



Cross-sectional Study

Knowledge, attitude, and practice towards basic life support among graduating class health science and medical students at Dilla University; a cross sectional study

Muhiddin Tadesse, Sofia Assen Seid^{*}, Hailemariam Getachew, Siraj Ahmed Ali

Department of Anesthesiology, Dilla University, College of Medicine and Health Science, Dilla, Ethiopia

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ABSTRACT

Introduction: Basic Life Support is a level of medical care Applied to victims of life-threatening illnesses and injuries before professional help is provided. This study aimed to assess the knowledge, attitude, and practice toward Basic Life support in Graduating class of health science and medical students at Dilla university referral hospital.

Method: ology: A cross-sectional study was conducted on graduating class students of Dilla University, college of medicine and health science from September 10/2021 to December 13/2021. A total of 167 participants were selected by a systematic random sampling technique. A bi-variable and multi-variable logistic regression analysis were carried out.

Result: Among the study participants, 95 (56.9%) and 86(51.5%) have good knowledge and good practice towards basic life support respectively. Being trained for basic life support and advanced life support, exposure with the person in need of basic life support were found more knowledgeable with odd ratio of [AOR = 13.8, 95% CI (6.3–30.1)], [AOR = 27.7, 95% CI (6.4–119)] and [AOR = 15.7, 95% CI (6.6–37.5)]. Learning anesthesia increases knowledge about basic life support nearly two times [AOR = 1.8, 95% CI (0.4–9.5)] when compared to medicine.

Conclusion: The findings of this study suggest that nearly half of health science students in our hospital lack adequate knowledge and skills in BLS. Training on basic life support and advanced life support, learning in anesthesia and medicine departments, and exposure to the person in need of basic life support were significantly associated with high knowledge. To increase knowledge of BLS standardized Training and assessments are recommended.

1. Background

Basic Life Support (BLS) refers to a level of medical care applied to victims of life-threatening illnesses and injuries before arrival at a health institution or before professional help is provided [1]. Having adequate knowledge of BLS and understanding of cardiopulmonary resuscitation can save lives of victims of life-threatening medical emergencies and sudden cardiac arrest (SCA). These procedures and knowledge are usually performed in situations where there is a danger to life until further standard care is provided at health facility [1,2].

Sudden cardiac arrest (SCA) is when the heart stops beating or

functioning abruptly which will eventually lead to the aborted blood supply to vital organs such as the brain; and if not treated immediately, sudden death or serious disability will happen. The result of SCA situations is mainly dependent on the time at which resuscitation is begin in which late intervention may end up with damage to heart rate and brain function due to lack of oxygen in these areas. For BLS providers to initiate resuscitation as quickly as possible needs adequate knowledge and understanding in order to recognize signs of clinical symptoms, thereby the time between identification of symptoms and initiation of CPR can be reduced. Current studies indicate that medical students have insufficient knowledge to recognize signs of serious medical conditions

Abbreviations: ACLS, Advanced cardiac life supports; AOR, Adjusted odd ratio; BLS, Basic Life Support; CI, Confidence Interval; COR, Crude Odd Ratio; CPR, Cardio Pulmonary Resuscitation; IRB, Institutional Review Board; SCA, Sudden Cardiac Arrest.

^{*} Corresponding author.

E-mail addresses: muhiddinhassen@gmail.com (M. Tadesse), sofiaassen6@gmail.com (S. Assen Seid), hailemariamgetachew23@gmail.com (H. Getachew), srjmyn@gmail.com (S.A. Ali).

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which will require the use of actions of BLS [3–5].

Besides the health matters, BLS knowledge also changes the social responsibility of society and strengthens values. Thus it is important to have a basic knowledge of BLS. Studies conducted in different countries showed that there is variable proportion of knowledge of BLS. The proportion of BLS knowledge was showed 43.7% in Iran, 39.2% in Saudi Arabia, and 74.3% in Egypt consecutively. Even though adequate information is not available in Ethiopia studies done in Addis Ababa among kindergarten teachers, their knowledge about BLS was 40.0% and another study conducted in Gondar among the non-medical population showed that BLS knowledge was 44.4% [6,7].

BLS and high-quality CPR is a vital tool for life-threatening conditions until a medical emergency is managed definitely. This forms an integral link in patient care [3].

The aim of this study was to assess the level of knowledge, attitude, and practice towards basic life support among graduating class medical and health science students. The findings are expected to help in formulating plans like training/workshops on the issue.

2. Methods

2.1. Study design and period

An institutional-based cross-sectional study was conducted on graduating class students of Dilla University, College of Medicine and Health Science from September 10/2021 to December 13/2021.

2.2. Study area

The study was conducted at Dilla University College of Medicine and Health Science. Dilla University is found in Dilla town Gedio Zone, South Nation Nationalities and Peoples' Region which is 360 km from Addis Ababa (the capital of Ethiopia). Dilla University College of Medicine and Health Science have two schools (school of medicine and school of public health) and six departments (Anesthesiology, pharmacy, psychiatry, Medical Laboratory, Nursing, and Midwifery).

2.3. Source population and study population

All undergraduate students at Dilla University College of Medicine and Health Science were the source population while an undergraduate students attending graduate classes during the study period were considered as a study population.

2.4. Inclusion and exclusion criteria

All graduating classes of undergraduate students at Dilla University College of Medicine and Health Science and available during data collection were included in the study whereas individuals who had communication difficulty were excluded in the study.

2.5. Sample size determination and sampling technique

The sample size was calculated using single population formula by taking a study done in Gondar which showed 44.8% good knowledge of BLS [6]. With the assumption of a 95% confidence interval and a 5% margin of error, the total sample size was found 152 after the correction formula was applied. With an account of a 10%, non-response rate a total of 167 subjects were selected in this study using a systematic random sampling technique with the K value of 1.5.

2.6. Data collection tools and procedures

The data for the study was collected after ethical clearance was obtained from Dilla University College of Medicine and Health Science Institutional Review Board (IRB) using a pretested checklist that assesses

socio-demographic variables, knowledge of BLS, practice toward BLS, and attitudes toward BLS. Data was collected from graduating class undergraduate students by trained data collectors. Data collectors had been supervised closely by the supervisors and the principal investigator. The completeness of each data had been checked by the principal investigator and the supervisors daily. The collected data were computed by coding the correct response as "1" and the incorrect responses as "0". After the correct answers were added up, participants who scored the mean and above score were labeled as having good knowledge whereas with a score below the mean were classified as having poor knowledge about basic life support. The scoring and classification are used similarly for practice and attitudes.

2.7. Operational definition

- **Good Knowledge:** refers to respondents who correctly answer >50% of the total knowledge question.
- **Good Practice:** refers to respondents who correctly answer >50% of the total practice question.
- **Positive attitudes:** refers to respondents who score greater than the mean score

2.8. Data quality control

The questionnaire was pre-tested among 5% of medical and health science students a week before the actual data collection. Based on the findings of the pretest, modifications on vague questions and the flow of items were done. One-day of training was given for data collectors. The data was checked for completeness during the data collection, entry, and analysis process. The study was reported in accordance with STROCCS 2021 guidelines. The study is registered on the research registry's <https://www.researchregistry.com/browse-the-registry#home/> with a unique identity number of 7958.

2.9. Data processing and analysis

Data was checked manually for completeness and then coded and entered into EPI info version 7 and exported to SPSS version 25 software (IBM) for analysis. Descriptive statistics was used to summarize the study findings. The proportion and frequency table was used to summarize the categorical variables. To identify factors associated with the outcome variable, a bi-variable logistic regression analysis was carried out to compute the association between each independent variable with the outcome variable. Those variables with a p-value less than or equal to 0.25 on bi-variable analysis were considered for multivariable analysis. The strength of statistical association was measured by odds ratios (OR) with a 95% confidence interval where P-values, less than 0.05 were declared as statistically significant.

3. Results

3.1. Socio-demographic characteristics

In this study, 167 health science and medical graduating class students have participated with a 100% response rate. Majorities (47.9%) of the participants' ages ranged from 20–25 years followed by 26–30 years (40.7%) and the rest were above 30 years. The majority (60.5%) of the participants were male. Two third of the study participants (64.1%) had taken Training on basic life support. A large proportion of 107 (73.7%) of the study participants did not take any training regarding Advanced life support (Table 1).

3.2. Knowledge, attitudes, and practices towards basic life support

Among 167 graduating class students who participate in this study 95 (56.9%) and 86 (51.5%) have good knowledge and good practice

Table 1
Sociodemographic characteristics of health science and medicine graduating class students at Dilla University.

Variables	Categories	Number	Percent %
Age	21–25	80	47.9
	26–30	68	40.7
	31–35	19	11.4
Sex	Male	101	60.5
	Female	66	39.5
Religions	Protestant	79	47.3
	Orthodox	66	39.5
	Muslim	22	13.2
Department	Medicine	14	8.4
	Health officer	25	15
	Nurse	30	18
	Midwifery	27	16.2
	Laboratory	27	16.2
	Pharmacy	17	10.2
	Anesthesia	14	8.4
	Psychiatry	13	7.8
	BLS Training	Yes	107
	No	60	35.9
ACLS Training	Yes	44	26.3
	No	123	73.7

towards basic life support respectively. Large proportion of the study participants 157 (94%) have a positive attitude toward basic life support (Fig. 1).

3.3. Response of students on basic knowledge and practice

Above half (52%) of the study participants were given correct answers for what they have to do when they gate unconscious patients. Approximately two-thirds of the study participant have good knowledge about the definition and goal of Basic life support. But only 25.7% of the study participant give correct answers for the correct sequence of the use of AED defibrillator (Table 2).

3.4. Factors associated with knowledge of participants about basic life support

Age, sex, religion, department, training about basic life support, trained advanced life support, and exposure to the person in need of basic life support was the variable eligible for multiple logistic

Table 2
Response of students to Basic Knowledge and practice.

Questions: Basic Knowledge and practice	Correct answers (n)	%
1 Definition of BLS	111	66.4
2 Goal of BLS	97	58
3 What do you do first when you gate an unconscious person?	87	52
4 How do you assess airways, breathing, and circulation?	93	55.6
5 How do you know when to start compressions	83	49.7
6 The correct place for the compression of the chest in an adult	63	37.7
7 The correct place for the compression of the chest in an infant	74	44.3
8 The correct depth and frequency of chest compression in adults during BLS	67	40.1
9 The correct depth and frequency of chest compressions in children during BLS	69	41.3
10 Rescuer breaths ratio of compression	98	58.6
11 If your friend suddenly shows symptoms of choking, what will you do?	105	62.8
12 Which of the following is high-quality chest compressions	51	30.5
13 Which of the following is the correct sequence of the use of AED defibrillator?	43	25.7
14 What is Recovery position	76	45.5

regression. Among these variables, department, trained about basic life support, trained advanced life support, and exposure to the person in need of basic life support was significantly associated with the knowledge score. In this regard, learning anesthesia increase knowledge about basic life support nearly two times [AOR = 1.8, 95% CI (0.4–9.5)] when compared to medicine. Being trained for BLS and ALS were nearly fourteen-time [AOR = 13.8, 95% CI (6.3–30.1)] and about twenty-eight times [AOR = 27.7, 95% CI (6.4–119)] more knowledgeable compared with those have no training of BLS and ALS respectively. Having 1–3 and >3 exposure with the person in need of BLS were found to be nearly sixteen [AOR = 15.7, 95% CI (6.6–37.5)] and nearly twenty-seven times [AOR = 26.9, 95% CI (2.8–261)] more knowledgeable as compared with their counterparts (Table 3).

4. Discussions

Sudden cardiac arrest is one of the most common causes of death in

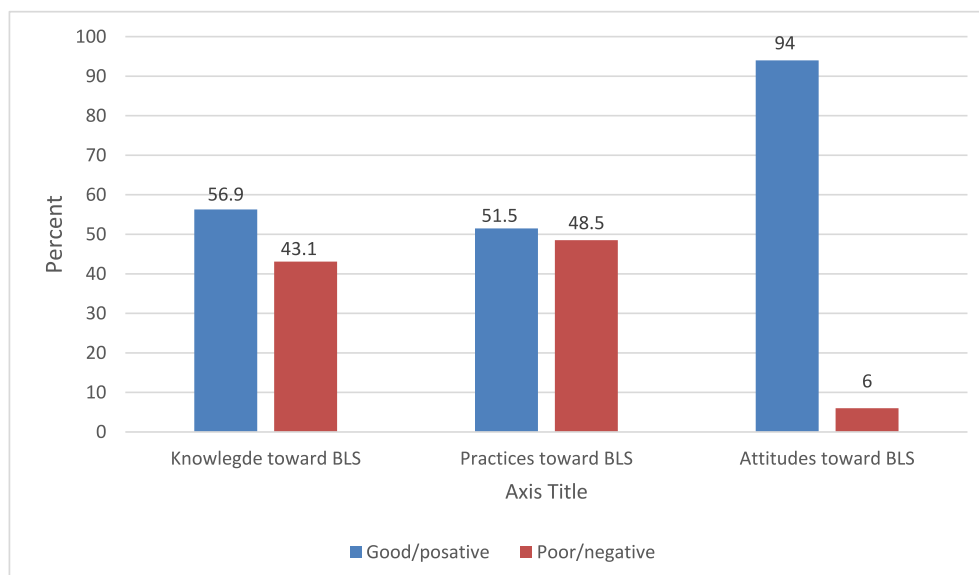


Fig. 1. Knowledge, Attitudes, and practices Towards Basic Life Support.

Table:3

Factors associated with knowledge toward BLS in health science and medicine graduating class students at Dilla university referral hospital 2021.

Variables	Categories	Knowledge		COR (95% CI)	AOR (95% CI)	p-values
		Good	Poor			
Age in years	20–25	36	44	1	1	0.281
	26–30	43	25	2.1(1.08–4.07)	2.3(0.7–7.2)	
	>30	16	3	6.5(1.7–24)	3.2(0.35–28.2)	
Sex	Male	65	36	2.16(1.2–4)	2.4(0.8–6.9)	0.119
	Female	30	36	1	1	
Religions	Protestant	41	38	1	1	0.893
	Orthodox	32	29	1.18(0.6–2.3)	0.77(0.23–2.5)	
	Muslim	17	5	3.1(0.6–9.4)	1.02(0.2–5.1)	
Department	Medicine	11	3	1	1	0.035*
	Health officer	18	7	0.7(0.15–3.3)	0.6(0.06–6.1)	
	Pharmacy	5	12	0.11(0.02–0.6)	0.27(0.1–0.85)	
	Psychiatry	4	9	0.12(0.02–0.7)	0.31(0.1–0.94)	
	Midwifery	19	8	0.65(0.14–2.9)	0.62(0.22–3.1)	
	Anesthesia	12	2	1.6(0.23–11.7)	1.8(0.4–9.5)	
	Nurse	19	11	0.47(0.1–2)	0.52(0.15–3.3)	
	Laboratory	7	20	0.1(0.02–0.45)	0.25(0.1–0.73)	
	BLS Training	Yes	83	24	13.8(6.3–30.1)	
	No	12	48	1	1	
ACLS Training	Yes	42	2	27.7(6.4–119)	24.5(3.5–170)	0.001*
	No	53	70	1	1	
Experience with CPR	0	8	43	1	1	0.005*
	1–3	82	28	15.7(6.6–37.5)	8(2.3–28.2)	
	>3	5	1	26.9(2.8–261)	6.5(0.2–237)	

the world. It is usually an acute emergency situation that occurs in health care settings with maximal levels of mortality risk. Medical personnel reported that a victim of cardiac arrest has the high rate of survival without neurological damage if care is received within 3–5 minutes of after incident happened [8,9]. To give immediate care, BLS knowledge and skill is every important to prevent and save the life of suddenly collapsed patient especially health science and medical students should become knowledgeable, have good attitude and adequate skill in order to deliver standard quality BLS [10].

This study showed that the level of good knowledge, good practice and positive attitude about BLS (basic life support) among graduating health science and medical students was found to be 56.9%, 52.5% and 94% respectively. Departments of graduating class student, having training about basic life support and advanced life support, and exposure with the person in need of basic life support were the factors associated with good knowledge of basic life support.

In this study the level of good knowledge about BLS (basic life support) was found to be 56.9% among graduating health science and medical students. The result was in line with the study conducted in Addis Ababa among taxi drivers and Saudi Arabia among medical and non-medical students which was 50.3% and 56.6% respectively [11,12].

The current study result was higher than the studies conducted in Gondar, Addis Ababa, Iran and United Arab Emirates which was 44.4%, 40.0%, 40.3% and 45.8% respectively [6,7,13,14]. The possible reasons of difference result might be due to variation in using the cut points of the study tool and this study done on graduating class medical and health science student while above studies were conducted on heterogeneous community that include non-educated and educated participants.

Among variables entered into multiple logistic regression analysis departments, trained about basic life support, trained advanced life support, and exposure with the person in need of basic life support were significantly associated with the knowledge score.

In this study, only 64% of the participants had received training about basic life support. The likelihood of having good knowledge with BLS training were nearly fourteen times [AOR = 13.8, 95% CI (6.3–30.1)] when compared to those not took BLS training. Participants with taking ALS training were nearly twenty-eight times [AOR = 27.7, 95% CI (6.4–119)] more knowledgeable compared with those have no training of ALS. The result was in line with the study done in 2020

Gondar Ethiopia which showed that those who received training about basic life support was found five times more knowledgeable compared to those who do not have the training [6]. The possible reason might be due to the fact that trained participants had excellent awareness about basic life support components that might get good knowledge score compared to those did not take the basic life support training. This has been supported by the studies done in Addis Ababa Ethiopia, Slovenia, United Arab Emirates, and South Austria [9–11,13].

In this regard department which the students enrolled by itself also showed knowledge score difference. Students in anesthesia department have increased knowledge about basic life support nearly two time [AOR = 1.8, 95% CI (0.4–9.5)] when compared to medicine. The result was in line with the study conducted in Egypt showed that there was a statistical significant difference of basic life support knowledge score among different department [15]. Good awareness about BLS in students engaged in department which incorporates emergency patient management, emergency care and management courses in their curriculum, and more expose the students for emergency practices might be considered as the possible reason for variation of knowledge among students in different departments.

In this study, large proportion of the study participant around 94% have positive attitude toward basic life support which is similar to other studies done in Brazil and India [16,17].

In our study around 51.5% study participants have good practice towards basic life support. The result was in line with the study done by Md yunus et al., in 2015 which was 53.45% [18]. The current study result was higher than the studies conducted in India showed that only 34% had good practice [19]. The possible reasons of difference result might be due to the fact that tool variation in using the cut points, socio-demographic variations, and the inclusion criteria variations, which brought the significant score difference. for this and that reason, the knowledge score might be increased or decreased.

The limitation of this study was bias related with participant level of understanding since data collection tool was a self-administered questionnaires.

5. Conclusions

The findings of this study suggest that nearly half of health science students lack adequate knowledge and skills in BLS. Many of the

students had never received BLS training. Majority of the participant have good attitudes toward BLS. Having training on basic life support, and exposure with the person in need of basic life support was significantly associated with high knowledge score. To increase knowledge of BLS standardized training and assessments are recommended in health institutions. We recommend that BLS have to be a core competency across all health care professionals and should be incorporated in the curriculum of medicine and health science programs. We also recommend the researcher better to do large scale study by involving the medical and non-medical student, physician on duty and community.

Ethics approval and consent to participate

This study was approved by the Dilla University College of Medicine and Health Science Institutional review board written letter for chart review was obtained from Chief clinical practical training director office.

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Author's contribution

All authors have made substantial contributions to the conception, design, analysis, and interpretation of data, acquisition of data, preparing the manuscript of this study, the critical review, and editing of the manuscript drafts for scientific merit and depth. All authors have read and approved the final version of the manuscript.

Competing interests

The authors declare that they have no competing interests.

Registration of research studies

The study is registered in research registry's <https://www.researchregistry.com/browse-the-registry#home/> with a unique identity number of 7958.

Guarantor

I/Sofia Assen Seid is guarantor and fully responsible for the work and the conduct of the study, had access to the data, and controlled the decision to publish.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and analyzed during the current study are available on reasonable request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104588>.

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