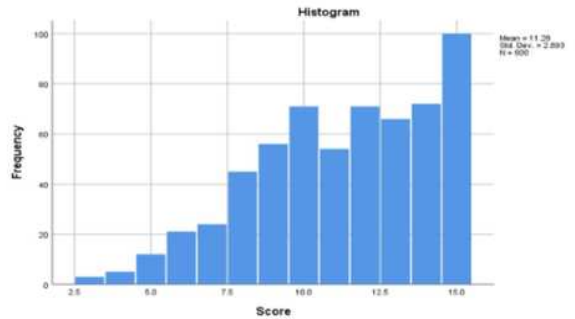


Figure 2: Depiction of distribution of knowledge scores in the Histogram

Table I: Details Of Adequacy And Inadequacy Of Knowledge Scores By Course Of Study

		Inadequate	Adequate
GNM	Count	4	23
	% within course	14.8%	85.2%
BSc	Count	4	52
	% within course	7.1%	92.9%
BPT	Count	5	14
	% within course	26.3%	73.7%
BDS	Count	2	35
	% within course	5.4%	94.6%
MBBS	Count	50	411
	% within course	10.8%	89.2%
Total	Count	65	535
	% within course	10.8%	89.2%

Attitude Scores-

the attitude score mean was found to be 13.1 points, with a standard deviation of 5.453. See Figure VII below to see the exact distribution of these scores.

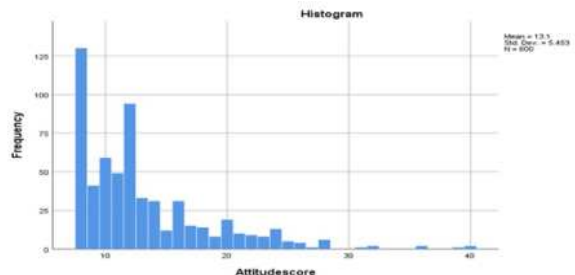


Figure 3: Showing The Distribution Of Attitude Scores In The Study Population

Percentile groups were taken to assess the overall attitude, at 33 percentile and 66 percentile. The score at 33 percentile was 10 attitude points and at 66 was 8 attitude points. The top one third of attitude scores got the least points possible, indicating the most desirable attitude. A majority of the responses had a desirable attitude, only a couple outliers showed an undesirable attitude, as shown by Figure 3 above.

DISCUSSION:

We made several key findings about the participants' demographics, awareness of Basic Life Sciences (BLS), and their competency in BLS and CPR (Cardiopulmonary Resuscitation) and challenges faced by them in receiving education.

While the majority of participants were aware of BLS, with college being the primary source of exposure, an alarmingly considerable percentage had never heard of it before. This highlights the need for broader spread of BLS knowledge through various channels, including entertainment media and workshops, to reach individuals who may not encounter it through traditional education.^(4,5)

Despite high awareness of BLS and CPR, a substantial portion of participants reported a lack of competency in these lifesaving techniques. This finding raises concerns about both the number and effectiveness of current training programs. It suggests the need for enhanced practical training opportunities and reinforcement of skills over time- a need also expressed by students in the "challenges to

training section.” This shows us that there is a demand for these courses, but they are simply not accessible enough.^(6,7)

Most of the participants had adequate knowledge scores, the mean knowledge score among participants was 11.28 points, with a median score of 12 points. The majority, nearly nine out of every ten, passed the test. These results make us hopeful about the future of emergency medicine. Students with previous training had higher scores and a better passing rate, as can be expected.

The course of study by the healthcare students did not make a significant difference in whether or not they passed. This is good news, showing us that all the students are being equally trained. A study conducted in India, showed that 40% of dental interns in Mangalore had a below average knowledge of BLS⁽¹²⁾. Our study reports better results, where the majority of students passed the test, (but only 51.5% of our students had scores above the mean of 11.28 points.)

The attitude scores revealed the perception of BLS among healthcare students.⁽¹⁴⁾ Trained students had a significantly better attitude towards BLS than untrained, showing us that the current training programs are effective in correcting misconceptions.^(15,16) In a previous study conducted in India, they found that dental interns had a mostly favourable attitude towards BLS, but 40% had a negative attitude^(18,19). Overall, our study showed a fantastic perception and fewer misconceptions regarding BLS even in the untrained.

The attitude scores were found to be significantly different based on the degree. However, due to the unequal number of responses received by students of each course, we hesitate to make any conclusions on the association between their degree, and knowledge or attitude. The majority of the responses, 77%, were from medical students, and the remaining were distributed among the rest.

A study conducted on medical, dental, nursing faculty and students in India at one tertiary care centre with attached college, found that the participants were aware of BLS, had a positive attitude, but knowledge was lacking⁽¹³⁾. This is in tune with our study where the participants had better attitude and awareness than knowledge/training. The difference lies in that most of the participants in our study had adequate knowledge.^(17,18)

The responses to the perception part of the questionnaire showed exceptionally well informed students with good attitudes.

There were many challenges faced by the responders in our survey.

The most reported challenge to adequate training was “lack of sufficient mannequins and simulation labs,” selected by over half of the participants. Over one third selected “not included in the curriculum.” These responses might trigger a knee jerk of helplessness, but they are optimistic. They indicate a high demand for adequate training facilities, and a student body that is interested in learning. We find this trend of requesting better facilities promising, and hope that policy makers will take it into account while allocating resources to various disciplines of healthcare.

More concerningly, some found a “lack of student participation/interest” while some reported “lack of trained professionals ready to teach.” The solution to this problem is to improve the quality of BLS instructors, such that a good leader, by expressing his/her own passion about the subject, might inspire students to do the same. We should also strive to include first aid in mainstream conversation, so that students' interest is ignited.^(17,19)

The responders also complained of a lack of time to practice, need for revision, lack of confidence in one's skills, low number of sessions allotted, and impractical online modules. With the COVID-19 pandemic no longer as much of a threat as it once was, online coaching must compulsorily be supplemented with about 6% of the participants reported seeing no challenges, and found their training adequate.^(18,20)

We should try to improve this number by setting clear, measurable, and achievable goals.

It is also important to consider the validity of using an online questionnaire to evaluate real-life skills. This is why we have taken BLS competency and knowledge as separate entities. Competency refers to being previously trained, and BLS knowledge indicates the

points scored on the quiz in our questionnaire.^(15,16) However, to assess the validity of the knowledge part of the questionnaire, we compared the association found between these two. As can be expected, it was highly significant and those that were competent, i.e. trained before, had a higher pass percentage and scored better than untrained peers.

There may also be selection bias present in our study. It is not unreasonable to think that students that were previously trained in BLS and knew its importance, were more motivated to answer the questionnaire and revise their education. Those that were unaware, or aware-but-uninterested in Basic Life Support could have similarly skipped over the survey message when they saw it. It is also entirely possible that untrained students were intimidated by the knowledge based questions and decided to stop the survey halfway through and never submit it at all. All of these situations could lead to us not receiving the responses with lower knowledge and attitude scores.

There is also the question of the survey being self administered and not proctored. However, it is an honor based system and we assume all the knowledge based questions to be answered in earnest.

The next step we suggest is community outreach by students. A study showed that teaching BLS to migrants is an effective way to increase healthcare involvement by lay persons.^(15,16,17) India also has a lot of such individuals. This is one of the recommendations we make, as 70% of the students in our study reported that if they are given an opportunity to be a BLS instructor, they would be willing to teach. This is mutually beneficial for early-career healthcare professionals who might need volunteer hours, and migrants with limited healthcare access. This will also solve the problem of deteriorating practical skills due to limited opportunities to use them^(12,13).

More research is needed to develop algorithms to effectively teach CPR when the mannequins are limited, including large didactic group sessions on one day, followed by multiple self practice sessions allotted at different times to smaller groups of students, spread across the year to facilitate revision.^(14,15) This way, the students will all be given adequate time to practice on the mannequin and gain confidence in one's abilities.

While we celebrate the positive outcomes of our study, we must remain vigilant in our efforts to continuously improve BLS education and training for healthcare providers, right from the student stage. Further research and interventions in this area are warranted, and are the need of the hour. By addressing knowledge gaps, dispelling misconceptions, expanding outreach and providing accessible training opportunities, we can ensure widespread access to BLS and CPR. We should empower future healthcare professionals to confidently and competently respond to emergencies, ultimately saving lives.^(11,14)

Limitations :

-The study revealed a significant gap in BLS competency despite high awareness levels among students.

-Challenges like inadequate resources and limited training opportunities were major barriers.

-Encouragingly, students exhibited a positive attitude towards BLS and showed a willingness to participate in further training and community outreach programs.

CONCLUSION

- This study underscores the urgent need for accessible and effective BLS training programs in India.
- By addressing the identified barriers and leveraging students' enthusiasm, healthcare education can be improved, ultimately enhancing emergency response outcomes.
- We advocate further research and hope to lay a foundation to undertake training and research activities in life support courses with the available resources which actually is the need of the hour.

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