

ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF EMERGENCY MEDICINE



KNOWLEDGE, ATTITUDE, PRACTICE, AND ASSOCIATED FACTORS TOWARDS
BASIC LIFE SUPPORT AMONG NURSES WORKING AT ADULT EMERGENCY
UNITS OF FEDERAL HOSPITALS, ADDIS ABABA, ETHIOPIA, 2021.

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APPROVAL SHEET

The board of reviewer approved this thesis by Eyasu Bikamo in its present form to meet the thesis prerequisite for a master's degree in emergency medicine and critical care nursing.

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LIST OF ABBREVIATIONS AND ACRONYMS

AOR	Adjusted Odds Ratio
AHA	American Heart Association
ALS	Advanced Life Support
BLH	Black lion hospital
BLS	Basic Life Support
COR	Crude Odds Ratio
EMS	Emergency Medical Service System
EMTs	Emergency Medical Technicians
ETB	Ethiopian Birr
FBAO	Foreign Body Airway Obstruction
IHCA	In-Hospital Cardiac Arrest
OHCA	Out-of-Hospital Cardiac Arrest
SCA	Sudden Cardiac Arrest
ROSC	Return of Spontaneous Circulation

ABSTRACT

Background: Basic life support (BLS) is an emergency procedure targeted to maintain the airway, breathing, and circulation for patients in life-threatening conditions before transferring to definitive care. It is the initial response to the cardiac or non-cardiac arrest and the basis for saving a precious life. Based on this, nurses should have Basic life support knowledge and practical skills to provide quality care to those victims.

Objective: To assess Knowledge, Attitude, practice, and associated factors towards Basic life support among nurses working at emergency units of federal hospitals in Addis Ababa, Ethiopia.

Methods: Institutional-based cross-sectional study was used to be conducted on participants towards basic life support at emergency units of federal hospitals during the study period from March 30, 2021, to June 30, 2021. Self-administered questioners were used to collecting data from respondents, and then it was presented by descriptive data presentation methods for the descriptive variable. Bivariate and multivariate logistic Regression analysis was used to show the effect of the independent variable on the dependent variable. The adjusted odds ratio was used to interpret the strength of association at 95% CI. Statistical significance has been assured by a P value < 0.05 in multivariate analysis. The result was presented in the form of figures, tables, and charts.

Result: 193 nurses participated in the study with a response rate of 96.5%, and among the study participants, 41.5%, 62.2%, and 35.8% had good knowledge, a favorable attitude, and good practice towards Basic life support, respectively. Educational status, and training, was significantly associated with Knowledge of Basic life support. In addition, knowledge level, Educational status, and training were significantly associated with basic life support practice on multivariate logistic regression ($p \leq 0.05$). However, no association was seen on the Attitude of BLS on multivariate logistic regression ($p > 0.05$).

Conclusion: Basic life support knowledge, attitude, and practice were all low among nurses in general. As a result, further training and advancement in education are required to achieve the desired result.

Keywords: Basic Life Support, Knowledge, Attitude, Practice, Nurses, Emergency.

1. INTRODUCTION

1.1 BACKGROUND

Sudden cardiac arrest is an acute onset of disruption of the heart's pumping ability, which leads to halting of blood flow to the brain, lungs, and other Organs. It's the leading cause of mortality and responsible for around half of all deaths from cardiovascular disease worldwide(1). A life-threatening emergency can occur anywhere in/out of the hospital. In the hospital, a cardiac arrest is an event that can potentially affect any hospitalized patients and associated with a high mortality rate if it's not recognized and managed within a minute(2).

Health professionals should have knowledge and skills on basic aspects of BLS/CPR to manage cardiac arrest. Basic life support (BLS) is an emergency procedure targeted to maintain the airway, breathing, and circulation for patients in life-threatening conditions before transferring to definitive care(3). It is the initial response to the cardiac or non-cardiac arrest and the basis for saving a precious life. Adult cardiac arrest survival and recovery are dependent on a complex system working together to ensure the best possible outcome for the victim. Rapid recognition, prompt CPR, defibrillation of malignant shock-able rhythms, and post-ROSC supportive care and treatment of underlying causes are the key focuses during adult cardiac arrest events(4).

High-quality cardiopulmonary resuscitation remains essential to improve outcomes. The AHA 2020 guidelines for the depth of chest compression are the same as the 2015 guidelines. CPR providers must ensure adequate depth of chest compression (5 cm or more and 6 cm or less) at a rate of 100 to 120 compressions per minute. Allow complete chest recoils, minimizing interruptions in compression. When rescue breathing/ventilation is provided, it takes approximately 1 second to inflate the chest sufficiently to visibly raise it. The ratio of chest compression to ventilation remains 30: 2. Do not interrupt chest compression for more than 10 seconds to provide ventilation. Early defibrillation can be accomplished through a CPR provider within 3-5 minutes after the collapse, and it can produce up to 50-70% survival(4,5).

In hospitals globally, it is usually believed that the nurses play a crucial role in the management of in-hospital cardiac arrest (IHCA), and commonly they are the first on the

scene of arrest who recognizes and initiates management as well as mobilizing of the advanced life support team. Therefore, the nurse's knowledge and skills are vital in determining successful patient outcomes from cardiac arrest(6).

1.2 STATEMENT OF PROBLEM

Nurses usually respond to hospital cardiac arrest and community emergency calls; therefore, their potential in basic life support (BLS) is important in improving patient outcomes. However, evidence shows a knowledge gap for nurses in basic life support guidelines(12).

In/out of hospital Cardiac arrest is major public health concern and cause mortality globally. A greater number of survivors have been seen when cardiac arrests are witnessed. Survival can even be three times increased when cardiac arrests are managed by persons able to provide immediate BLS. However, only an insignificant number of cardiac arrest victims receive adequate life-saving cardiopulmonary resuscitation (CPR), thus indicating the need for improvement(13,14). The basic Knowledge of BLS plays a vital role in determining the success of resuscitation following cardiac arrest. This, in turn, shall improve survival rate as well as reduce post-arrest morbidity(9).

Basic life support provides a basic level of care for treating patients, especially those with life-threatening illnesses or injuries. Ideally, everyone should know about BLS/CPR. however, scientific knowledge and proper CPR techniques from nurses are a critical part that makes the difference between life and death, especially after cardiorespiratory arrest(10,11).

Adequate knowledge and skills of basic life support (BLS) and cardiopulmonary resuscitation (CPR) are significant global concerns to ensure that health care professionals can provide essential life-saving care in life-threatening situations. (18) It is believed that health care professionals should have well sound Knowledge, a positive attitude, and skills about BLS as they face an emergency. All health care professionals should be qualified in BLS and know how to provide breathing, compression, and defibrillation. Several accidental and potentially fatal incidents can occur at any time during our everyday lives. However, Providing BLS to patients in need of emergency treatment as soon as possible can significantly impact the outcome(14,15).

The demand also for BLS courses continues to grow in industrialized countries. However, training in developing countries is generally not practiced(14,15).

Numerous publications on the level of Knowledge, Attitude, and practice of BLS among health workers showed disappointing results(16).

The skill to recognize and respond effectively to a cardiac arrest situation rests on nurses being competent in the emergency life-saving procedures of CPR. In contrast, the lack of resuscitation skills has been identified as a contributing factor to the poor outcome of victims during cardiopulmonary arrest(6).

The level of Knowledge, Attitude, and practice among health care professionals vary, as shown by different surveys in different parts of the world. For example, a survey conducted in a Tanta university hospital revealed that about only 33.92% of nurses had adequate knowledge level on BLS while the majority had no adequate knowledge(14).

In another survey done by Roshana et al. about the recommended maneuver for opening the airway of the injured victim, only 40% of them answered jaw thrust with immobilization of the cervical spine(17). The Research is done in the Tertiary Level Hospital of Nepal also revealed that most of the nurses working in high care units of the hospital did not have adequate knowledge about BLS and CPR. Only 2% had adequate Knowledge about BLS(18).

Few nurses were answered questions like how to open the airway of a victim with a head injury, how many initial breaths should you provide for unresponsive victims, and the first step for unresponsive victims in Ethiopia's Gondar and Bahirdar referral hospitals in 2016(11).

As a result, this study aims to assess BLS knowledge, attitude, practice, and determinant factors among nurses working in the Adult emergency departments of federal hospitals in Addis Ababa, Ethiopia.

1.3 SIGNIFICANCE OF STUDY

Basic life support provides basic care to patients, especially those suffering from life-threatening illnesses or traumatic injuries. Therefore, the nurse must be able to resuscitate from the moment of the first dispatch. Ideally, all healthcare professionals should be familiar with BLS and CPR. Still, scientific knowledge and appropriate CPR nursing skills are important factors that distinguish life and death, especially after a cardiorespiratory arrest.

Using the proper BLS as soon as possible for potentially life-threatening situations including traumatic injuries or acute non-traumatic medical problems that have been handled with low-cost procedures. However, this is only achieved when someone who has basic BLS knowledge, a positive attitude, and skills on when and how to do it carries out the BLS.

This Research, therefore, was tried to dig out the gap in the Knowledge, Attitude, and practical skills of nurses towards BLS and attempt to display solutions or directions to resolve gaps and identify variables to provide sound BLS care by nurses in or out of the hospital. Besides, for further analysis, the study will be used as baseline data for policymakers and other stakeholders.

2. LITERATURE REVIEW

In 2015, In-hospital cardiac arrest affected about 1.2 percent of adults admitted to US hospitals. However, 25.8% of these patients were discharged alive from the hospital, and 82 percent of those who survived had good functional status at the time of discharge(4).

Early initiation of BLS has been shown to extend the probability of survival for someone having a cardiopulmonary arrest. To extend the chances of surviving during a cardiopulmonary arrest, the rescuer should follow the steps for all ages within the chain of survival(9,19).

2.1. Knowledge of Nurses towards Basic Life Support

An observational study done in Nepal showed that in recommended maneuver for opening the injured victim's airway, only 40% of them answered jaw thrust with immobilization of the cervical spine. In contrast, more than half of participants pointed out head tilt-chin lift maneuver, which should be avoided in suspected victims with the C-spine injury. However, average health professionals in the hospital lack adequate Knowledge in CPR/BLS(17).

A study done in Pakistan to compare the three categories of health professionals (doctors, dentists, and nurses) from five institutes shows that Nurse' Knowledge of BLS was low(20).

The study conducted in Nepal showed that the staffs including medical doctors, paramedics, nursing staff's knowledge on basic life support were not satisfactory, very few of the participants were aware of the sign of cardiac arrest and correct method of checking the pulse. One possible explanation for not having an adequate level of Knowledge for BLS was that the study was included nursing staffs as major participants. Therefore, it was obvious in their study that nursing staff and paramedics were not expected to have adequate knowledge as compared to medical doctors(21).

A study done in Tanta University Hospital in Egypt showed that most staff nurses' knowledge level of BLS was inadequate(14).

Other findings in East Africa in Eritrea showed acquisition of Basic Life Support knowledge among the study participants mean score of knowledge questions was 9.58/20 and 15.9/20 before and immediately after training, respectively(22). Similarly, the research finding in

Uganda revealed that nurses' knowledge on CPR answered before instruction was 53.8% and 82.5% post instruction(23).

Other Research done in three district hospitals in Botswana reveals that among 154 participants near to half of the nurses did not know the correct compression ventilation ratio, compression rate, updated AHA guidelines, BLS steps, a chain of survival, and the indication for using an automated external defibrillator (AED) and providing ventilation using the bag-valve-mask(24).

Research in Nepal also revealed that to questions on chest compression in adults, nearly half of the participants could identify that the correct location of the hands for chest compression is the center of the chest between two nipples; the compression rate is 100/min. In addition, the chest compression to ventilation ratio is 30:2(17).

While Research is done in Saud Arabia showed 42% failed to identify 'looking for safety as the first step in BLS, and 75% failed to identify activating EMS as the course of action to take immediately after confirming the unresponsiveness of an adult(25).

In the Defibrillator Knowledge Research Study in South Africa, the areas of knowledge examined are the correct use of the Joules settings, defibrillation, and synchronized cardioversion indications. Revealed that only 14% of emergency unit staff know the correct Joules setting of the defibrillator, only 18% of all indications for defibrillation, and only 6% of people know the correct indication synchronized cardioversion(26).

The Research in Rwanda shows that Ninety-two percent (92%) of the nurses don't know the correct sequence of steps for CPR, while only 59.50% of nurses answered the methods to open the airway in cervical spine injury(7).

Another similar study in East Africa in Kenya found that most clinicians answered the recommended maneuver to open the airway in the unresponsive trauma patient is the Jaw Thrust maneuver(27).

A research study conducted in Amara regional state hospitals in Gondar and Bahirdar showed that more than half of the respondents were reported not knowing how to perform BLS. The most correctly answered question was about the abbreviation of BLS(11).

2.2 Attitude of Nurses towards Basic Life Support

In Saudi Arabia, a quasi-experimental study was conducted for two classes of healthcare providers: those who had recently completed a BLS–AED course and those who had not. Overall, 53.4 percent of pre-BLS respondents and 64.8 percent of post-BLS respondents had optimistic attitudes, as shown by the fact that attitude scores improved dramatically with the number of exposures ($p < 0.001$).and increased significantly with an increasing number of previous training courses ($p < 0.001$) in both groups(28).

According to A cross-sectional study in India, 57.3% and 8.7% of participants expressed reluctance to perform CPR inside and outside the hospital, respectively. The reason for reluctance was as if they might risk causing harm or injury to the victim, fear of the spread of infection to self, lack of confidence, embarrassment(29).

The study done in Kenya revealed that most clinicians feel that performing BLS in the unresponsive victim saves life effectively(27).

Research findings on 4th-year medical students in Pakistan showed 93.80% of respondents showed a positive attitude towards learning BLS and their interest in performing it despite their present skills(3).

Research conducted in Saud Arabia recommended that Repeated Training help staff retain the knowledge of CPR and an AED. However, Retention of Knowledge and skills during and after Training in CPR is difficult and requires systematic training with appropriate methodology(28).

Similarly, Research conducted in Saudi women's universities revealed that around 77.0% of participants indicated a desire to receive additional BLS training, and 78.5% supported mandatory BLS training(30).

In the study conducted in Gondar of study participants, 60.8% had a good attitude. Based on the profession, 90.1% of physicians and 94.1% of anesthetists had a better attitude towards adult CPR than other professions. On the other hand, most health professionals believe that BLS/ACLS training should be given before practicing CPR, and some of them strongly agreed that they should be recertified on a CPR course every two years(31).

Similarly, Research conducted in Addis Ababa, Ethiopia, on anesthetists revealed the majority of the participants, 60%, with a mean of 0.95, completely agree that training is important, and 32% of them completely agree that their lack of self-confidence influences them in initiating CPR and 48% of them, completely agree that lack of training influences them in initiating CPR(32).

2.3 Practice of Nurses towards Basic Life Support

Basic life support is a practice-based skill. Airway management is largely for any patient with head trauma, cervical spine injury, chest trauma, and a Glasgow Coma Scale <8 for those to open the airway by jaw thrust maneuvers(33).

The descriptive cross-sectional study in Rawalpindi Medical University, Pakistan, revealed Only 6.6% had practiced BLS and the majority 65.69% were unable to perform CPR independently, and 87.24% were unsatisfied with the degree of practical knowledge (3).

Research findings in Rwanda reveal that most participants scored low levels of practical skills, 79%, while only 21% documented having practice skills on BLS(7).

According to prospective pre/post-intervention design done in Uganda reveals skills was 46 pre-instruction and 81.5 post instruction before and after six months respectively(23). while A quantitative, quasi-experimental study was conducted at three hospitals in Botswana and showed markedly deficient CPR skills among nurses who indicated that the nurses did not know the majority of the BLS steps(24).

According to A descriptive cross-sectional study that was conducted in Nepal, Most of the respondents (86 %) had seen CPR being done, and more than half of the respondents (58%) had done CPR(18).

Another Research done in Rwanda shows that Respondents were asked if they have been involved in the emergency care of RTA victims at the scene or hospital; 88.2% reported that they had been involved in emergency care while 11.8% had not(34).

A study conducted in Ethiopia revealed that during resuscitation, 62.87% and 37.12% of participants were involved with the frequency of 1-5 and ≥ 5 times, respectively. And, only 18.04% of participants were involved as a team leader, and 63.7% replied that they were not confident in performing BLS procedures(11).

Similarly, according to Research in Nepal Bisrat medical college, 76% of the participants had encountered cardiac arrest situations in their clinical practice. Still, they were managing those cases with limited Knowledge of BLS(21).

A cross-sectional exploratory study was conducted in Yemen, Respectively; 63.3% and 16.5% of them correctly answered the next steps in the two situations (if the pulse is present and if not)(35).

The study conducted in Gondar and Bahirdar Hospitals revealed that Nurses' who received BLS training were three times more likely to practice BLS skills than those who had no training before or after graduation. Nurses who had previous exposure to BLS skills were 7.8 times more likely to practice BLS than those who did not expose. Nurses who replied as they were confident in performing BLS had 7.4 times more likely to practice BLS skills than those who were not confident(11).

2.3. Factors Affecting Knowledge, Attitude, and Practice of nurses towards Basic Life Support

Nurses are often the first healthcare professionals in a hospital to identify a patient in cardiac arrest, so they must have a thorough understanding of BLS and the necessary skills to respond appropriately in cardiac arrest and other emergencies. According to the findings of various studies, Knowledge of BLS was positively associated with educational level, year of experience, assigned place, resuscitation training, and prior exposure to cardiac arrest patients(20).

Variables such as age, sex, number of work settings, educational status, CPR training, and reading CPR guidelines had a significant association with the attitude of health professionals. On the other hand, nurses' knowledge, resuscitation training, previous exposure to cardiac arrest, and confidence in performing BLS were positively associated with the BLS practice(35).

A quasi-experimental study was conducted in Saud Arabia was significantly associated by the recent completion of BLS training ($p < 0.001$), the number of previous BLS training courses ($p = 0.008$), and previous exposure to cardiac-arrest cases ($p = 0.018$), as well as by low concern ($p < 0.001$)(28).

A cross-sectional exploratory study conducted in Yemen also associated with those who attended BLS training had obtained a higher mean score than those who had no training. And, those who had previously performed cardiopulmonary resuscitation (CPR) for a patient had a higher mean score in comparison to those who did not perform is significantly associated with practice evidenced by ($p < 0.001$)(35).

The Research conducted in Peru in Peruvian university students concludes that the knowledge level about BLS in medical students from the universities under evaluation is poor and associated with academic stage and having received previous BLS instruction. Evidenced by the academic stage and having received a previous BLS course ($p < 0.05$)(16).

Research conducted in Saudi women's university revealed that Students who had previously received BLS training had significantly higher knowledge scores ($P < 0.001$), although their knowledge scores remained poor(30).

Research done in Ethiopia, Gondar hospital on CPR revealed that variables such as sex, age, work experience, number of work settings, educational status, exposure to cardiac arrest cases, CPR training, and reading international CPR guidelines were significant. However, only work experience, CPR training, several work settings, exposure to cardiac arrest cases, and reading international CPR guidelines were significantly associated with good knowledge (31).

Also, A cross-sectional study conducted in Egypt found there were statistically significant associations regarding academic qualification, place of current work, previous Training on

BLS, and duration since the last training course ($p < 0.001$)(14). Study conducted in Ethiopia Gondar and Bahirdar university specialized hospitals, knowledge, resuscitation training, previous exposure to cardiac arrest patient, and confidence in performing BLS were factors found to be significantly associated with the practice of nurses towards BLS at a p-value of <0.05 (11).

Another study in Ethiopia's Gondar specialized hospital looked at the impact of those features on health professionals' attitudes. Age, sex, number of work environments, educational status, CPR training, and reading CPR guidelines are all significantly associated with health professionals' attitudes. However, only CPR training and reading CPR guidelines were significantly associated with a good attitude(31).

2.4. CONCEPTUAL FRAMEWORK

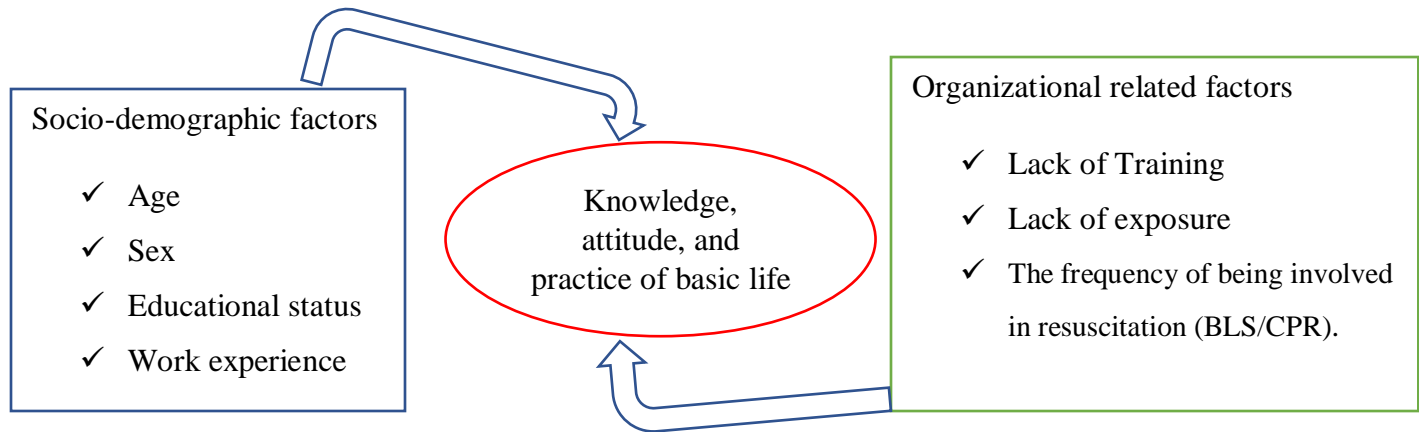


Figure 1 Conceptual framework on the assessment of Knowledge, Attitude, and practice towards basic life support and factors affecting its delivery among nurses working at an adult emergency unit of federal hospitals in Addis Ababa, Ethiopia, 2021.

3. OBJECTIVES

3.1. General objective

- To Assess Knowledge, Attitude, And Practice Towards Basic Life Support and Its Associated Factors Among Nurses Working at adult Emergency Unit of Federal Hospitals in Addis Ababa, Ethiopia. 2021.

3.2. Specific Objectives

- To assess the Knowledge of Nurses working in adult emergency units of selected federal hospitals Towards Basic Life Support.
- To Assess the Attitude of Nurses working in the adult emergency unit of selected federal hospitals Towards Basic Life Support.
- To Assess the Practice of Nurses working in the adult emergency unit of selected federal hospitals Towards Basic Life Support.
- To Identify Factors Affecting Knowledge, Attitude, And Practice of nurses working in the adult emergency unit of selected federal hospitals Towards Basic Life Support in Addis Ababa, Ethiopia, 2021.

4. METHODS

4.1 Study Area and Period

The study was conducted in federal hospitals in Addis Ababa, Ethiopia, from March 30 to June 30, 2021. Addis Ababa is the capital city of Ethiopia, and it is the largest city in Ethiopia; its area is estimated to be 530Km² with altitudes ranging from 2200 to 3000m above sea level, with an average temperature of 22.8C° and an average rainfall of 1,180.4mm. The current metro area population of Addis Ababa in 2021 is **5,006,000**, a **4.42% increase** from 2020. (36). Addis Ababa has 41 hospitals (14 public and 28 NGOs and private). From seven federal hospitals in Addis Ababa, five federal hospitals were selected for this study.

- All African Leprosy, Tuberculosis and Rehabilitation Training Center (ALERT):
- St. Paul Hospital Millennium Medical College (SPHMMC)
- Aabet Hospital
- St. Peter's Specialized Hospital
- Black lion Specialized Hospital (TASH) were selected for this study. Yeka kotebe hospital due to reserve for COVID-19 patients whereas Emanuel hospital was excluded due to it provides specific mental health services

4.2 Study Design

An institutional-based cross-sectional quantitative study design was conducted.

4.3 Population

4.3.1 Source Population

All nurses working in the adult emergency unit of the federal hospitals of Addis Ababa.

4.3.2 Study subject and study unit

All Nurses working in the adult emergency unit of selected federal hospitals of Addis Ababa, Ethiopia, and that fulfill the eligibility criteria.

4.4 Eligibility Criteria

4.4.1 Inclusion Criteria

All nurses who are currently working in the Adult emergency units.

4.4.2 Exclusion Criteria

Nurses inaccessible (assigned to other institution like, millennium hall of COVID 19 center), sick, and leave during data collection time were excluded from the study.

4.5 Sampling Procedure

There are 215 nurses currently found on work in the adult emergency unit of selected federal hospitals of Addis Ababa, Ethiopia. Therefore, a complete census was used from each hospital.

Selected federal hospitals and total nurses assigned in adult emergency units, Addis Ababa, 2021.

Sr number	Name of selected hospitals	Number of emergencies Nurses	Remark
1	BLH	56	
2	A Abet	56	
3	St PAULO'S	62	
4	St PETER	16	
5	ALERT	25	
TOTAL		215	

4.6 Study Variables

4.6.1 Dependent Variables

- ✓ Knowledge
- ✓ Attitude
- ✓ Practice

4.6.2 Independent Variables

Socio-demographic characteristics

- ✓ Age
- ✓ educational status
- ✓ years of experience
- ✓ sex

Organizational Factors

- ✓ Resuscitation training
- ✓ previous exposure to cardiac arrest patients
- ✓ The frequency involved during resuscitation.

4.7 Data Collection Methods

4.7.1 Data Collection Procedure and Tools

Trained data collectors were used to collect data by using closed-ended questionnaires adopted from AHA 2020 guideline and other similar studies. Then the questioners were modified to the local context(4,7,31).

Personnel for data collection included five BSC nurses and five MSc nurses as a supervisor selected from emergency department and onsite training given for 01 days by the principal investigator on how to collect the intended data for this study.

Self-administered questionnaires were used to collect data from respondents to assess their Knowledge, Attitude, and practice level towards BLS. Data was collected through a structured and pretested self-administered questionnaire adopted from different kinds of literature. This questioner has an English version only and had four parts. Socio-demographic characteristics

of respondents contain eight questions. Knowledge of respondents on BLS contains 14 questions, the mean score classified into two levels (good and poor knowledge). The attitude of respondents towards the BLS part contains 08 questions; the mean score is classified into two levels (favorable Attitude and unfavorable Attitude). A practice-related question towards BLS contains 12 questions, the mean score classified into two levels (good practice and poor practice), and the Obstacles to perform BLS contains 01 questions.

4.8 Data Quality Management

4.8.1. Data quality control

A pretest was done on five percent of the respondents at Menilik 2nd referral hospital, which did not include in the study. Then ambiguous and unsuitable questions were modified after the pretest was conducted. In addition to the pretest, the data collectors were trained for completeness of responses to questionnaires before collecting the actual data. The principal investigator also continuously followed data collection and checked the data for completeness clarity, and collected the filled questioner.

4.9. Data Processing and Analysis

A questionnaire was checked for completeness and consistency after data collection. Epi data version 4.6 was used to create the data template format. The data was then exported and analyzed using SPSS 26. Descriptive statistics such as frequency, cross-tabulation, percent, and pie chart were used to summarize the data. Multicollinearity and Hosmer-Lemeshow goodness of fit were also used to test the model's fitness at p-values of >0.05 . Binary logistic regression analysis was employed to assess the association between dependent and independent variables. The appropriate 95 percent confidence intervals for crude and adjusted odds ratios were computed. In multivariable logistic regression, independent variables with P-values of less than 0.05 were declared statistically significant.

4.9.1 Operational Definitions

Basic life support (BLS): is a set of emergency procedures applied to a patient to maintain a patient's airway, supporting breathing and circulation without the use of equipment other than a simple airway device or protective shield. In general, it includes a technique like cardiopulmonary resuscitation (CPR), shocking, and first aid treatments to sustain a patient's life until the patient receives advanced medical care.

Leveling knowledge of respondents

Good knowledge: - nurses who were working in the adult emergency unit who score more than the mean score of knowledge-related questionnaire towards basic life support.

Poor knowledge: - nurses who were working in an adult emergency unit that scores less than the mean of knowledge-related questionnaires towards basic life support.

Leveling attitude of respondents

Favorable attitude: - nurses who were working in the adult emergency unit who scores more than the mean score of five-point Likert scale questionnaires toward basic life support.

Unfavorable attitude: - nurses who were working in the adult emergency unit who scores less than the mean score of five-point Likert scale questioners toward basic life support.

Leveling Practice status of respondents

Good practice:- nurses who were working in the adult emergency unit who meet above the mean score of BLS practice questions towards basic life support.

Poor practice: - nurses who were working in the adult emergency unit who scored less than the mean score of BLS practice questions towards basic life support.

4.10 Ethical Consideration

Ethical clearance was secured from the Research Ethical Committee (REC) of the Emergency Medicine Department as mandated by Addis Ababa University College of health sciences. This ethical clearance letter was submitted to the head office of hospitals. Then a letter of permission was obtained from hospitals, and then this letter was submitted to the nursing department head and coordinators of each department before actual data collection began. The objectives of the study and its procedures were mentioned for the study participants initially. Then informed consent was obtained from all study participants before proceeding with data collection. Finally, each respondent was asked to check whether the information provided on the purpose of the study has been adequately understood or not. Confidentiality of the information obtained from each participant was maintained.

4.11 Dissemination of Results

This study's final report will be submitted to the emergency medicine department, Addis Ababa University, FMOH, and Federal Hospitals. In addition, efforts will be made to present in scientific conferences and publish in national journals.

5. RESULTS

5.1 Socio-Demographic Characteristics of Nurses of Federal Hospitals, Addis Ababa, Ethiopia, May 2021.

Two hundred fifteen samples had planned for the study, and 200 adult emergency nurses participated in the study and 193 nurses were included in the analysis. Seven subjects excluded from analysis due to incompleteness and inconsistency of their response; 15 nurses excluded initially before data collection. Because, they were inaccessible and assigned to another center (millennium hall, COVID 19 center) from Aabet and St Paulo's, and a response rate was yielding 96.5%. Among them, majorities 135(69.9%) age group was between 25-30 years, and the mean age (SD) was 28.03±3.504yr. More than half of the participants were females, 106(54.9%), and all participants' ages ranged from 22 to and 43years. More than two-thirds of the participants, 154(79.8%), had a bachelors' degree (BSc), and 23(11.9%) were MSc in nursing. More than half of the respondents, 104(53.9%), had 1-5 years of clinical experience (Table 1).

Table one Socio-Demographic Characteristics of Nurses at Federal Hospitals, Addis Ababa, Ethiopia, May 2021.

Variables		Frequency	Percent (%)
Sex	Male	87	45.1
	Female	106	54.9
Age	20-24	23	11.9
	25-30	135	69.9
	>30	35	18.1
Education status	Diploma	16	8.3
	BSc	154	79.8
	MSc	23	11.9
Year of experience	<1 year	18	9.3
	1-5	104	53.9
	6-10	48	24.9
	>10	23	11.9

5.1.1 BLS-related characteristics of the participants

More than two-thirds of 132(68.4%) of study participants had BLS training. In addition, around 44(22.8%) and 88(45.6%) of the participant had received pre-service (Training given before graduation) and in-service Training (Training after graduation), respectively. One hundred four (53.9%) of the study participants have been involved in patient resuscitation greater than ten times (Table 2).

Table 2: BLS-related characteristics of the participants at Federal Hospitals, Addis Ababa, Ethiopia, May 2021.

Variables			Frequency	Percent (%)
Training on BLS/ Resuscitation	yes	Before graduation	44(22.8%)	68.4
		On Job training(after graduation)	88(45.6%)	
	No		61	31.6
Involved in resuscitation to cardiac arrest patients	Never		12	6.2
	1-5 times		22	11.4
	6-10 times		55	28.5
	>10 times		104	53.9

5.3 Knowledge of the study participants towards basic life support

The number and percentage of knowledge scores of the respondents are listed in Table 3. The percentage of correct answers varied from 36.8% to 88.1%. The mean score for the participants was 7.3. Among the participants, about 170(88.1%) answered the Basic concept of BLS. Followed by the two questions: "The location for chest compression in infants and " The ratio of CPR, single-rescuer in the adult are the most correctly answered questions 130(67.4%), 144(74.6%), respectively. On the other hand, more than 60% were incorrectly answered when asked about immediate action if you confirm somebody is not responding to you even after Shaking and shouting at him, and the first response if your friend suddenly starts expressing symptoms of choking were 117(60.6%), 118(61.1%) respectively.

Regarding questions on the exact location for chest compression, more than half of the participants could not identify that the right location of the hands for chest compression is the center of the chest between two nipples. Nevertheless, nearly half 95(49.2%) of participants correctly answered: "The Rate of chest compression in adult and Children during CPR." (Table: 3)

Table: 3 Responses of Nurses for BLS Knowledge Questions in Emergency Units at Federal Hospitals of Addis Ababa, Ethiopia May 2021.

Knowledge assessment questions	Incorrect responses		Correct responses	
	N(193)	%	N(193)	%
1. The Basic concept of BLS	23	11.9	170	88.1
2. The first response when you see someone is unresponsive in the middle of the road(Note: You are alone there)	86	44.6	107	55.4
3. The immediate action when you confirm somebody is not responding to you even after Shaking and shouting at him.	117	60.6	76	39.4
4. The exact location for chest compression	109	56.5	84	43.5
5. The location for chest compression in infants	63	32.6	130	67.4
6. The Depth of compression in adults during CPR	106	54.9	87	45.1
7. The Depth of compression in Children during CPR	122	63.2	71	36.8

8. The Depth of compression in neonates during CPR	102	52.8	91	47.2
9. The Rate of chest compression in adult and Children during CPR	98	50.8	95	49.2
10. The ratio of CPR, single-rescuer in an adult is	49	25.4	144	74.6
11. In a newborn, the chest compression and ventilation ratio is	115	59.6	78	40.4
12. Your first response If you and your friend are having food in a canteen and suddenly your friend starts expressing symptoms of choking.	118	61.1	75	38.9
13. Your next approach if You noticed that your colleague has suddenly developed slurring of speech and weakness of the right upper limb.	101	52.3	92	47.7
14. The next step for a 50-year-old gentleman with retrosternal chest discomfort, profuse sweating, and vomiting.	84	43.5	109	56.5

5.3.1 The overall Knowledge of participants

The mean score of knowledge questioners answered correctly by study participants was 7.3 ± 3.4 . Of the total of study participants, around 113(58.5%), greater than half of the Emergency Nurses had poor knowledge, while the remaining 80(41.5%) scored good Knowledge towards BLS (**figure 2**).

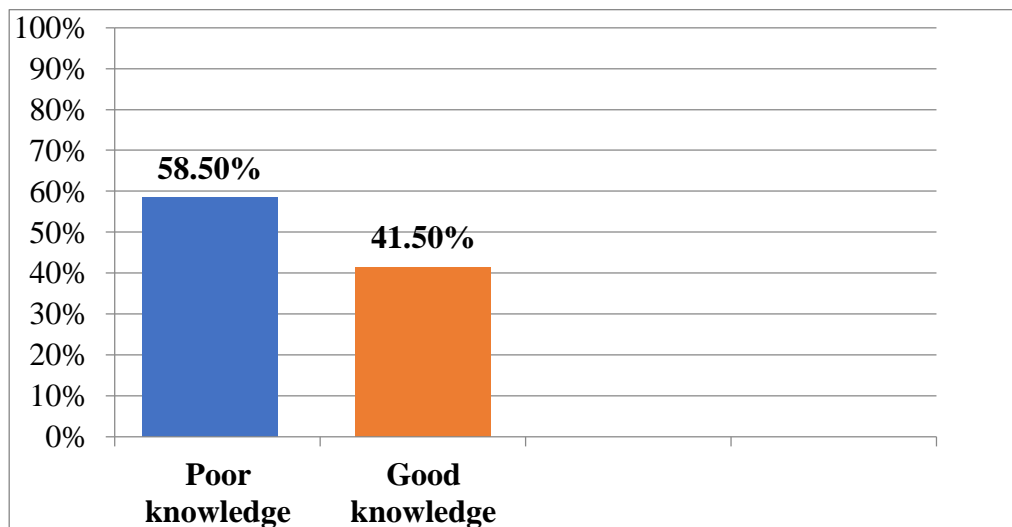


Figure 2: BLS Knowledge status of the Nurses working in the emergency unit of selected Federal Hospitals, Addis Ababa, Ethiopia 2021(N=193).

5.4 Attitude of the study participants towards basic life support

One hundred nine (56.5%) of the respondents agreed, and 55(28.5%) strongly agreed that they are Confident in recognizing a person in need of basic life support, while seven (3.6%) strongly disagreed with it. Regarding confidence in providing chest compressions 101(52.3%), more than half of the participants agreed, 60(31.1%) strongly agreed while nine (4.7%) strongly disagreed, and six (3.1%) disagreed on it.

As presented in the table below, the higher proportion of participants, 81(42%), strongly agreed, and 73(37.8%) agreed) on the statement, all professionals should get BLS training before practicing CPR (**Table: 4**).

Table 4: Responses of Nurses for BLS attitude Questions in Emergency Units of Federal Hospitals of Addis Ababa, Ethiopia May 2021.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
Attitude assessments questions	N (%)	N (%)	N (%)	N (%)	N (%)
Interested in the profession	19(9.8)	10(5.2)	25(23)	97(50.3)	42(21.8)
Confident in recognizing a person in need of basic life support	7(3.6)	13(6.7)	9(4.7)	109(56.5)	55(28.5)
confident in providing chest compressions	9(4.7)	6(3.1)	17(8.8)	101(52.3)	60(31.1)
willingness to provide chest compressions to a stranger in need	6(3.1)	12(6.2)	23(11.9)	98(50.8)	54(28)
want other laypersons (trained in BLS) to try to resuscitate you if you require BLS	9(4.7)	15(7.8)	24(12.4)	91(47.2)	54(28)
the Knowledge, Attitude, and skills of	7(3.6)	18(9.3)	10(5.2)	76(39.4)	82(42.5)

health professionals towards CPR can affect patient outcome					
All professionals should get BLS training before practicing CPR	12(6.2)	13(6.7)	14(7.3)	73(37.8)	81(42.0)
All health professionals can do BLS	12(6.2)	34(17.6)	15(7.8)	67(34.7)	65(33.7)

5.4.1 The overall Attitude of participants

Nurses that asked to score eight questions on a five-point Likert scale related to basic life support. The mean score for attitude was 3.91 ± 0.74 . Respondents who scored more than the mean value were recorded as having a favorable attitude. In contrast, nurses who scored less than the mean value were recorded as having an unfavorable attitude towards basic life support. Among the 193 respondents, 120(62.2%) had a favorable attitude, whereas 73(37.8%) of participants had an unfavorable attitude towards basic life support (**figure 3**).

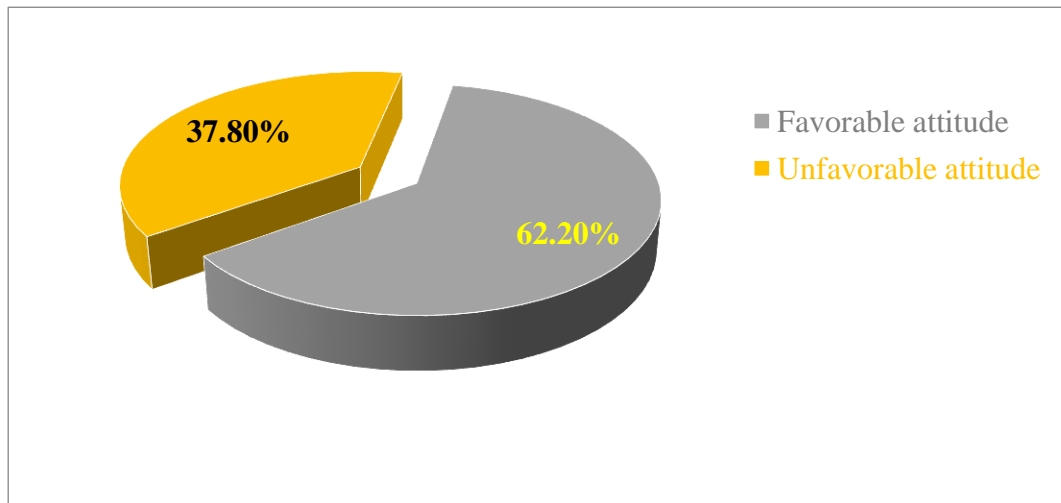


Figure 3: BLS Attitude status of the Nurses working in the emergency unit of Federal Hospitals of Addis Ababa, Ethiopia 2021(N=193).

5.5 Practice of the study participants towards basic life support

According to **table, 5** shown below, out of 193 participants, this study revealed that around 61(31.6%) respondents had not received BLS training. Still, most participants had taken Training on BLS before their graduation (pre-service training) and after graduation as in-service training. Regarding the involvement in patient resuscitation, 55(28.5%) and 104(53.9%) of participants were involved with the frequency of 6-10 and ≥ 10 times, respectively. More than two-thirds 166(86 %) of participants were correctly replied to the question “Where should you attempt to perform a pulse check in an adult” followed by questions stating, “Which one is the correct method in the management of choking in adults and responsive?” was 139(72%). While only 49(25.4%) correctly responded to the inquiry "In an adult with an advanced airway in place during 2-rescuer CPR, how often should breaths be administered?" was the least correctly answered practical question towards BLS. (*Table: 5*)

Table: 5 Responses of Nurses for BLS practice Questions in Emergency Units of Federal Hospitals at Addis Ababa, Ethiopia May 2021.

practice assessment questions	Incorrect Responses		Correct responses	
	N(193)	%	N(193)	%
1. Appropriate maneuver to opening the airway of the injured victim	82	42.5	111	57.5
2. The five links in the adult Chain of Survival include	141	73.1	52	26.9
3. How often should rescuers switch roles when performing 2-rescuer CPR	104	53.9	89	46.1
3. The initial Basic Life Support steps for adults are	98	50.8	95	49.2
5. Where should you attempt to perform a pulse check in an adult?	27	14.0	166	86.0
6.The proper steps for operating an AED are	73	37.8	120	62.2
7. Which one of the following Sign/s of severe airway obstruction	107	55.4	86	44.6
8. In an adult with an advanced airway in place during 2-	144	74.6	49	25.4

rescuer CPR, how often breaths should be administered				
9. The critical characteristics of high-quality CPR include which of the following	70	36.3	123	63.7
10. The Correct step in management chocking of the infant but responsive	68	35.2	125	64.8
11. The correct method in the management of choking in adults and responsive	54	28.0	139	72.0

5.5.1 The overall practice of participants

Nurses that asked to score 11 practice-related questions towards basic life support. The mean score for the practice questioner was 5.98 ± 2.46 . Respondents who scored more than the mean value were reported as having a good practice, whereas nurses who scored less than the mean value were reported as having poor practice towards basic life support. Among the 193 respondents, 124(64.2%) had poor practice, whereas only 69(35.8%) of participants had good practice towards basic life support (**figure 4**).

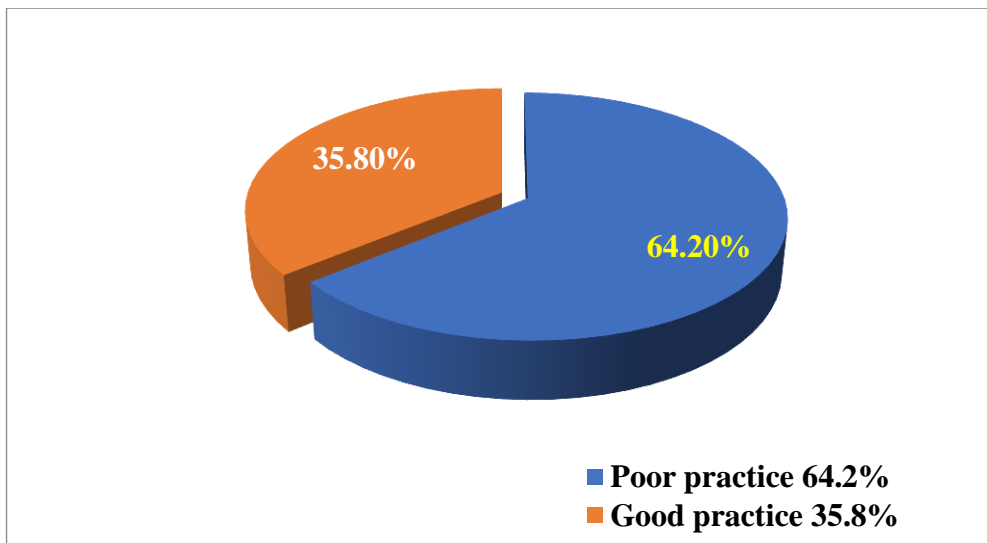


Figure 4: BLS practice status of the Nurses working in the emergency unit of selected Federal Hospitals of Addis Ababa, Ethiopia 2021(N=193).

5.6 Factors associated with nurses' Knowledge, Attitude, and Practice towards BLS

For Bivariate and multivariate analysis between dependent and independent variables, a binary logistic regression model was utilized. Using p-value ≤ 0.25 as a cut point to add more variables, Bivariate binary logistic regression was used to choose variables that were required to be added into multivariate binary logistic regression. As a result, variables with a p-value of less than 0.25 were considered for inclusion in a multivariate logistic regression model to exclude confounders. Finally, variables with a p-value ≤ 0.05 were considered significantly associated.

5.6.1 Factors Associated With Knowledge of Nurses towards Basic Life Support

In the unadjusted binary logistic regression analysis, seven variables (sex, age, educational level, work experience, training on basic life support, involvement in patient resuscitation, frequency to be involved in patient resuscitation) were variables that found to be associated with the Knowledge of BLS by scoring p-value ≤ 0.25 . From them, six variables (sex, age, and educational level, work experience, training on basic life support, and frequency to be involved in patient resuscitation) were found to be significantly associated with knowledge of basic life support by scoring p-value ≤ 0.05 in binary logistic regression. For further extension, female respondents were two times more knowledgeable as compared with males [COR 2.029 95%CI (1.126-3.568)]. MSC level nurses were six times more knowledgeable as compared with diploma nurses [COR 6.107 95%CI (1.415-26.356)]. Those who had >10 yrs. work experience was 4.8 times more knowledgeable as compared with <1 yrs.[COR 4.875 95%CI(1.274-18.649)] and those who had been involved in patient resuscitation for >10 times in their clinical experience were 3.5 times more knowledgeable as compared with nurses who were involved for <5 times. [COR 3.533 95%CI (1.214-10.287)].

In multivariate logistic regression analysis, Seven variables (sex, age, educational level, work experience, training on basic life support, involvement in patient resuscitation, frequency to be involved in patient resuscitation) were meet the required criteria for multivariate logistic regression analysis from bivariate logistic regression analysis by scoring p-value ≤ 0.25 .

However, qualified only two variables (educational level, training on basic life support) by scoring p-value ≤ 0.05 and found to be associated with knowledge of basic life support. In addition, study participants with an MSc level of education were 5.5 times more likely to be knowledgeable than those with a diploma in nursing. [AOR: 5.581; 95%CI (1.155-26.974)]. Regarding Training on BLS (Resuscitation), those who had received BLS (resuscitation) training were three times more likely to be knowledgeable than those who had not received basic life support training. [AOR 2.975 95%CI (1.176-5.381)]. **Table: 6).**

Table: 6 Bivariate and Multivariate analysis of factors associated with nurses' knowledge towards basic life support in the adult emergency unit of Federal Hospitals, Addis Ababa, Ethiopia, May 2021. (N=193)

Variables			Knowledge			
	Poor	Good	COR	P Value	AOR	P Value
Sex						
Male	59(67.8%)	28(32.2%)	1		1	
Female	54(50.9%)	52(49.1%)	2.029(1.126-3.568)	0.019*	1.899(0.981- 3.679)	0.057
Age						
20-24	17(73.9%)	6(26.9%)	1		1	
25-29	80(59.3%)	55(40.7%)	1.948(0.722-5.253)	0.188	1.994(0.658-6.041)	0.222
>30	16(45.7%)	19(54.3%)	3.365(1.072-10.561)	0.038*	1.800(0.459-7.058)	0.399
Educational level						
Diploma	9(56.3%)	7(43.8%)	1		1	
BSc	100 (64.9%)	54 (35.1%)	0.694 (0.245-1.968)	0.492	0.768(0.255-2.315)	0.639
MSc	4(17.4%)	19(82.6%)	6.107(1.415-26.356)	0.015*	5.581(1.155-26.974)	0.032**
Work experience						
<1years	13(72.2%)	5(27.8%)	1		1	
1-5 years	65(62.5%)	39(37.5%)	1.560(0.517-4.711)	0.430	0.831(0.248-2.783)	0.765
6-10 years	27(56.3%)	21(43.7%)	2.022(0.622-6.572)	0.242	0.744(0.192-2.879)	0.668
>10 years	8(34.8%)	15(65.2%)	4.875(1.274-18.649)	0.021*	1.583(0.327-7.665)	0.568
Training on basic life support (Resuscitation).						
Yes	67(50.8%)	65(49.2%)	2.975(1.514-5.845)	0.002*	2.975(1.176-5.381)	0.017**
No	46(75.4%)	15(24.6%)	1		1	

Involved In Patient Resuscitation(BLS/CPR) During Nursing Experience

Yes	104(57.5%)	77(42.5%)	2.243(0.582-8.478)	0.243	1.742(0.415-7.321)	0.448
No	9(75%)	3(25%)	1		1	
How Many Times You Involved In Resuscitation (BLS/CPR) During Nursing Experience.						
1-5 times	17(77.3%)	5(22.7%)	1		1	
6-10 times	36(65.5%)	19(34.5%)	1.794(.573-5.620)	0.315		
>10 times	51(49%)	53(51%)	3.533(1.214-10.287)	0.021*		

NB: **COR**: crude odd ratio *, significant at p-value ≤ 0.25 **AOR**: adjusted odd ratio **, significant at p-value ≤ 0.05

5.6.2 Factors Associated With the attitude of Nurses towards Basic Life Support

On Bivariate logistic regression analysis: only three variables (Practice level of BLS, Year of experience, and involvement in patient resuscitation (BLS/CPR) were associated with the dependent variable and meet the required criteria for multivariate logistic regression analysis at a p-value ≤ 0.25 . For further extension, those who had good practice status in BLS were 1.8 times more likely to have a favorable attitude as compared with poor practice on BLS. [(COR 1.829 95%CI(0.974-3.434)]. Those who were involved in patient resuscitation (BLS/CPR) during Nursing Experience were 3.5 times more likely to have a favorable attitude as compared with those who had not. [(COR 3.569 95%CI(1.035-12.310)]. Nevertheless, in the multivariate logistic regression analysis, no variables are associated with dependent variables. (P-value > 0.05) (**Table 7**)

Table 7 Bivariate and Multivariate analysis of factors associated with the attitude of nurses towards basic life support in adult emergency unit of Federal Hospitals, Addis Ababa, Ethiopia, May,2021.(N=193)

Variables	Attitude		COR	P Value	AOR	P Value
	unfavorable	favorable				
Year of experience						
<1 years	9(50%)	9(50%)	1		1	
1-5 years	38(36.5%)	66(63.5%)	1.737(0.635-4.752)	0.282*	1.399(0.494-3.965)	0.527
6-10 years	19(39.6%)	29(60.4%)	1.526(0.513-4.540)	0.447*	1.223(0.396-3.774)	0.727
>10 years	7(30.4%)	16(69.6%)	2.286(0.634-8.234)	0.206*	1.622(0.423-6.211)	0.480
Involved In Patient Resuscitation (BLS/CPR) During Nursing Experience						
Yes	65(35.9%)	116(64.1%)	3.569(1.035-12.310)	0.044*	2.970(0.843- 10.465)	0.090
No	8(66.7%)	4(33.3%)	1		1	
Practice level						
Good	20(29%)	49(71%)	1.829(0.974-3.434)	0.060*	1.612(0.837- 3.106)	0.154
Poor	53(42.7%)	71(57.3%)	1		1	
NB: COR : crude odds ratio *, significant at p-value ≤ 0.25 AOR : adjusted odds ratio						

5.6.3 Factors Associated With the practice of Nurses towards Basic Life Support

On Bivariate logistic regression analysis: six variables (Knowledge of BLS, Attitude towards BLS, Educational level, year of experience, training on basic life support, and Involved in Patient Resuscitation) were associated with the dependent variable at a p-value ≤ 0.25 . Among them, four variables (Knowledge of BLS, Educational level, year of experience, and Training on basic life support) were significantly associated with the practice of nurses towards BLS at the p-value of ≤ 0.05 . For more explanation, On Bivariate logistic regression, knowledgeable nurses were three times more likely to perform BLS skills than those with poor Knowledge [COR=3.168, 95%CI 3.191 (1.731-5.885)]. Nurses who received BLS training were 3.5 times more likely to practice BLS than nurses who did not undergo BLS training [COR=3.563 95% CI (1.704-7.450)]. Nurses' Who had >10 years of Clinical experience were 12 times more likely to practice BLS as compared to those who had only <1years clinical experience [COR 12.444 95% CI (2.292-67.561)].

In the multivariate logistic regression analysis, six variables (Knowledge of BLS, Attitude towards BLS, Educational level, year of experience, training on basic life support, and Involved in Patient Resuscitation) were meet the required criteria from Bivariate logistic regression analysis for multivariate logistic regression analysis at p-value ≤ 0.25 . From them, three variables (knowledge status of BLS, resuscitation training, and educational status) were significantly associated with the practice of nurses towards BLS at the p-value of ≤ 0.05 . In addition, the present study revealed that knowledgeable nurses were three times more likely to perform BLS skills than those with poor Knowledge [AOR=3.168,95%CI(1.708-5.873)]. Nurses who received BLS training were 2.5 times more likely to practice BLS than nurses who did not undergo BLS training before or after graduation[AOR= 2.543, 95% CI (1.062-6.090)]. Nurses' with master's degrees were 7.6 times more likely to practice BLS as compared to those who had a diploma in nursing [AOR=7.634, 95% CI (1.036-56.239)]. **Table 8).**

Table: 8 Bivariate and Multivariate analysis of factors associated with the practice of nurses towards basic life support in the adult emergency unit of *Federal Hospitals*, Addis Ababa, Ethiopia, May 2021. (N=193)

Variables	Practice		COR	P-Value	AOR	P-Value
	Poor	Good				
Educational level						
Diploma	7(43.8%)	9(56.3%)	1		1	
BSc in nursing	115(74.7%)	39(25.3%)	0.264(0.092-0.756)	0.013*	0.239(0.072-0.791)	0.019**
MSc	2(8.7%)	21(91.3%)	8.167(1.412-47.221)	0.019*	7.634(1.036-56.239)	0.046**
Year of experience						
<1years	16(88.9%)	2(11.1%)	1		1	
1-5 years	69(66.3%)	35(33.7%)	4.058(0.883-18.651)	0.072	3.098(0.588-16.329)	0.182
6-10 years	30(62.5%)	18(37.5%)	4.800(0.987-23.347)	0.052	2.342(0.389-14.104)	0.353
>10 years	9(39.1%)	14(60.9%)	12.444(2.292-67.561)	0.003*	5.931(0.886-39.676)	0.066
Training on basic life support						
Yes	74(56.1%)	58(43.9%)	3.563(1.704-7.450)	0.001*	2.543(1.062-6.090)	0.036**
No	50(82%)	11(18%)	1		1	
Involved In Patient Resuscitation (BLS/CPR) During Nursing Experience						
Yes	113(62.4%)	68(37.6%)	6.619(0.836-52.411)	0.073	5.477(0.509-58.969)	0.161
No	11(91.7%)	1(8.3%)	1		1	
Knowledge						
Good	39(48.8%)	41(51.2%)	3.191(1.731-5.885)	0.000*	3.168(1.708-5.873)	0.000**
Poor	85(75.2%)	28(24.8%)	1		1	
Attitude						
Favorable	71(59.2%)	49(40.8%)	1.829(0.974-3.434)	0.060	1.801(0.937-3.460)	0.077
Unfavorable	53(72.6%)	20(27.4%)	1		1	
NB: COR : crude odds ratio *, significant at p-value ≤ 0.25						
AOR : adjusted odds ratio **, significant at p-value ≤ 0.05						

5.6.4 Perceived factors associated with the obstacles to Practice BLS among nurses working at emergency units of Federal Hospitals.

A total of 165(85.5%) of Nurses were revealed that Unwilling to do the procedures, not a factor affecting BLS practice, followed by Not being confident about the procedures 151(78.2%). More than 30% of participants state that Medico-legal and workloads are factors affect their practice towards BLS (46.1%, 36.3%), respectively. There is no significant association between variables ($p>0.05$). (Table 9)

Table 9 Perceived factors associated with Practice of BLS among nurses working at emergency units of Federal Hospitals 2021 (N=193)

Variables	N (%)	
	Yes	NO
Medico-legal	89(46.1%)	104(53.9)
Workload	70(36.3%)	123(63.7%)
Not being confident to the procedures	42(21.8%)	151(78.2%)
Unwilling to do the procedures	28(14.5%)	165(85.5%)
Presence of updated protocol	62(32.1%)	131(67.9%)

6. DISCUSSION

INTRODUCTION

Basic life support is a life-saving maneuver that starts with the immediate recognition of a suddenly collapsed victim and is an important part of emergency resuscitation. Since life-threatening emergencies can occur at any time, healthcare professionals must respond at all times. To start proper management, they must have the required knowledge and skills(37).

This study assessed Knowledge, Attitude, Practice, and its associated factors about basic life support among nurses at selected federally administered hospitals of Addis Ababa. This chapter discusses the study's major findings with a focus on the objectives of the study, which were to assess the existing level of Knowledge, Attitude, and practice among nurses about Basic Life Support at Federal Hospitals, Addis Ababa.

6.1 Socio-demographic information

The socio-demographic characteristics of study participants showed that more than half of respondents in the adult emergency unit were dominated by females nurses 106(54.9%), and the mean age of respondents was 28.03 ± 3.504 . The results were supported by other studies conducted in Rwanda 72% (7) Dr. Raghvendra Singh et al.2019 61%(38).

In addition, More than two-thirds of 132(68.4%) of study participants had BLS training. Around One hundred four (53.9%) of the study participants have been involved in patient resuscitation for greater than ten times. This result was higher than the study conducted in Egypt(6). According to the Egypt study, 73% have no prior training, and 27% have no information about CPR. The possible reason for the difference might be the study period and study unit.

6.2 Knowledge about basic life support

Nurses are the first health care personnel who encounter emergency health situations in health care settings and the community as well. Therefore, BLS knowledge and practical skills are important for nurses.

To the researcher's knowledge, this study is the first of its kind conducted in federally administered hospitals in emergency units only to document the Knowledge, Attitude, and practice levels on basic life support among nurses at federal hospitals.

The current study categorized as good Knowledge (above mean) and poor Knowledge (below mean) and revealed that the nurses who reported good knowledge on questions towards basic life support were 41.5%. This study is higher than the study conducted in Ethiopia, 38.6%(11). Rwanda25%(7). Egypt33.9%(14) Nepal34% moderate, 2% adequate(18). India20%(38). Saud Arabia 12.1%(30). The possible reason may be they conducted a study on total hospital nurses who are not frequently involved in patient resuscitation. However, this study was conducted only on emergency units, and respondents were better exposed and frequently involved in resuscitation. But this study lower than the study done in Eretria 55%(22) Uganda 53.8% and 82.5% pre and post-test, respectively. (23) The possible reason for the difference might be related to the recent training, and most of the respondents evaluated immediately after training.

In this study, regarding the question raised on "Depth and Rate of chest compression in adults and Children during CPR," around 45.1% and 49.2% responded with correct answers, respectively. This result is higher than the study conducted in **Arjyal B et al.** Nepal 30.7% and 38.1%, respectively(18). The possible reason may be the greater number of trained staff as this study revealed that Training on BLS was 68.4%, but they had only 14% staffs participated in previous BLS training. On the other hand, contrary to our findings regarding previous Training, **Alotaibi et al.** reported that 99.1% of their participants had previously undergone BLS training(39).

The current study found a statistically significant association between the respondents' BLS knowledge level, previous BLS training, and educational status in multivariate logistic regression. MSc nurses were 5.5 times more knowledgeable than diploma nurses, and those who had BLS training were three times more knowledgeable than those who had no training; (table 6). Our result supported by Zayed HA and Saied SM 2020, who found a significant relationship between nurses' level of education, previous training, and BLS knowledge scores; where the subjects with the highest proportion of adequate knowledge were those with a Bachelor's degree and trained BLS.(14) and similarly, supported by kelkay et al. (11) Yemen (40) and Salameh et al. 2018(41) In opposition to our findings, Bajracharya and Nagarkotil (2016) reported that there was no association between nurses' knowledge of basic life support and their educational status in a study of nurses from a tertiary level hospital in Nepal. (18) The possible reason may be in Nepal, nurses who participated in the study are small in

number, and used study design was a purposive sampling method so, during the study, participants knowledge level were unaffected because they may be in the same knowledge status. Saud Arabia(42) There was no statistically significant association between knowledge and academic level ($p>0.05$). The reason for this might be that their knowledge score was enough and was unaffected by their educational status.

6.3 Attitude about basic life support

In our study, 62.2% of participants had, favorable attitude towards BLS. The finding is consistent with the study conducted by mersha et al. (60.8%)(31), Narayan et al. (59.9%)(43) Roshana et al. (17). But lower than Saud Arabia, 74% had a positive attitude(42). A possible explanation might be the comprehensive setup, and frequent BLS knowledge tests may have influenced the findings.

On the other side, 52.3 % (agree) and 31.1 % (strongly agree) of participants reported confidence in providing chest compression. These numbers match those reported in India 57.7%(44). **Chew et al.** More than half of the participants (57.1%) were confident in their ability to provide chest compression. (45) Furthermore, 78.7% of the study participants were willing to provide chest compressions to a stranger, these figures better than that of reported in India 70.5% were willing to provide chest compressions to a stranger,(44) the possible explanation might be they were medical students with no professional experience or confidence to provide for strangers.

To see the effect of selected characteristics on the attitude of health professionals, bivariate and multivariate logistic regression analysis had applied. Variables such as year of experience, involvement in patient resuscitation (BLS/CPR) during the nursing experience, and practical level had associated with the attitude of health professionals in the bivariate analysis. However, there is no association seen in the multivariate analysis. This result contrary to mersha et al. (31) The possible explanation might be the participants in the mersha et al. were different health professionals as compared with our study; only nurses were influenced the result.

6.4 Practice about basic life support

This section addressed the discussion about knowledge of BLS practice among nurses at federally administered hospitals, Addis Ababa. The findings of this study revealed that overall

scores for response to variables on practice were low. The mean score of all participants was 5.98 ± 2.46 . According to Figure 3 showed that 124(64.2%) had poor practice, whereas only 69(35.8%) of participants had good practice towards basic life support. This result is higher than the study conducted in Ethiopia 2016 (11) 71.6% of the participants had poor BLS, and in Rwanda 2017(7), only 21% documented a high level of practice. There might be a difference in exposure to patient resuscitation because they both included nurses from all departments, whereas our study only included nurses from emergency departments.

Nurse-initiated defibrillation can save lives; hence nursing staff should be encouraged to include it in their scope of practice as a standard rather than an optional ability(26). In this study response to the question on how to use an AED properly, 73 individuals (37.8%) answered incorrectly. However, this report is better than Botswana's (24), which noted a lack of AED knowledge and resources that need to be improved.

Nurses must provide high-quality basic life support since they are the usual and first responders, especially in a hospital setting. As shown in multivariate analysis, knowledge level, training, and level of education were significantly associated with the practice of nurses towards BLS. Nurses with good BLS knowledge are three times more likely to Practice BLS as compared with nurses with poor BLS knowledge. Nurses with a master's degree were 7.6 times more likely to perform BLS skills than those with a BSc or diploma in nursing. The participants who had previously received BLS training were three times more likely to practice BLS as compared with those who had not. This result is consistent with Research conducted in Gondar and Bahirdar hospitals in 2016. (11) The reason for this Might be explained by the fact that various studies have shown the need for regular resuscitation training and educational advancement in preventing practical knowledge deterioration.

7. CONCLUSION AND RECOMMENDATION

7.1 CONCLUSION

The capacity to act promptly and effectively to life-threatening events such as cardiopulmonary arrest and shock is dependent on the health care team's knowledge and skill in BLS. The majority of nurses in this study had poor Knowledge, Attitude, and poor practice in delivering basic life support. Educational status and resuscitation training were positively associated with the Knowledge of BLS. Furthermore, the knowledge level of nurses, BLS training, and Educational status was positively associated with the BLS practice. However, no significant association was seen in the attitude of nurses towards BLS. As a result, further training and advancement in education are required to achieve the desired result.

7.2 RECOMMENDATIONS

Researchers

- ✓ Further study based on experimental design is also required, as well as research on resuscitation outcomes in hospital settings.

For Concern Body Regarding Training (FMOH, Emergency Medicine)

- ✓ Simulation-based education should be used to give continual refresher training and to establish protocols for practicing effective BLS techniques while also keeping nurses updated.

For All Hospitals

- ✓ To make in-service simulation based training on BLS maneuvers.
- ✓ To Promote and provide opportunities for employees' in-service educational advancement

For Nurses

- ✓ To keep up to date on the latest BLS guidelines.
- ✓ To participate in patient resuscitation, gain practical experience, and apply what they have learned.

8. STRENGTH AND LIMITATIONS OF THE STUDY

8.1 STRENGTH OF THE STUDY

- ✓ High response rate since, the department was busy in this pandemic era to collect data from emergency staff.
- ✓ More than 70% of federal hospitals in Addis Ababa and all nurses working in adult emergency units were included.

8.2 LIMITATIONS OF THE STUDY

- ✓ The use of only a questionnaire, which acts as a measure of mainly theoretical knowledge, is a limitation of this study. On the other hand, practical performance necessitates both theoretical and psychomotor abilities.
- ✓ The study was only done at federally administered hospitals; other governmental hospitals administered by the Addis Ababa health bureau and private institutions were not included.
- ✓ Shares disadvantages in cross-sectional studies.

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10. ANNEX:1 QUESTIONNAIRE INFORMATION

Addis Ababa University, college of health sciences, department of emergency medicine and critical care.

Participant Code_____

Date: DD/MM/YY ____/____/_____.

INFORMATION SHEETS,

My name is Eyasu bikamo. I am from AAU. I will be conducting a study on Knowledge, Attitude, and practice (KAP) towards basic life support among nurses working at the adult emergency unit of federally administered hospitals in AA for a partial fulfillment requirement of an MSc degree in emergency medicine Critical Care Nursing. I am here to assess KAP towards basic life support among nurses working at the adult emergency unit with associated variables. I would appreciate your participation in this study and selected to participate in this study. So you are kindly requested to respond to all statements or questions based on the instruction given. Your information is used only for research purposes and is kept confidential. The following is some general information about the study.

Objectives of the study: This study aimed to assess the KAP towards basic life support among nurses working at the adult emergency unit of federally administered hospitals in Addis Ababa, Ethiopia, 2020/2021.

Confidentiality: All information obtained from you will be kept private and will not be shared with any third parties; your name will not be recorded on the question sheet, ensuring that you will not be known for any reason.

Benefits of the study: You will not be paid or given any preferential benefits because of your involvement in the study; however, by participating in the study and providing your honest information, you will be helping to change nurses' knowledge, attitudes, and practices about basic life support in adult emergency units.

Risks of the study: The study procedure does not bear any physical or psychological trauma. Furthermore, you have not forced to respond or give information that you do not know.

Consent: Your willingness to take part in the study will determine your participation. You have the option to either not participate at all or to stop participating at any time after you have begun.

Rights as a participant: Please feel free to contact me if you have any questions about the study. It is entirely up to you whether you participate in this study. In addition, I hope you will take part in this survey because your opinions are extremely valuable.

Informed consent, are you voluntarily participating in this study? 1. Yes: 2. No

Eyasu Bikamo phone number **+251916116450**

Email **bikamoeyasu@gmail.com**

Annex 1.1 socio-demographic variable Questions

Sr no	Questions	Variables	Coding	skip
1	Sex	Male	1	
		Female	2	
2	Age in a year-----			
3	Education level in nursing	Diploma	1	
		Degree	2	
		MSc and above	3	
4	Work experience in hospital(in years)	<1	1	
		1-5	2	
		6-10	3	
		>10	4	
5	Did you have training about basic life support (Resuscitation)?	Yes, if yes, answer no 6	1	
		No	2	
6	When did you take training about basic life support?	Before graduation	1	
		While working(on the job training)	2	
7	Did you ever involve in patient resuscitation during your nursing experience?	Yes, if yes, answer no 8	1	
		No	2	
8	How many times you have been involved in a cardiac arrest	_____times		

	patient.			
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Annex 1.2 Knowledge Questions towards BLS

No	Knowledge Questions		coding	skip
1	what is the Basic concept of BLS?	Recognizing and treating a life-threatening condition	1	
		Taking complete history	2	
		Coming to a definitive diagnosis problem	3	
2	When you find someone unresponsive in the middle of the road, what will be your first response? (Note: You are alone there)	Open airway	1	
		Start chest compression	2	
		Look for safety	3	
		Give two breathings	4	
3	If you confirm somebody is not responding to you even after shaking and shouting at him, what will be your immediate action?	Start CPR	1	
		Activate EMS	2	
		Put him in a recovery position	3	
		Observe	4	
4	What is the location for chest compression?	The left side of the chest	1	
		The right side of the chest	2	
		Mid chest	3	
		Xiphisternum	4	
5	What is the location for chest compression in infants?	One fingerbreadth below the nipple line	1	
		One fingerbreadth above the nipple line	2	
		At the intermammary line	3	
		At Xiphisternum	4	
6	Depth of compression in adults	1½ – 2 inches	1	

	during CPR	2½ – 3 inches	2	
		1 – 1½ inches	3	
		½ – 1 inch	4	
7	Depth of compression in Children during CPR	1½ – 2 inches	1	
		2½ – 3 inches	2	
		One-half to the one-third depth of the chest	3	
		½ – 1 cm	4	
8	Depth of compression in neonates during CPR	1½ – 2 inches	1	
		2½ – 3 inches	2	
		½ – 1 cm	3	
		One-half to the one-third depth of the chest	4	
9	Rate of chest compression in adult and Children during CPR	100 / min-120/min	1	
		90 / min	2	
		80 / min- 100/min	3	
		70 / min	4	
10	The ratio of CPR, single-rescuer in the adult is	15:2	1	
		5:1	2	
		30:2	3	
		15:1	4	
11	In a newborn, the chest compression and ventilation ratio is	15:2	1	
		5:1	2	
		30:2	3	
		3:1	4	
12	If you and your friend are having food in a canteen and suddenly your friend starts expressing symptoms of choking, what will be your first	Give abdominal thrusts	1	
		Give chest compression	2	
		Confirm foreign body aspiration by talking to him	3	
		Give back blows	4	

	response?			
13	You noticed that your colleague has suddenly developed slurring of speech and weakness of the right upper limb. Which one of the following can be done?	Offer him some drinks, probably hypoglycemia	1	
		Possibly stroke, get him to the nearest clinic	2	
		Possibly stroke, he may require thrombolysis and hence activate emergency medical services	3	
		It may be due to sleep deprivation, which makes him sleep.	4	
14	A 50-year-old gentleman with retrosternal chest discomfort, profuse sweating, and vomiting. What is next?	Probably myocardial infarction hence activates EMS, give an aspirin tablet and allow him to rest	1	
		Probably acid peptic disease, give antacid and Ranitidine	2	
		Probably indigestion, hence give soda	3	
		Take him by walk to the nearest clinic	4	

Annex: 1.3 Attitude related questions towards basic life support

No	Attitude questions	Strongly disagree	Disagree	Neutral	Agree	strongly agree
1	Are you interested in the profession?					
2	Are you confident in recognizing a person in need of basic life support?					
3	Are you confident in providing chest compressions?					
4	Are you willing to provide chest compressions to a stranger?					
5	Would you want other laypersons (trained in BLS) to try to resuscitate you if you require BLS?					
6	Are the knowledge, attitude, and skills of health professionals towards CPR can affect patient outcomes?					
7	All professionals should get BLS training before practicing CPR.					
8	All health professionals can do BLS.					

Annex: 1.4 Practice related questions towards basic life support

No	Practice related questions		coding	skip
Q1	Which appropriate maneuver to opening the airway of the injured victim?	Head tilts chin lift	1	
		Jaw thrust	2	
		Head tilt	3	
Q2	The five links in the adult Chain of Survival include all of the following EXCEPT :	Early CPR	1	
		Integrated post-cardiac arrest care	2	
		Advanced airway placement	3	
		Rapid defibrillation	4	
Q3	How often should rescuers switch roles when performing 2-rescuer CPR?	After each cycle	1	
		After two cycles	2	
		After five cycles	3	
		After ten cycles	4	
Q4	The initial Basic Life Support steps for adults are	Assess the victim, give two rescue breaths, defibrillate, start CPR	1	
		Assess the victim, activate EMS & get AED, check pulse, start CPR	2	
		Check pulse, give rescue breaths, assess the victim, defibrillate	3	
		Assess the victim, start CPR, give two rescue breaths, defibrillate	4	
Q5	Where should you attempt to perform a pulse check in an adult?	Carotid	1	
		Brachial	2	
		Ulnar	3	
		Temporal	4	
Q6	The proper steps for operating an AED are:	On the AED, attach electrode pads, shock the patient, and analyze the rhythm	1	
		On the AED, attach electrode pads, analyze the rhythm, clear the patient, and deliver the shock	2	

		Attach electrode pads, check pulse, shock patient, and analyze rhythm	3	
		Check pulse, attach electrode pads, and analyze rhythm, shock patient	4	
Q7	Which one of the following Sign/s of severe airway obstruction? (More than one answer is possible)	Poor air exchange	1	
		High-pitched noise while inhaling	2	
		Unable to cry	3	
		May wheeze between cough	4	
Q8	In an adult with an advanced airway in place during 2-rescuer CPR, how often breaths should be administered	Every 5 seconds	1	
		Every 10-12 seconds	2	
		Every 5-6 seconds	3	
		Every 6-8 seconds	4	
Q9	The critical characteristics of high-quality CPR include which of the following	Starting chest compressions within 10 seconds of recognition of cardiac arrest	1	
		Push hard, push fast	2	
		Minimize interruptions	3	
		All	4	
Q10	Which one is the Correct step in management chocking of the infant but responsive?	Give five back blows, then give five chest thrusts	1	
		Give five back blows, then give five abdominal thrusts	2	
Q11	Which one is the correct method in the management of choking in adults and responsive?	Give abdominal thrust	1	
		Give chest thrust	2	
		Give cardiopulmonary resuscitation	3	
Q12	Which one following is the obstacle to you to practice basic life support? (more than	Medico-legal issues	1	
		Workload	2	
		Not being confident to the procedures	3	

	one answer is possible)	Unwilling to do the procedure	4	
		Absence of protocol	5	

