

Basic Life Support Competency Among Medical Students in South-East, Nigeria

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ABSTRACT

Introduction: Worldwide, lack of knowledge and skills of Basic Life contributes significantly to mortality from cardiac arrest, with approximately 90% of out-of-hospital cases resulting in death. Survival rates remain below 10% in many regions, largely due to delayed or absent basic life support provided.

Objective: To assess Knowledge, attitude, and practice of basic life support among medical students in Enugu State University of Technology, Enugu State, South-East Nigeria.

Methodology: The study was a descriptive cross-sectional study. The analysis was conducted using generated tables, frequency and percentage calculations, and cross-tabulations. Summary statistics were used to represent quantitative data. Chi-square was used, at 95% confidence interval, and P-value was set at 0.05.

Results: 42% of respondents had good knowledge of BLS, and 58% had poor knowledge, while 77.6% demonstrated a positive attitude. However, practice was very poor, as only 7.6% had good practice.

Conclusion and Recommendations: The respondents had positive attitude, poor knowledge, and very poor practice of Basic life support. BLS training should be made compulsory in the medical curriculum, with regular refresher courses, and simulation-based practices.

Keywords: Knowledge, Attitude, Practice, Basic, Life Support

Introduction

Basic Life Support (BLS) is an essential life-saving intervention that comprises of cardiopulmonary resuscitation (CPR), airway management, artificial ventilation, and bleeding control and it is performed to sustain life during emergencies until advanced care is available. These interventions can be effectively delivered by both healthcare professionals and trained laypersons, making widespread BLS knowledge crucial in reducing preventable mortality. Outcomes improve significantly when BLS is initiated early. Evidence shows that early initiation of BLS, particularly by bystanders, significantly improves survival and neurological outcomes in out-of-hospital cardiac arrest. Recent international consensus highlights the importance of early recognition, rapid

activation of emergency services, and immediate CPR as key determinants of survival. Increasing community participation in BLS training enhances emergency preparedness and contributes to improved outcomes beyond the effect of CPR alone. Promoting BLS education among the general population, including school-based training initiatives, and adherence to international guidelines are essential to reducing avoidable deaths and improving overall emergency care outcomes [1-5].

Knowledge of Basic Life Support (BLS) is essential for effective emergency response, yet studies worldwide show significant gaps in understanding its principles and techniques. In Germany, despite 90% of respondents having first aid training, fewer than 10% correctly identified the proper chest compression rate. Similarly, only 2 of 748 participants in Poland, Lithuania, and

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Spain achieved a perfect BLS score. In the Middle East and Asia, knowledge deficits persist. None of over 2,000 students in Syria, Jordan, and Iraq answered all BLS questions correctly. In Saudi Arabia, Pakistan, and India, poor to average knowledge was common, with 83% of Indian students scoring below 50%. Specific skills such as CPR, airway management, automated external defibrillation (AED) use, and choking management are particularly poorly understood. In Africa, studies report similar trends. Up to 84% of students at Al-Azhar medical schools, Egypt failed to identify correct chest compression points, and less than one-third of students in Uganda had good BLS knowledge. In Ethiopia, knowledge levels were moderate but gaps remained, especially in AED use. In Nigeria, BLS knowledge among healthcare students is limited. In Kano, 95.4% of clinical students were unaware of the correct resuscitation sequence, while dental and medical students showed significant improvement only after formal training. At the University of Port Harcourt, 60.1% had poor knowledge, and studies in Abia State showed moderate knowledge, underscoring the need for structured BLS programs [6-26].

Attitude toward Basic Life Support (BLS) strongly influences a medical student's willingness to perform resuscitation, seek training, and apply skills during emergencies [27]. Globally, studies report generally positive attitudes among students, even where knowledge and skills are limited. In Saudi Arabia, students with prior BLS training were more confident in performing CPR (58.3% vs 42.7% in untrained students) and overall attitudes toward learning BLS were favourable [10,28,29]. In Malaysia and Taiwan, willingness to perform CPR increased with knowledge and skill acquisition, while untrained participants were hesitant [15,30]. In India, 98% of students in Mangalore and other studies supported BLS training despite gaps in knowledge [18,31,32].

Similarly, in Nepal (95%) and Ethiopia (94%) students favoured inclusion of BLS in the curriculum [17,22]. In Africa, positive attitudes were also reported: in Uganda, almost all participants recognized BLS as an essential skill and were willing to step forward to perform it if trained [20]. Nigerian students show similar trends; in Ibadan, 99% believed acquiring CPR skills was necessary, 95% supported inclusion in curricula, and most without prior training expressed a desire for instruction [33]. At the University of Port Harcourt, 92.7% wanted BLS integrated into their training, and in Gregory University, Abia, 92% were willing to administer first aid if properly trained. Overall, medical students exhibit strong positive attitudes toward BLS, demonstrating readiness to learn and perform life-saving interventions, even when practical experience is limited [25,26].

Despite positive attitudes, actual practice of BLS among medical students remains limited. In Lebanon, students had low levels of hands-on experience, even when they displayed moderate to good attitudes toward BLS [34]. In Saudi Arabia, only 12.5% of students had ever performed BLS, and most lacked confidence in their skills despite training [28]. In India, a study showed that trained students scored significantly higher in practical BLS skills than untrained participants, though many still failed to acquire adequate competence after a single session [31,35]. Among dental students in India, 56.8% reported lacking

confidence in performing CPR or using a defibrillator [36]. In Pakistan, only 8.7% of medical students had performed BLS, and 4% could use an AED, although 94% agreed it should be included in their curriculum [37]. Nigerian studies report similar gaps: in Lagos, only 35.4% had performed CPR, and 85.7% lacked confidence in AED use, despite high awareness of its importance (9). At the University of Ibadan, 29.7% of students had formal CPR training, with most expressing a desire to acquire practical skills [38]. These findings indicate a clear discrepancy between positive attitudes and limited practice, often due to lack of training opportunities, resources, and integration of practical BLS exercises into medical curricula. Addressing these gaps with structured simulation-based training, frequent refreshers, and curriculum inclusion is essential to prepare healthcare students for real-life emergencies.

Methodology

The study site was Enugu State University of Technology, Enugu, South East, Nigeria. Enugu State is located between latitude 6° 30' N and longitude 7° 30' E within an area of 7,161 square kilometers. The estimated population of Enugu State based on the 2006 Nigeria's census, and a growth rate of 2.33% is 4,411,100; females constitute 50.1% of the population of Enugu State. Women of reproductive age (15 to 49 years) constitute 26% of her population [39].

Study Design

The study was a descriptive cross-sectional study

Study Population

The study population consists of medical students in Enugu State University of Technology, South-East Nigeria.

Sample Size Determination

The sample size was determined using the Fisher's formula for sample size determination for cross sectional study. The total number of respondents was 250 [40].

Sampling Technique

A multi-stage sampling technique was employed. In the first stage, stratified sampling was used to group students into five strata based on their level of study (200 to 600 level), with a total population of 614 students. Proportionate allocation was applied to distribute the sample size ($n = 250$) across the strata. In the second stage, systematic sampling was used to select participants from each stratum. A sampling interval was determined for each level by dividing the number of students by the allocated sample size. The first participant in each stratum was selected using simple random sampling, after which every second student on the class list was selected until the required sample size was achieved. The research was done in the month of December, 2025.

Study Instruments

This was a pretested, semi-structured, interviewer administered questionnaire constructed and adapted to explore the knowledge, attitude and practice of BLS among the participants.

Outcome Measures

The main outcome variables were knowledge, attitude, practice,

and factors influencing Basic Life Support (BLS). Knowledge: Assessed using structured questions; correct responses scored 1 and incorrect 0. Scores were converted to percentages, with $\geq 50\%$ classified as good knowledge and $< 50\%$ as poor knowledge. Attitude: Measured using Likert scale items. Scores were converted to percentages; $\geq 50\%$ indicated positive attitude, while $< 50\%$ indicated negative attitude. Practice: Assessed by self-reported performance of BLS skills. Positive responses scored 1 and negative 0; $\geq 50\%$ indicated good practice and $< 50\%$ poor practice. Factors influencing practice: Assessed using structured items on barriers to BLS performance and analysed descriptively.

Statistical Analysis

Data were entered and analysed using SPSS version 28. Data cleaning and coding were performed daily. Descriptive statistics (mean, frequencies, and proportions) were used to summarize variables and results presented in tables and charts. The Chi-square test was used to assess associations between variables. Statistical significance was set at $p < 0.05$ with a 95% confidence interval.

Ethical Considerations

Ethical approval was obtained from the Enugu State University Teaching Hospital Ethics Committee. Informed consent was obtained from all participants. Confidentiality was maintained, and participation was voluntary with the right to withdraw at any time without consequences.

Limitations

As a cross-sectional study, causal relationships cannot be established. Additionally, the sensitivity of some variables may have led to non-response or social desirability bias.

Results

A total of 250 respondents participated in the study, giving a response rate of 100%. Data were analysed and presented using tables with corresponding narratives.

Table 1: Socio-demographic Characteristics of Participants.

Variable	Category	Frequency (n)	Percentage (%)
Age (years) Mean (SD) 21.73 ± 2.16	<20	84	33.6
	21 - 25	153	61.2
	26 - 30	13	5.2
Gender	Male	161	64.4
	Female	89	35.6
Year of study	2nd year	71	28.4
	3rd year	61	24.4
	4th year	42	16.8
	5th year	42	16.8
	6th year	34	13.6
Religion	Christian	243	97.2
	Muslim	7	2.8
Marital status	Single	233	93.2

	Married	13	5.2
	Separated	4	1.6

Table 1 showed that the mean age of the respondents was 21.73 ± 2.16 years, with majority of respondents aged 21–25 years (61.2%). Males constituted 64.4% of the participants, while females accounted for 35.6%. 2nd year students formed the largest group (28.4%), followed by 3rd year students (24.4%), while 4th and 5th year students each accounted for 16.8%, and 6th year students represented the least proportion (13.6%). Most respondents were Christians (97.2%), and the majority were single (93.2%), with only a small proportion married (5.2%) or separated (1.6%).

Table 2: Knowledge of Basic Life Support

Variable	Correct response frequency	Percentage
Meaning of BLS	177	70.8
First action in unresponsive person	135	54.0
Immediate response if no breathing	177	70.8
Chest compression site – adult	153	61.2
Chest compression site – infant	74	29.6
Rescue breathing – infant	47	18.8
Compression depth – adult	103	41.2
Compression depth – child/neonate	46	18.4
Compression rate – adult/child	99	39.6
Knowledge of AED	112	44.8
Knowledge of EMS	140	56.0
Management of choking – adult	184	73.6
Management of bleeding	199	79.6
Tourniquet use	159	63.6
Drowning response	85	34.0
Overall BLS Knowledge		
Good	105	42.0
Poor	145	58.0

Table 2 showed that most students correctly identified the meaning of BLS (70.8%) and immediate adult CPR steps (70.8%), as well as bleeding management (79.6%) and adult choking (73.6%). However, knowledge was poor for pediatric BLS—including infant chest compression (29.6%), rescue breathing (18.8%), and compression depth (18.4%)—as well as drowning response (34.0%) and AED use (44.8%). Only 42% of the respondents demonstrated good knowledge of Basic Life Support, while most of them (58%) had poor knowledge

Table 3: Attitude towards Basic Life Support

Variable	Frequency	Percentage
BLS is necessary	210	84.0
BLS should be in the curriculum	225	90.0
BLS improves competence	225	90.0
Interested in hands-on BLS training	208	83.2
Willing to teach BLF	193	77.2
Confident performing BLS	63	25.2
Able to assess unconscious patient and initiate BLS	89	35.6
Willing to perform mouth-to-mouth (same gender)	87	34.8
Willing to perform mouth-to-mouth (opposite gender)	107	42.8
Overall attitude towards BLS		
Positive	194	77.6
Negative	56	22.4

Table 3 showed that most respondents had a positive attitude toward BLS, with 84–90% perceiving it as necessary, supporting its inclusion in the curriculum, and believing it improves competence. Interest in hands-on training (83.2%) and willingness to teach BLS (77.2%) were high. However, confidence in performing BLS (25.2%) and managing an unconscious person (35.6%) was low. Overall, 77.6% of participants demonstrated a positive attitude.

Table 4: Practice of Basic Life Support

Variables	Frequency	Percentage
Received formal BLS training	108	43.2
Performed BLS in real life	25	10.0
Experience using AED	4	1.6
Practices BLS protocols at least sometimes	128	51.2
Can check pulse and breathing	172	68.8
Confident managing choking	62	24.8
Confident managing bleeding	67	26.8
Overall BLS practice		
Good	19	7.6
Poor	231	92.4

Table 4 showed that 43.2% had formal BLS training, 10% had performed BLS in real-life, and 1.6% had used an AED. Only 51.2% practiced BLS protocols occasionally, while 68.8% could check pulse and breathing. Confidence in managing choking (24.8%) and bleeding (26.8%) was low, with just 7.6% demonstrating good overall practice.

Discussion

The mean age of the respondents was 21.73 ± 2.16 years, with the majority aged 21–25 years. This is consistent with findings from a multi-centre survey of Nigerian medical students, where the mean age was 22.2 ± 2.9 years and the modal age range was 21–25 years [41]. Similarly, a study among medical students

in Port Harcourt, Nigeria found a mean age of approximately 22.1 years, while research among nursing and allied health students in SouthWest Nigeria also reported mean ages between 20 and 23 years, aligning with our findings. Such age profiles are common in studies of medical and health science students across Africa, where classroom entry and progression through the curriculum generally place students in their early twenties during clinical years. Across Africa, studies in Ethiopia and Uganda involving medical or health science students reported mean ages ranging from 21.5 to 23.0 years, suggesting that young adult learners dominate health training programs across the continent [20,22,25]. Also, research among medical and paramedical students in India, and Saudi Arabia showed mean ages of the participants in the early twenties, further supporting that BLS knowledge and practice research typically involves participants in this age group [16,28,18,35].

The overall good knowledge of BLS among the respondents was 42.0%, while 58.0% demonstrated poor knowledge, indicating a significant gap in essential emergency response skills. Comparatively, a study among medical students in Gregory University, Abia State, reported better knowledge scores of 52.8%, whereas in Port Harcourt, Nigeria, 60.1% of students demonstrated poor BLS knowledge [25,26]. Similarly, among dental students in Kano, knowledge prior to training was low, but post-training scores improved dramatically to 88.2% correct responses [24]. Among clinical students in Kano, 95.4% were unaware of the circulation, airway, and breathing (CAB) sequence, and nearly half answered incorrectly regarding chest compression ratios [23]. Globally, BLS knowledge gaps are also prevalent. In Ethiopia, 56.9% of students had good knowledge overall, but only 25.7% could correctly answer questions on AED usage [22]. Our study's overall good knowledge (42.0%) was lower, but AED awareness (44.8%) was slightly higher, possibly due to curricular exposure or prior encounters with resuscitation scenarios. In Uganda, less than one-third of medical students had good knowledge, while studies in Saudi Arabia reported extremely poor BLS knowledge among female medical students (87.9%) In South Asia, studies in India, and Nepal consistently show poor theoretical and practical BLS knowledge, with only 20% to 39% achieving satisfactory knowledge levels. Across Europe, studies in Poland, Lithuania, Spain, and Germany reflect persistent gaps in BLS knowledge, even among students with prior first aid training [7,8]. Collectively, these findings indicate that inadequate BLS knowledge is a widespread issue, highlighting the urgent need for structured, repeated, and hands-on BLS training globally [20,16,12,17,18,35].

Despite gaps in knowledge, the overall prevalence of a positive attitude toward BLS among the respondents was 77.6%, with 22.4% demonstrating negative attitudes. A similar high prevalence of positive attitudes has been observed in Saudi Arabia (77.7–78.5%), while Gregory University, Abia State reported 92% willingness to perform first aid if properly trained. Comparatively, Port Harcourt University had a lower prevalence of positive attitudes (56.7%). Indian and Taiwanese studies also report high positive attitudes toward BLS, even where knowledge is limited, suggesting that recognition of BLS importance does not always correlate with theoretical competence.18,30,31 In our study, self-confidence in performing BLS was low,

with only 25.2% agreeing they could perform BLS correctly. Similarly, willingness to perform mouth-to-mouth resuscitation was mixed, with 34.8% willing for same-gender victims and 42.8% for opposite-gender victims. These findings underscore that positive attitudes alone do not ensure readiness or practical competence [16,18,25,26].

The prevalence of good BLS practice among respondents was strikingly low at 7.6%, while 92.4% demonstrated poor practice. Comparable findings were reported in Ibadan, Nigeria, where few students had performed CPR despite high interest and curriculum support [38]. In Southwest Nigeria, only 35.4% had ever performed CPR, 41 while in Pakistan, Rawalpindi Medical University reported 93.4% had not practiced BLS, 14 reflecting similar challenges in hands-on experience.

Conclusion and Recommendations

The respondents generally have a positive attitude toward Basic Life Support (BLS) and expressed willingness to learn and perform life-saving interventions. However, practical skills and confidence remain limited. To address this gap, BLS should be integrated into medical curricula with structured, hands-on training, regular refresher courses, and access to simulation resources and exercises. Encouraging community-based practice and peer training can further reinforce skills and ensure students are prepared to respond effectively in emergencies.

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