

**HAWASSA UNIVERSITY COLLEGE OF MEDICINE  
AND SCHOOL OF HEALTH SCIENCE**



**KNOWLEDGE AND PRACTICE TOWARDS BASIC LIFE SUPPORT  
AMONG NURSES WORKING AT PUBLIC HOSPITALS, IN HAWASSA  
CITY, SIDAMA, ETHIOPIA, 2023**

**MSc THESIS**

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**HAWASSA UNIVERSITY, HAWASSA, ETHIOPIA**

**NOVEMBER, 2023**

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NURSES WORKING AT PUBLIC HOSPITALS, IN HAWASSA CITY, SIDAMA,  
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**A RESEARCH THESIS SUBMITTED TO SCHOOL OF NURSING, COLLEGE OF  
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**IN EMERGENCY MEDICINE AND CRITICAL CARE NURSING**

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**NOVEMBER, 2023**

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## **DECLARATION**

I hereby declare that this MSc thesis is my original work and has not been presented for a degree in any other university, and all sources of material used for this thesis have been duly acknowledged.

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## **ADVISORS APPROVAL SHEET**

This is to certify that the thesis entitled **“Knowledge and Practice towards Basic Life Support among Nurses Working at Public Hospitals in Hawassa City, Sidama, Ethiopia, 2023”** was submitted in partial fulfillment of the requirements for the degree of Masters of Science with specialization in Emergency Medicine and Critical Care Nursing, the Graduate program of the School of Nursing, and has been carried out by Betelhem Demeke ID. No-PGECCN/0001/14, under our supervision.

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We, the undersigned, members of the Board of Examiners of the final open defense by Betelhem Demeke have read and evaluated her thesis entitled “**Knowledge and practice towards Basic Life Support among Nurses working at public Hospitals in Hawassa City, Sidama, Ethiopia, 2023**”, and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the degree.

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## **ABBREVIATION AND ACRONYMS**

AED	- Automated External Defibrillator
BLS	- Basic Life Support
CPA	- Cardiopulmonary arrest
CPR	- Cardio pulmonary resuscitation
EMS	- Emergency Medical Service
HUCMHS	- Hawassa University College of Medicine and Health Science
HUCSH	- Hawassa University Comprehensive Specialized Hospital

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## Abstract

**Introduction:** Basic Life Support (BLS) is the foundation for saving lives after cardiac arrest, respiratory arrest, and choking in adults, children, and infants. In hospital cardiac arrest situations as well as community emergency calls, nurses are frequently the initial responders; as a result, their proficiency in basic life support is crucial for enhancing patient outcomes. However, little is known about the knowledge and practice of basic life support in Ethiopia.

**Objective:** To assess knowledge, practice, and their associated factors toward basic life support among nurses working at public hospitals in Hawassa City, Sidama, Ethiopia, in 2023.

**Methodology:** An institution-based cross-sectional study was conducted from April 1 to 15, 2023, in Hawassa City public hospitals with a sample size of 410 study participants selected using simple random sampling techniques. Data were collected using a self-administered, structured questionnaire. Logistic regression was applied to control the effects of some variables on the outcome variables, and odd ratios were calculated to determine the strength of the association. Results were interpreted as an association if the p-value was  $< 0.05$  at 95% CI. Descriptions of data were made using tables, percentages, and graphs.

**Results:** A total of 375 participants took part in the study, with a response rate of 91.5%. About one-fourth of 102 (27.2%) [95% CI (22.7–31.7)] and 106 (28.3%) [95% CI (23.7–32.9)] were found to be knowledgeable and have good practices towards basic life support, respectively. Being female, age and work experience were found to be significantly associated with knowledge of BLS. Being male, Nurses' who had taken training and good knowledge level nurses towards basic life support were found to be significantly associated with practice of BLS.

**Conclusion:** The results of this study showed that nurses working at public hospitals in Hawassa City's overall knowledge and practice of basic life support were poor. Therefore, more work needs to be done to increase nurses' knowledge and practice in order to reduce avoidable deaths caused by unexpected emergencies such as choking, drowning, or sudden cardiac arrest. Thus, subsequent training and education on basic life support are mandatory to achieve the desired outcome.

**Key words:** Knowledge, Practice, Basic Life Support, Nurse

## CHAPTER ONE: INTRODUCTION

### 1.1. Background

Basic life support (BLS) is a method of preserving or regaining life that involves opening and maintaining an airway, breathing, and circulation without the need for extra equipment (Isa et al., 2022). It is a type of medical care typically administered by doctors and nurses in the hospital and by emergency medical services (EMS) or qualified bystanders outside of the hospital. Basic Life Support is characterized by its quick emergency cardiovascular care, rescue breathing, chest compressions, and even early defibrillation to restore normal breathing in adults and children (Kleinman et al., 2015).

Basic life support (BLS) is an emergency procedure that consists of maneuvers that include recognizing sudden cardiac arrest signs, stroke, heart attack, and foreign body airway obstruction (Zayed & Saied, 2020). The survival of cardiac arrest is significantly influenced by the prompt use of basic life support and cardiopulmonary resuscitation. The core components of BLS involve prompt detection of sudden cardiac arrest (SCA), activation of the emergency response system, early compressions and resuscitation, and quick defibrillation with an AED (AED). Effective and timely CPR reduces the likelihood of death following sudden cardiac arrest (A. Arif & C. Riaz, 2020).

The most urgent medical and surgical situation is cardiopulmonary arrest. It is a significant global health issue that is prevalent particularly in low-income communities and may be related to insufficient medical resources and infrastructure.

Cardiac arrest may occur in and out of hospitals due to different reasons, such as traumatic injuries of any cause, cardiac diseases and stroke (Olasveengen et al., 2021)

The goal of BLS is to maintain the cardiac arrest victim's breathing and circulation. BLS focuses primarily on CPR. It is a life-saving emergency procedure. It entails defibrillation using a manual or automated external defibrillator as well as chest compressions with or without rescue breathing (AED) (Pathan, 2020).

Prompt CPR can significantly reduce the risk of an unexpected death; it is regarded as a crucial medical practice. In any area of the hospital, nurses are often the first medical personnel to come into contact with a patient experiencing cardiopulmonary arrest (CPA). Cardiopulmonary resuscitation (CPR) skills and timely start-up are critical parts of determining the outcome for individuals with CPA (Varughese & Bridget D'silva, 2018).

Maintaining the airway during an emergency is one of the most crucial emergency airway management techniques. Techniques for opening the airway include head tilt-chin lift, jaw thrust, recovery positioning, maintaining the airway open, and administering oxygen therapy. Several procedures, including the Heimlich maneuver, chest thrusts, and back blows (slaps), can be employed to manage the primary airway in the case of a foreign body obstruction (Nigatu et al., 2022).

The nurses working in a hospital must have adequate knowledge and practice of BLS and cardiac pulmonary resuscitation (CPR). Cardiac arrest or cardiopulmonary arrest can leave the victims with severe morbidities or even lead to death if not attended to immediately or treated

promptly. The main organ to suffer oxygen deprivation is the brain, which sustains irreversible damage after about four minutes (Upendrababu, 2018).

The cornerstones of BLS are the early detection and intervention of cardiac arrest victims by doing CPR. This keeps the patient alive until definitive medical care is available and the patient is moved to a hospital environment for more advanced therapy. During CPR, BLS aims to preserve the airway, breathing, and circulation. After a cardiac arrest, CPR is a life-saving technique for restoring cardiac and respiratory function (Chaudhary et al., 2023).

## **1.2. Statement of the problem**

Adequate knowledge and skills regarding BLS and appropriate application of the same are essential requisites for healthcare professional (Mani et al., 2014). Since 1966, BLS training has been advised for all healthcare personnel in the United States, particularly those who perform resuscitation. Demand for courses in BLS and CPR is ever-increasing worldwide. Unfortunately, resuscitation training standards are still lacking in developing nations. Up to the present, few reports have addressed the current level of awareness and knowledge in the area among health professionals in developing countries (M. Assefa & T. Saol, 2019).

Cardiac arrest, which is estimated to account for 15% to 20% of all fatalities, is a significant public health issue (Irfan et al., 2019). In both industrialized and developing nations, it is a significant contributor to cardiovascular morbidity and mortality (Sachdeva, 2020). Every year, more than 3 million people die from sudden cardiac arrest worldwide, and less than 8% survive (Mendhe et al., 2017). When basic life support (BLS) procedures are properly performed, approximately 50,000 people per year can live until professional help arrives (Jarrah et al., 2018).

According to reports, 33% to 40% of cardiac arrests in developed countries occur inside hospitals, and more than 60% of those events are first noticed by nurses (Zayed & Saied, 2020). Nurses, doctors, and paramedics, who are at the frontlines of resuscitation practice and health care, are expected to be proficient in performing BLS (Mardegan, 2011). Nursing professionals are usually the first to witness a cardiac arrest at the hospital and call for assistance. In order to contribute more effectively to cardiac arrest maneuvers, nurses must

have up-to-date technical knowledge and established practical skills (Bajracharya & Nagarkoti, 2016).

Nurses are expected to provide effective emergency aid services either in their working area or outside of the hospital. Emergency situations that nurses may encounter include respiratory failure and abrupt cardiac arrest. Nurses have to be the first to practice BLS and CPR in these emergency scenarios. Cardiac arrest-related morbidity and mortality rates can be significantly impacted by nurses' first action (Isa et al., 2022).

The level of knowledge and practice regarding basic life support among professional nurses vary, as shown by different surveys in different parts of the world. i.e., in the study conducted in Pakistan, 34% of participants have sufficient knowledge, 66% have insufficient knowledge, and 48% have good practice; 52% have poor practice about BLS (A. Arif & C. Riaz, 2020)(Irfan et al., 2019);in India, Delhi nurses had average knowledge (64%) and poor skill (66%) for basic life support (Sachdeva, 2020). A study conducted in Africa on nurses' knowledge and practice towards basic life support in a Rwanda referral hospital showed that 75% had poor knowledge and most of the participants scored low levels of skills (79% on basic life support) (Marie Claire, 2017); in Egypt, Tanta university staff nurses, about two-thirds of them (66.08%) had inadequate knowledge levels(Zayed & Saied, 2020).

The study conducted in Ethiopia regarding knowledge and practice of basic life support among nurses in Addis Abeba federal hospitals showed that 58.5% had poor knowledge and 64.2% of the nurses had poor practice (Eyasu Bikamo, 2021); in Gondar and Bahirdar referral hospitals, 61.4% of the respondents were reported as not having knowledge about how to perform BLS

and 71.6% of the participants had poor BLS practice (Kelkay et al., 2018).The above-listed study focused only on one type (level) of hospital.

The practice and knowledge of nurses are essential for addressing such problems. Primary, secondary, and tertiary hospital nurses were included in this study. So, the objective of this study was to assess the level of basic life support knowledge, practice and associated factors among nurses working in Hawassa City's public hospitals.

### **1.3. Significance of the study**

This study was conducted to investigate the level of knowledge and practice among nurses on Basic Life Support at public hospitals in Hawassa City, Sidama, Ethiopia. Utilizing the appropriate basic life support knowledge and skills as soon as feasible in potentially life-threatening circumstances, such as severe injuries or acute, non-traumatic medical issues that have been treated with inexpensive procedures, as a result, the nurse must be able to start resuscitation right away after the initial identification. All medical staff should ideally be trained in basic life support and cardio pulmonary resuscitation. Even so, scientific knowledge and appropriate BLS and CPR nursing skills are important factors that distinguish life from death, especially after a cardio respiratory arrest. This is only possible if a person is trained in basic life support and knows when and how to administer it. For various health offices, policymakers, and the ministry of health to take remedial action to close the gap using different techniques, it is important to identify the gap in knowledge and practice on the BLS and describe the primary causes for its occurrence. Also, it is advantageous for nurses to be aware of their own deviation from the necessary standard level. Before being assigned to the emergency department (adult and pedi), intensive care unit, medical ward, surgical ward, pediatrics ward, OB/GYN ward, or operating room, recovery room and delivery room the study will mandate BLS training. It may even result in the inclusion of BLS as a required course in the curriculum. The results of this study might also be used by the Hawassa City Health Office and perhaps other organizations at the national level to plan health care delivery. Also, this study serves as a foundation for future research on relevant topics by another researcher.

## **CHAPTER TWO: OBJECTIVES**

### **2.1. General Objective**

- To assess knowledge, practice and their associated factors towards Basic Life Support among nurses working at public hospitals, in Hawassa city, Sidama, Ethiopia, 2023.

### **2.2. Specific Objectives**

- To assess the level of BLS knowledge among nurses working at public hospitals, in Hawassa city, Sidama, Ethiopia, 2023.
- To determine the level of BLS practice among nurses working at public hospitals, in Hawassa city, Sidama, Ethiopia, 2023.
- To identify factors associated with knowledge towards BLS among nurses working at public hospitals, in Hawassa city, Sidama, Ethiopia, 2023.
- To identify factors associated with practice towards BLS among nurses working at public hospitals, in Hawassa city, Sidama, Ethiopia, 2023.

### **2.3. Research Questions**

This study is expected to answer the following research questions.

- I. What is the level of nurses' knowledge towards BLS, working in Hawassa City public hospitals?
- II. What is the level of nurses' practice towards BLS, working in Hawassa City public hospitals?
- III. What are the factors affecting the nurses' knowledge towards BLS working in Hawassa City public hospitals?
- IV. What are the factors affecting the nurses' practice towards BLS working in Hawassa City public hospitals?

## CHAPTER THREE: LITERATURE REVIEW

### 3.1. Knowledge towards Basic Life Support

A cross-sectional study on basic life support among nurses at Allied Hospital Faisalabad in Pakistan found that participants lacked appropriate knowledge and practice in BLS. Just 34% of participants had enough understanding of BLS, compared to 66% who have insufficient knowledge (A. Arif & C. Riaz, 2020). A study done among nurses in tertiary care hospital in Peshawar, KP, revealed that the good knowledge of participants was 82.02% with a standard deviation of 12.347% regarding cardiopulmonary resuscitation (Shah et al., 2019). According to (Irfan et al., 2019) healthcare professionals participated in a multi-centric, cross-sectional survey at largest city, Pakistan showed that 58.3% of those who responded to the questionnaire scored lower than 50%, indicating inadequate knowledge, nurses had average ratings of 38.4%, on the knowledge section of the BLS.

A cross-sectional study done on basic life support knowledge and practice among nurses of a Tertiary Level Hospital of Nepal 62% of the respondents stated circulation, airway and breathing as the latest CPR sequence and 66 % had inadequate knowledge, 32% had moderate knowledge while minority 2 % had adequate knowledge on Basic Life Support (Bajracharya & Nagarkoti, 2016). An investigation into the understanding and application of BLS was conducted in New Delhi, India. The average knowledge level of nurses was 68% (Sachdeva, 2020). In a study of healthcare workers conducted in a hospital in Nepal, 55% had moderate knowledge, 32% had inadequate knowledge, and 12% had adequate knowledge (Chaudhary et al., 2023).

According to (Sharma et al., 2022) knowledge, awareness, and attitude about basic life support (BLS) among nursing staff practicing at the government medical college in Bharatpur, only 10% of nurses had good knowledge about BLS, while 50% had moderate knowledge, i.e., between 60 to 80% and 40% of nurses had poor knowledge (below 50%).

In a survey done in Shahjahanpur, Uttar Pradesh, 60% of the participants had never heard of BLS before. According to the knowledge scores, 62% of staff nurses have a good understanding of basic life support, compared to 38% of staff nurses who have average knowledge (BLS) (Jayashree Das, 2022). (Singh & Seervi, 2019) found that 67% of the nursing staff had medium understanding of the basic life support algorithm, followed by 20% of nursing staff with high knowledge and 13% of nursing staff with poor knowledge.

A cross-sectional study was conducted in the Islamic Republic of Iran on the relationship between knowledge and skill for basic life support in the personnel of emergency medical services. The knowledge level was poor for 31% of participants, average for 68%, and good for only 1% of participants (Papi et al., 2020).

A cross-sectional study was conducted in Egypt at Tanta University. The BLS knowledge scores of nursing professionals were low, with a mean of  $10.92 \pm 3.73$  and about two-thirds of them (66.08%) had inadequate knowledge levels (Ha & Sm, 2020).

In a survey carried out on knowledge related to basic life support among nurses at Mangalore in Father Muller Medical College Hospital, knowledge of current CPR guidelines showed 3.4% had very good knowledge and 32.5% had a good knowledge level (Varughese & B. D'silva, 2018).

In a study conducted at Dhamar, Yemen, 65% had a BLS knowledge score of at least 50%, corresponding to adequate knowledge about BLS, and 35% had a BLS knowledge score of less than 50%, corresponding to inadequate knowledge about BLS) (Salah et al., 2022). According to (Alkubati et al., 2022) a survey of nurses in Yemen revealed that 53.65% of answer choices for BLS knowledge were correct.

In research among nurses in Ogun State, Nigeria, it was found that 74.9% of respondents had good knowledge of cardiopulmonary resuscitation. According to 96.3% of those surveyed, cardiopulmonary resuscitation should be administered to the patient right away before informing the doctor. 97.8% of participants knew that during CPR, chest compressions stimulate 25% of the heart's activity. According to 84.4% of participants, chest compressions during CPR should be performed in the middle of the chest on the lower half of the breast. 97.2% of respondents correctly stated that adult experiencing cardiac emergencies should have their carotid artery pulse examined (Margaret Ihunanya et al., 2020).

According to Nakuru County Referral Hospital, a study on health personnel' knowledge and skills in cardiopulmonary resuscitation revealed that slightly more than half, 54.3% of the respondents, had poor knowledge of the procedure (Manono et al., 2021).

At the University of Gondar, Ethiopia, only 25.1% (95% CI 21.2 to 29.3) of health professionals had good knowledge about adult CPR. Adult CPR was known well by 16.7% of nurses and poorly by 83.3% (Mersha et al., 2020).

A cross-sectional study was conducted in the Amhara region, Northwest Ethiopia, on knowledge, practice, and associated factors toward basic life support among nurses only 38.6% of study participants had good knowledge (Kelkay et al., 2018).

In Addis Ababa, Ethiopia survey showed that 52.7% of nurses who work for pre-hospital fire and emergency response and rescue authorities had insufficient knowledge of basic life support (Alate, 2019).

In Addis Ababa, Ethiopia, a study conducted on the knowledge, attitude, practice, and associated factors of BLS among nurses revealed 58.5%, more than half of the emergency nurses, had poor knowledge, while the remaining 41.5% had good knowledge of BLS (Eyasu Bikamo, 2021).

### **3.2. Practice towards Basic Life Support**

In Pakistan, an Allied Hospital Faisalabad descriptive cross-sectional study on basic life support among nurses found that 48% have good practice compared to 52% who have poor practice (A. Arif & C. Riaz, 2020). A study of nurses in tertiary care hospital in Peshawar, KP, found that good practice for cardiopulmonary resuscitation was 42.42 percent, with a standard deviation of 10.948% (Shah et al., 2019).

A study on BLS knowledge and practice was carried out in New Delhi, India. 64% of nurses performed poorly (Sachdeva, 2020).

A cross-sectional study was conducted in the Islamic Republic of Iran on the relationship between knowledge and skill for basic life support in the personnel of emergency medical

services. Forty-three percent of the participants had poor skills, 28% had average skills, and only 29% had good skills (Papi et al., 2020).

Nurses perform cardiopulmonary resuscitation at the Babcock University Teaching Hospital in Nigeria, where 65.2% of those surveyed had good practice of CPR. Before beginning cardiopulmonary resuscitation, 65.2% of the participants checked the patient's pulse rate, and 74.1% made sure the patient was lying supine on a relatively firm surface (Margaret Ihunanya et al., 2020).

A study carried out in a private hospital in Seremban on the knowledge and practice of basic life support among registered nurses revealed that 45.9% had a good level of practice toward BLS, while half of the respondents had an average level of practice with 84.1% (Isa et al., 2022).

According to Nakuru County Referral Hospital, knowledge and skills of cardiopulmonary resuscitation among health workers revealed that the majority 61.1% of the respondents had poor CPR practice (Manono et al., 2021).

In a cross-sectional survey on nurses' practice, knowledge, and related aspects of managing the airway and breathing in public hospitals in Addis Abeba, when opening the airway for a patient with a suspected neck injury, 86.3% of the respondents chose the appropriate action (jaw thrust). About 24.5%, 48.0%, and 72.5% of the respondents correctly identified the actions that should be taken for a responsive patient displaying choking symptoms before suctioning and for a comatose injured patient as a first action (Nigatu et al., 2022).

In a study done in Addis Ababa, Ethiopia, it was shown that 56.6% of the nurses who worked for the pre-hospital fire and emergency response and rescue authority had poor BLS practices (Alate, 2019).

A cross-sectional study was conducted in the Amhara region, Northwest Ethiopia, on knowledge, practice, and associated factors toward basic life support among nurses study revealed that 71.6% of the participants had poor BLS practice (Kelkay et al., 2018).

In Addis Ababa, Ethiopia, a study conducted on the knowledge, attitude, practice, and associated factors of BLS among nurses revealed 64.2% had poor practice, whereas only 35.8% of participants had good practice toward basic life support (Eyasu Bikamo, 2021).

### **3.3. Factors associated with knowledge and practice towards BLS**

An integrative literature review: factors affecting ward nurses' basic life support experiences include staff interaction issues, confidence concerns, fear of harm and potential litigation, defibrillation concerns, and basic life support training issues (Dermer et al., 2022).

In a survey carried out on factors associated with knowledge related to basic life support among nurses at Father Muller Medical College Hospital, there was a significant association between the knowledge of staff nurses on CPR and selected variables, namely, age, education, designation, and years of experience; the number of times undergone training on CPR; the number of times actively participating in CPR; and how many times you had an opportunity to provide cardiac compressions in the working area, which had a significant association at the 0.05 level (Varughese & B. D'silva, 2018).

An investigation into the understanding and application of BLS was carried out in New Delhi, India. Variables associated with the participant's knowledge and skills were significantly associated with demographic characteristics: experience, clinical area, and in-service education (Sachdeva, 2020).

In a study of healthcare workers conducted in a hospital in Nepal, there is a strong association significant between the age group and the level of knowledge (Chaudhary et al., 2023).

A cross-sectional study was conducted in Egypt at Tanta University. Statistically significant relationships exist between academic qualifications, the present workplace, previous BLS training, and time since the last training course. For nurses who have received BLS training (total knowledge score:  $3.272 \pm 12.99$ ) and those who have not (total knowledge score:  $3.274 \pm 9.37$ ), there is a significant association between the frequency of correct answers and BLS training (Ha & Sm, 2020).

In the South Africa study, the barriers to achieving high-quality performance were only decreased knowledge, which was significantly influenced by aged nurses. Last training in CPR decreased knowledge performance and skill with increasing time. The most recent type of CPR training ( $p = 0.02$ ) and the type of guidelines participants were trained were factors that influenced skill (Veronese et al., 2018).

In the Islamic Republic of Iran, a cross-sectional study on the association between knowledge and skill for basic life support was carried out among emergency medical services employees.

The only factor significantly associated with the score in basic life support skills was basic life support training ( $P = 0.004$ ). Academic achievement ( $P = 0.046$ ) and participation in

resuscitation training ( $P = 0.006$ ) were strongly related to basic life support knowledge scores (Papi et al., 2020).

In a cross-sectional study at the University of Gondar about factors affecting healthcare professionals' knowledge of adult cardiopulmonary resuscitation, only work experience, CPR training, the number of work settings, exposure to cardiac arrest patients, and reading international CPR guidelines were significantly associated with good knowledge (Mersha et al., 2020).

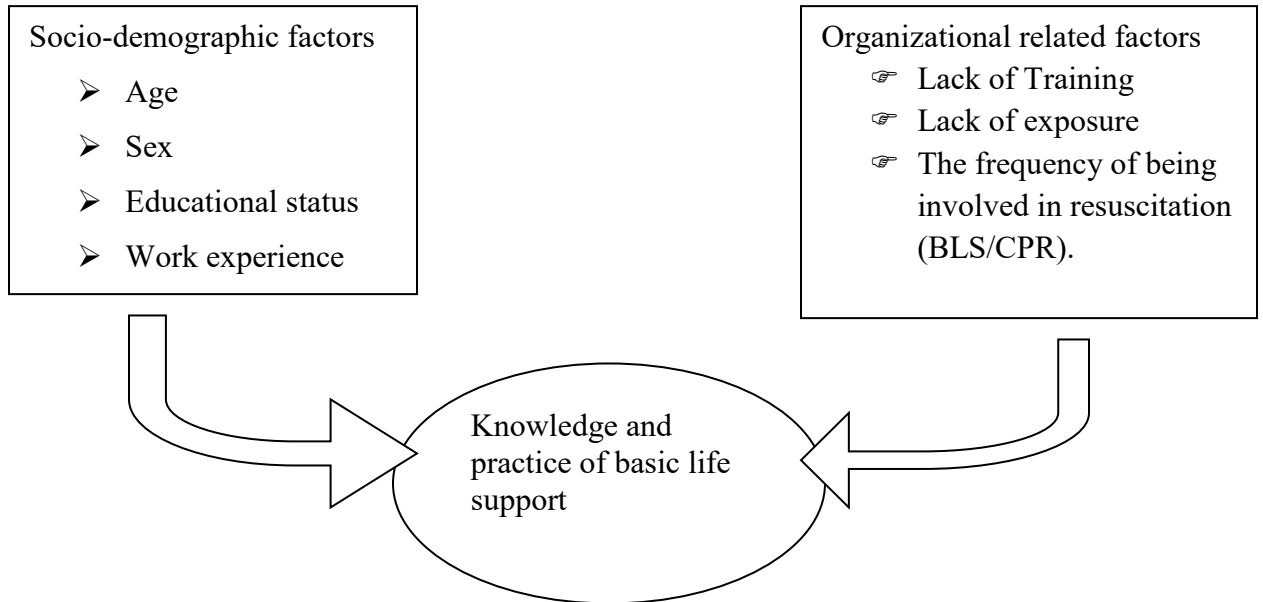
A cross-sectional study was conducted in the Amhara region, Northwest Ethiopia, and carried out factors that were educational status, year of experience, and currently assigned place from socio-demographic characteristics; only resuscitation training and previous exposure to cardiac arrest from other factor-related characteristics of the study participants were the variables significantly associated with the knowledge of BLS at p-value of  $\leq 0.05$  (Kelkay et al., 2018).

In a study carried out in Addis Ababa, Ethiopia, the variables that were significantly associated with the knowledge of BLS at a p-value of less than 0.05 were educational status, prior engagement in critical patient resuscitation, and previous exposure to cardiac arrest among nurses working in ambulances at Fire Emergency Prevention Rescue Authority; With a reference p-value of less than 0.05, the socio-demographic knowledge of nurses involved in patient resuscitation as well as the lack of updated BLS protocols, lack of confidence, and unwillingness to carry out the BLS procedures were all factors that were significantly associated. Also nurses' behavior toward BLS was substantially related to their knowledge, training, and educational level. Nurses with good BLS knowledge are three times more likely

to practice BLS as compared with nurses with poor BLS knowledge associated with BLS practice (Alate, 2019).

According to a study conducted in Addis Ababa, Ethiopia, nurses' behavior toward BLS was substantially related to their knowledge, training, and educational level. Nurses with good BLS knowledge are three times more likely to practice BLS as compared with nurses with poor BLS knowledge (Eyasu Bikamo, 2021).

### 3.4. Conceptual Framework



Source: (Eyasu Bikamo, 2021)

**Figure 1: Conceptual framework on the assessment of knowledge and practice towards basic life support and their associated factors for nurses working at public hospitals in Hawassa City, Sidama, Ethiopia, in 2023.**

## CHAPTER FOUR: MATERIALS AND METHODS

### 4.1. Study design and period

This study was an institutional-based descriptive cross-sectional study design. The data collection was conducted from April 01 to 15, 2023.

### 4.2. Study area

The study was conducted in Ethiopia, Sidama Region, at Hawassa City public hospitals. South of Addis Abeba, the city is situated at a distance of 275 km. The town serves as the capital of the Sidama Region. It lies on the Trans-African Highway 4 Cairo-Cape Town and has a latitude and longitude of 7°3'N 38°28'E and an elevation of 1,708 meters (5,604 ft) above sea level. Its name comes from a Sidamic word meaning "wide body of water". It comprises eight sub-cities, totaling 32 Kebeles, of which 21 are urban and 11 are rural. The central statistics agency of Ethiopia has projected that Hawassa will have 436,992 residents in 2012E.C. Males comprise 224,907 (or 51.4%) of the city's population, while females constitute 212,085 (or 48.6%). (Hawassa.gov.et). City has six private hospitals, twelve health centers, and four public hospitals: Hawassa University Comprehensive Specialized Hospital (HUCSH), Adare General Hospital, Tula Primary Hospital, and Motite-Fura Primary Hospital. A tertiary care facility, the referral hospital, namely Hawassa University Comprehensive Specialized Hospital (HUCSH), is expected to serve 10 to 18 million people in the southern region and the surrounding Oromia zones with 496 nurses and 470 beds (HUCSH, 2021). The General Hospital, namely Adare General Hospital (AGH), has been serving about 1,206,458 people with 189 nurses and 154

beds in the hospital (AGH, 2021). Compared to Tula Primary Hospital's 79 nurses and 90 beds and Motite-Fura Primary Hospital's 34 nurses and 20 beds,

### **4.3. Population**

#### **4.3.1. Source population**

The source populations were all nurses employed at public hospitals in Hawassa city, specifically Hawassa University Comprehensive Specialized Hospital, Adare General Hospital, Tula Primary Hospital, and Motite-Fura Primary Hospital.

#### **4.3.2. Study population**

All selected nurses employed at Hawassa City public hospitals, including the Adult Emergency OPD, Pediatrics Emergency OPD, intensive care unit, medical ward, surgical ward, Pedi ward, OB/GYN ward, delivery room, operating and recovery room were making up the study population.

#### **4.3.3. Study Unit**

The study units were each selected nurses.

### **4.4. Inclusion and Exclusion Criteria**

#### **4.4.1. Inclusion criteria**

All nurses who were currently working in selected public hospitals were available at the time of data collection and volunteered to participate.

#### **4.4.2. Exclusion Criteria**

The study was excluded nurses who serve as administrative staff.

## 4.5. Sampling

### 4.5.1. Sample size determination

The sample size was computed using a single population proportion formula by considering the following assumptions: 95% (percent) confidence interval, critical value,  $Z_{1-\alpha/2} = 1.96$ , with a margin of error of  $d = 0.05$ . The estimated proportion was derived from a study conducted at Addis Ababa University, Ethiopia, among nurses working in an adult emergency unit of federal hospitals; the nurses' good knowledge and good practice and poor knowledge and poor practice about basic life support were 41.5% and 35.8%, and 58.5% and 65.2%, respectively (Eyasu Bikamo, 2021). Therefore, an estimated proportion ( $P = 41.5\%$ ) was taken from a study done previously by Eyasu Bikamo (2021) with a non-response rate of 10%.

$$n_0 = \frac{Z^2 P (1-p)}{d^2}$$

n= total Sample size required

Z = confidence interval of 95 % (1.96)

P =proportion 41.5% (0.415)

d= Margin of error 5 % ( 0.05)

n<sub>0</sub>= sample obtained from single population formula

$$n = \frac{[1.96]^2 * 0.415(1-0.415)}{(0.05)^2} = 373$$

By adding 10% non- response rate,  $n = 410$

A total of 410 nurses who were working at Hawassa city public hospitals were included in the study.

#### 4.5.2. Sampling technique

Hawassa city has one comprehensive specialized hospital, one general hospital, and two primary hospitals. All four public hospitals in Hawassa city were included in the study. The numbers of study participants within each hospital were proportionally allocated, and study participants were selected using a simple random sampling technique from four public hospitals. A sample was selected from each hospital department (unit) namely: Adult Emergency OPD, Pediatric Emergency OPD, intensive care unit, medical ward, surgical ward, Pediatric ward, delivery room, OB/GYN ward, operating room and recovery.

The proportional allocation formula was used to select the final population from each public hospital as follows:

$$n_i = \frac{N_i}{N} n$$

- $n_i$  = Sample size of each hospital
- $N_i$  = Population size of each hospital nurses
- $n$  = Total sample size of the study (410)
- $N$  = Total population size of four hospital nurses (798)

Population size of each hospital nurses and proportionally allocate.

- HUCSH total number of nurses = 496,  $HUCSH =$

$$\frac{496 \text{ (total no of nurses at HUCSH)}}{798 \text{ (total no of nurses at four hospitals)}} \cdot 410 \text{ (total sample size = 255)}$$

- Adare general hospital total number of nurses = 189,

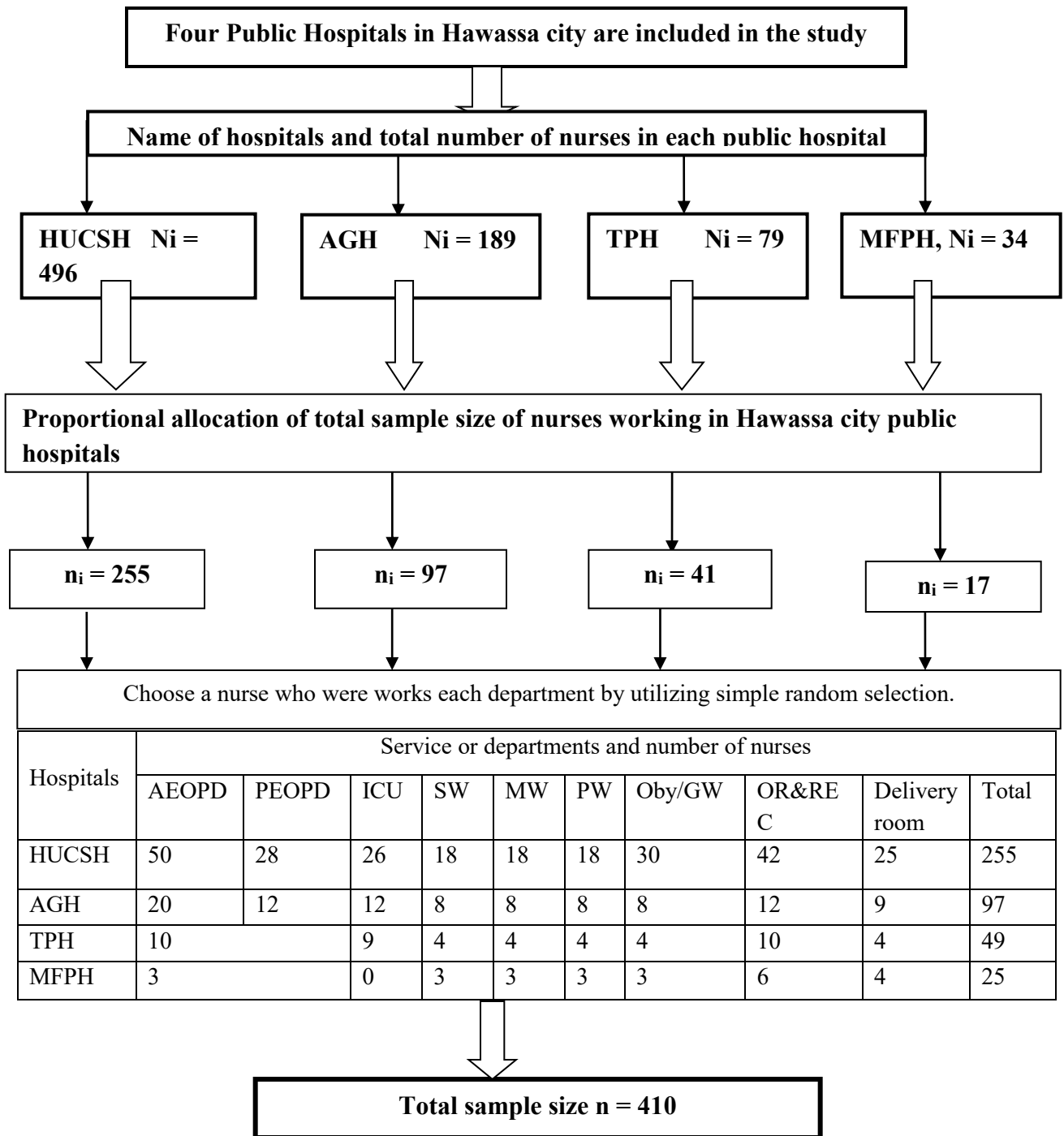
$$AGH = \frac{189 \text{ (total no of nurses at AGH)}}{798 \text{ (total no of nurses at four hospitals)}} \cdot 410 \text{ (total sample size = 97)}$$

- Tula primary hospital total number of nurses = 79,

$$TPH = \frac{79 \text{ (total no of nurses at TPH)}}{798 \text{ (total no of nurses at four hospitals)}} \mathbf{410} \text{ (total sample size)} = 41$$

- Motite-Fura primary hospital total number of nurses = 34,

$$MFPH = \frac{34 \text{ total no of nurses at MFPH}}{798 \text{ (total no of nurses at four hospitals)}} \mathbf{410} \text{ (total sample size)} = 17$$



**Figure 2: Schematic presentation of sampling procedure used to select study participants for assessing nurses' knowledge and practice towards Basic Life Support working at Hawassa city public hospitals, Sidama, Ethiopia, 2023.**

## **4.6. Variables**

### **4.6.1. Dependent Variables**

- ☞ Knowledge level of nurses towards BSL.
- ☞ Practice level of nurses towards BLS.

### **4.6.2. Independent Variables**

#### ☞ **Socio-demographic characteristics**

- Age
- Sex
- Religion
- Educational status
- Year of experience

#### ☞ **Organizational related factors**

- Resuscitation training
- previous exposure to cardiac arrest patients

## **4.7. Data Collection and Analysis**

### **4.7.1. Data Collection instruments**

Self-administered questionnaires were prepared by selecting, adapting, and modifying appropriate evaluation tools from previously published research on a related topic of study in order to assess the nurses' knowledge and practice level about BLS (Eyasu Bikamo, 2021);(Isa et al., 2022); (Alate, 2019); (Kelkay et al., 2018); (Marie Claire, 2017). These questionnaires contain three parts and were prepared in an English version. The questionnaire is divided into three sections: the first section asks questions about the socio-demographic information of the

nurses working in public hospitals; the second section probes knowledge; and the third section examines practice about basic life support.

#### **4.7.2. Data Collection Processing**

A total of four nurses and two supervisors were sorted out. The data was collected from Hawassa University Comprehensive Specialized Hospital, Adare General Hospital, Tula Primary Hospital, and Motite-Fura primary hospital nurses. Four data collectors were provided with questionnaires for selected nurses from each of the selected public hospitals, and the two supervisors were supervising them. The principal investigator oversees data collection, completeness, and consistency daily.

#### **4.7.3. Data quality control measures**

Prior to data collection, the tool was pre-tested on 5% of the sample size by administering it to nurses working at governmental hospital in the Sidama region at Yirba primary hospital to ensure consistency, validity, and acceptability of the questioners; this sample was not included in the actual study. Cronbach's alpha coefficient measures the internal consistency, or reliability, of a set of survey items, and Cronbach's alpha result was 0.75, which showed the strong validity and reliability of the questionnaire. During a one-day training or orientation, data collectors and supervisors were trained and oriented on the importance of the study, how to ensure the confidentiality of study participants, proper filling of a standardized questionnaire, and data collection methods.

#### **4.7.4. Data Analysis**

Data was checked manually for completeness, then cleaned, coded, and entered into Epi-Data version 3.1.0 and exported to SPSS version 20 software for analysis. Descriptive statistics was used to summarize the study's findings. The proportion and frequency table were used to

summarize the categorical variables. To identify factors associated with the outcome variables, a bi-variable binary logistic regression analysis was carried out to compute the association between each independent variable and the outcome variable. Those variables having a p-value less than or equal to 0.25 on bi-variable binary logistic regression analysis was entered jointly into the multivariate binary logistic regression analysis to control all possible confounders. The strength of the statistical association was measured by adjusted odds ratios (AOR) with a 95% confidence interval, where P-values less than 0.05 were declared statistically significant. The results of the study were presented in the form of textual or written explanations, tables, and charts.

#### **4.8. Operational definitions**

The operational definitions are adapted from the study conducted among nurses at Addis Ababa, Federal hospitals (Eyasu Bikamo, 2021), (Alate, 2019).

**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**

Each correct answer was scored 1, and each incorrect answer was coded as 0.

- ☞ **Good knowledge:** - if respondents answer above or equal to 50% on knowledge-related questionnaire about basic life support.
- ☞ **Poor knowledge:** - if the respondents answered less than 50% on knowledge-related questionnaires about basic life support.

### **Leveling Practice status of respondents**

Each correct answer was scored 1, and each incorrect answer was coded as 0.

- **Good practice:** -nurses who meet above or equal 50% on practice questions towards basic life support.
- **Poor practice:** - nurses who scored less than 50% on practice questions towards basic life support.

### **4.9. Ethical Consideration**

Ethical clearance was obtained from Hawassa University College of medicine and Health Science, Institutional Review Board reference number IRB/294/15. Permission letter were obtained from HUCMHS school of Nursing. The purpose and objective of the study were explained to the respondents. Then, written consent was taken from each participant after clearly explaining the purpose of the study. The respondents were informed to withdraw from the study at any time of data collection and/or to refrain from responding to questions if they not interested to participate by any reason.

### **4.10. Result Dissemination**

The findings of the study will be presented to the College of Medicine and Health Science at Hawassa University. The findings of the study will be submitted to the HUCMHS School of Nursing. Also, the findings will be submitted to the health facilities where the study was done. The findings will be published in journals.

## **CHAPTER FIVE: RESULTS**

### **5.1. Introduction**

During the survey, a total of 410 questionnaires were prepared and distributed to nurses, and 375 of the distributed questionnaires were returned, for a response rate of around 91.7%. So the analysis was made based on 375 responses to questionnaires. This chapter presents the final results and the processes through which they were obtained.

### **5.2. Socio Demographic characteristics of nurses**

A total of 375 respondents participated in the study, providing an overall response rate of 91.5%. Half of the respondents, 190 (50.7%), were female. More than half (54.7%) of the respondents had ages ranging from 26–30 years, followed by those above 30 years, 140 (37.3%). 294 (78.4%), were degree holder and 42 (11.2%) had diplomas. More than half of the study participants, 204 (54.4%), had taken training on basic life support. A large proportion of 273 (72.8%) were involved in patient resuscitation during their nursing experience.

**Table 1: Socio-demographic characteristics of the study participants at public hospitals in Hawassa city, Sidama region, Ethiopia, 2023 (n = 375)**

<b>Variables</b>	<b>Category</b>	<b>Frequency (N)</b>	<b>Percent (%)</b>
<b>Sex</b>	Male	185	49.3
	Female	190	50.7
<b>Age category</b>	21-25	30	8
	<b>26-30</b>	<b>205</b>	<b>54.7</b>
	≥31	140	37.3
<b>Religion</b>	Muslim	32	8.5
	<b>Protestant</b>	<b>204</b>	<b>54.4</b>
	Orthodox	139	37.1
<b>Educational status</b>	Diploma	42	11.2
	<b>Degree</b>	<b>294</b>	<b>78.4</b>
	MSc and above	39	10.4
<b>Work experience in hospital</b>			
	less than 1 year	42	11.2
	<b>1 to 5 years</b>	<b>152</b>	<b>40.5</b>
	6 to 10 years	134	35.7
	greater than 10 years	47	12.5
<b>Training about basic life support</b>			
yes	Before graduation	80	21.3
	On job training	124	33.1
No		171	45.6
<b>Involved in patient resuscitation during your nursing experience</b>			
	Yes	273	72.8
	No	102	27.2

## 5.2. Knowledge of the study participants towards basic life support

The study was to determine the level of knowledge of basic life support among nurses at public hospitals in Hawassa City. Knowledge was assessed by posing a series of questions to respondents on basic life support; each correct answer was scored 1, and each incorrect answer was coded as 0, as shown in Table 2, which shows the distribution of the knowledge question among respondents regarding BLS. About nearly one-third of respondents, or 120 (32%), knew that the “C, A, B, and D” are CPR steps that follow for unresponsive, not breathing, and patients who have no pulse. Regarding "basic concepts of basic life support," 336 respondents, or 89.6% of the sample, provided inaccurate answers. Besides that, about two-fourths of the respondents, 168 (44.8%), answered correctly to the question “When you find someone unresponsive in the middle of the road, what will be your first response?" The answer was looking for safety. Moreover, 99 (26.4%) respondents answered correctly to the question about their immediate action “when respondents are not responding after shaking or shouting." One-third 127 (33.3%) of the respondents, knew the compression location, and 180 (48%) knew the location for chest compression in infants.

**Table 2: Nurses’ responses to basic life support knowledge questions in Hawassa City public hospitals, Sidama region, Ethiopia, 2023 (n = 375)**

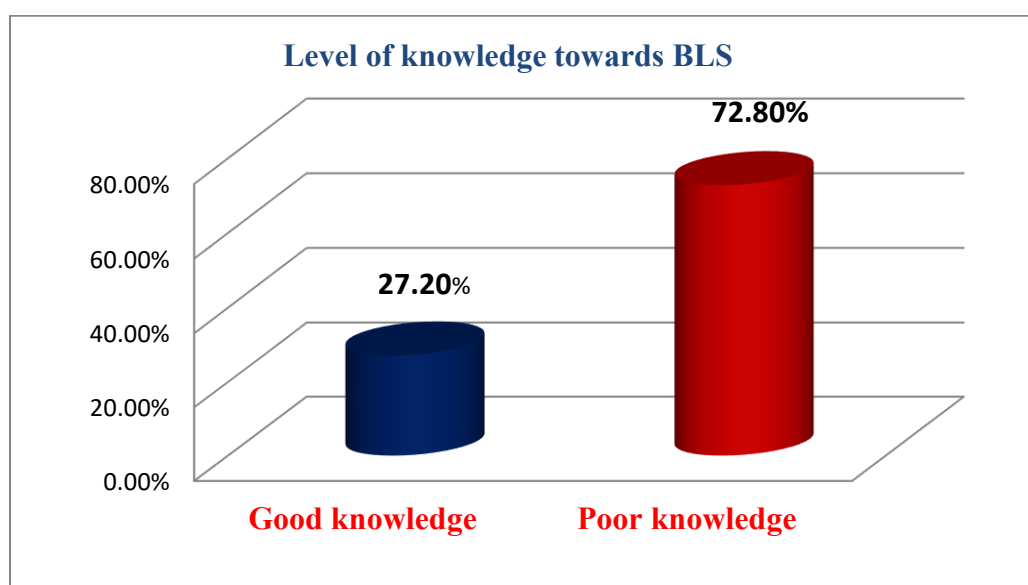
No	Questions	Correct	Incorrect
		Frequency (n) Percent (%)	Frequency (n) Percent (%)
1	Which CPR steps you follow for unresponsive, not breathing and patient who has no pulse, except in new born care?	120 (32.0%)	255 (68%)

---

2	What is the Basic concept of BLS?	39 (10.4)	336 (89.6)
3	When you find someone unresponsive in the middle of the road, what will be your first response? (Note: You are alone there)	168 (44.8)	207 (55.2)
4	If you confirm somebody is not responding to you even after shaking and shouting at him, what will be your immediate action?	99 (26.4)	276 (73.6)
5	What is the location for chest compression?	127 (33.9)	248 (66.1)
6	What is the location for chest compression in infants?	180 (48.0)	195 (52.0)
7	How often should rescuer check pulses when performing CPR?	131 (34.9)	244 (65.1)
8	Depth of compression in adults during CPR	159 (42.4)	216 (57.6)
9	Depth of compression in Children during CPR	133 (35.5)	242 (64.5)
10	Depth of compression in neonates during CPR	126 (33.6)	249 (66.4)
11	Rate of chest compression in adult and Children during CPR	181 (48.3)	194 (51.7)
12	The ratio of CPR, single-rescuer in the adult is	204 (54.4)	171 (45.6)
13	In a newborn, the chest compression and ventilation ratio is	122 (32.5)	253 (67.5)
14	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 response?	140 (37.3)	235 (62.7)
15	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?	121 (32.3)	254 (67.7)

---

To determine the level of knowledge, knowledge scores were calculated to report whether the participants had either correctly or incorrectly answered the questions of knowledge. The scores were categorized into levels depending on average knowledge score. Based on this, scores greater than or equal to 50% indicate a good knowledge level, while scores less than 50% represent a poor knowledge level towards basic life support. Therefore, among 375 respondents, 102 (27.2%) [95% CI (22.7–31.7)] had good knowledge of basic life support. Described in Figure 3,



**Figure 3: Knowledge level towards basic life support among nurses working at Hawassa City public hospitals, Sidama region, Ethiopia, 2023**

### **5.3. Practice of the study participants towards basic life support**

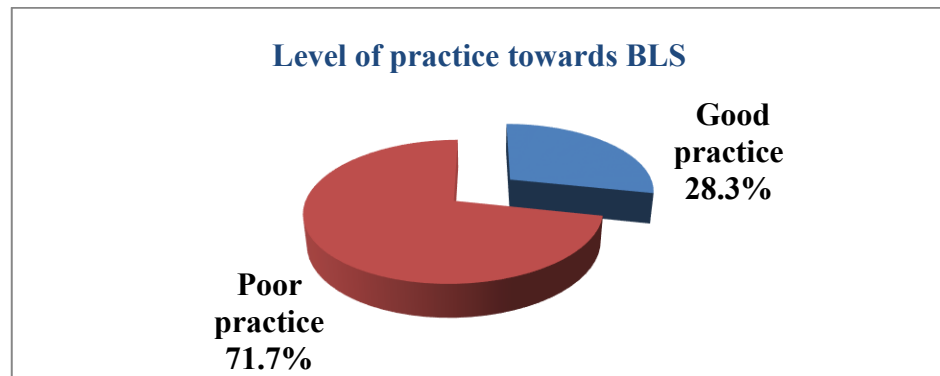
The study was to determine the level of practice of basic life support among nurses at public hospitals in Hawassa City. Practice was assessed by posing a series of questions to respondents on basic life support. Each correct answer was scored 1 and each incorrect answer was coded as 0, as shown in Table 3, which shows the distribution of the practice question among respondents regarding the appropriate maneuver to open the airway of the injured victim. 155 (41.3%) respondents practiced the jaw thrust maneuver. More than half, or the majority, of participants responded to practice questions, and 237 (63.2%) participants responded to the questions about the critical components of effective CPR, which include beginning chest compressions in less than ten seconds, pushing hard and fast, and minimizing interruptions. 223 (59.5%) participants recognized that the carotid pulse was what was being checked in adults during CPR, and 206 (54.9%) respondents were aware of how to handle choking in infants; however, over 70% of participants provided an inaccurate response when asked. What is a sign of a significant airway obstruction? How often should breath be given to an adult receiving two-rescuer CPR who has an advanced airway in place? The five links in the adult chain of survival include all of the following, except? There were 300 (80.0%), 285 (76.0%), and 277 (73.9%), respectively.

**Table 3: Nurses' responses to basic life support practice questions in Hawassa City public hospitals, Sidama region, Ethiopia, 2023 (n = 375)**

No	Questions	Correct	Incorrect
		Frequency (n) Percent (%)	Frequency (n) Percent (%)
1.	Which appropriate maneuver to opening the airway of the injured victim?	155 (41.3%)	220 (58.7%)
2	The five links in the adult Chain of Survival	90 (24.0%)	285 (76.0%)
3	How often should rescuers switch roles when performing 2-rescuer CPR?	175 (46.7%)	200 (53.3%)
4	The initial Basic Life Support steps for adults	165 (44.0%)	210 (56.0%)
5	Where should attempt to perform a pulse check in an adult	<b>223 (59.5%)</b>	152 (40.5%)
6	The proper steps for operating an AED	144 (38.4%)	231 (61.6%)
7	Which one of the following Sign/s of severe airway obstruction?	75 (20.0%)	300 (80.0%)
8	In an adult with an advanced airway in place during 2-rescuer CPR, how often breaths should be administered	98 (26.1%)	277 (73.9%)
9	The critical characteristics of high-quality CPR	<b>237 (63.2%)</b>	138 (36.8%)
10	The correct step in management chocking of the infant	<b>206 (54.9%)</b>	169 (45.1%)
11	The correct method in the management of choking in adults and responsive?	185 (49.3%)	190 (50.7%)

To determine the level of practice, practice scores were calculated to report whether the participants had either correctly or incorrectly answered the questions of practice. The scores were categorized into levels depending on average practice score. Based on this, scores greater

than or equal to 50% indicate a good practice level, while scores less than 50% represent a poor practice level towards basic life support. Therefore, among 375 respondents, 106 (28.3%) [95% CI (23.7–32.9)] had good practice with basic life support. Described in Figure 4,



**Figure 4: Nurses level of practice towards basic life support at Hawassa City public hospitals, Sidama region, Ethiopia, 2023**

#### 5.4. Factors associated with the knowledge of participants about basic life support

In the bivariate binary logistic regression analysis, sex, age, education level, work experience, involvement in patient resuscitation, and religion were the variables eligible for multivariate binary logistic regression.

After adjusting for potential confounding variables by running multivariable binary logistic regression, sex, age, and work experience were found to be significantly associated with the knowledge score. In this regard, being female was found to be 1.2 [AOR=1.2, 95% CI (1.1-3.8)] times knowledgeable as compared with being male. Being in the age range of 26–30 years was 3.8 [AOR=3.8, 95% CI (1.75–8.4)] more likely to have good knowledge about basic life support. Whereas, being >30 years old was 2.5 [AOR=2.5, 95 CI (2.39–8.25)] times more knowledgeable as compared with its counterpart. Having 1–5, 2–5, and >10 work experience was found to be 1.5 [AOR = 1.5, 95% CI (1.26–2.23)], nearly three times [AOR = 2.5, 95% CI (1.7–3.9)], and 1.5 times [AOR =1.5, 95% CI (1.22–5.3)] more knowledgeable as compared with their counterparts.

**Table 4: Factors affecting the knowledge of nurses about basic life support working at public hospitals in Hawassa City, Sidama region, 2023**

Variables	Knowledge		COR 95% CI	AOR 95% CI
	Good	Poor		
Sex				
Male	45	140	1	
Female	57	133	1.33(1.2,6.75)	<b>1.2(1.1- 3.8)**</b>
Age				
20-25	2	28	1	<b>1</b>

26-30	50	155	4.5(2.69-8.25)	<b>3.8(1.75-8.4)**</b>
>30	50	90	7.8(2.69-8.25)	<b>2.5(2.39-8.25)**</b>
<b>Religion</b>				
Muslim	1	29	1	1
Protestant	48	157	8.9(0.3-10.6)	2.7(0.2,6.13)
Orthodox	50	90	16(0.9-20.6)	3.5(0.2,9.1)
<b>Education level</b>				
Diploma	12	30	1	1
Degree	75	219	1.5(0.69-8.25)	1.8(0.45-8.1)
MSc and Above	15	24	1.6(0.4-5.5)	1.3(0.2-3.3)
<b>Work experience</b>				
<1 years	6	36	1	1
1-5 years	37	115	1.93(1.76-3.56)	<b>1.5(1.26-2.23)**</b>
6-10 years	41	93	2.64 (1.6-4.6)	<b>2.5(1.7-3.9)**</b>
≥11 years	18	29	3.72(2.2-9.5)	<b>1.5(1.22-5.3)**</b>
<b>Involved in patient resuscitation</b>				
Yes	82	191	1.76(0.44-3.56)	1.5(0.76-3.56)
No	20	82	1	

**\*\* indicates the significant association on at p. value < 0.05**

### 5.5. Factors associated with the practice of basic life support among nurses

Nurses' who were female were 1.2 times more likely to practice BLS as compared to those who were male [AOR=1.2, 95% CI (1.1, 3.8)]. Nurses' who had taken training were 1.5 times more likely to practice BLS as compared to those who had not taken training [AOR=1.5, 95% CI (1.36, 3.6)]. As shown in the present study, knowledgeable nurses were two times more likely to perform BLS as compared to those with lesser or inadequate knowledge. [AOR = 1.8, 95% CI (1.4, 4.6)].

**Table 5: Factors affecting the practice of nurses about basic life support working at public hospitals in Hawassa City, Sidama region, 2023**

Variables	Practice		COR 95%CI	AOR 95%CI
	Good	Poor		
Sex				
Male	45	140	1	
Female	61	129	1.47(1.3,6.5)	<b>1.2(1.1-3.8)**</b>
Age				
20-25	10	20	1	1
26-30	50	155	4.5(0.69-8.25)	3.8(0.75-8.4)
>30	46	94	7.8(0.69-8.25)	2.5(0.39-8.25)
Training				
Yes	68	136	1.75(1.5-4.6)	<b>1.5(1.36-3.6)**</b>
No	38	133	1	
Knowledge				
Yes	60	42	7.05(1.5-9.6)	<b>1.8(1.4-4.6)**</b>
No	46	227	1	

\*\* indicates the significant association on at p. value < 0.01

\* indicates the significant association on at p. value < 0.05

## CHAPTER SIX: DISCUSSION

BLS is an essential medical procedure that is critically vital for individuals who face sudden cardiopulmonary arrest secondary to cardiac and respiratory failure, choking, and drowning. Therefore, BLS competence is crucial to both preventing and preserving the life of a patient who has unexpectedly collapsed. So nurses should become knowledgeable and skilled in delivering quality basic life support. The results of this study, however, show that nurses employed by Hawassa City public hospitals lacked basic life support knowledge and practice.

The overall level of knowledge towards BLS in this study was 27.2% [95% CI (22.7–31.7)] and found to be consistent with the studies conducted in Pakistan (34%) (A. Arif & C. Riaz, 2020). Similarly the result was in line with a study done in Rwanda referral hospital (25%) (Marie Claire, 2017); and in Father Muller Medical College Hospital (32.5%) (Varughese & B. D'silva, 2018).

However, the level of knowledge in this study was lower than the reports in Yemen, (65%) (Salah et al., 2022) and (53.65%) (Alkubati et al., 2022) and in Addis Ababa, Ethiopia (47.3%) (Alate, 2019). Likewise, the finding of this study was lower than another study on the BLS revealed 41.5% had good knowledge of BLS (Eyasu Bikamo, 2021) and in Egypt, Tanta university staff nurses, 66.1% had adequate knowledge levels (Zayed & Saied, 2020). The possible reason might be due to the intervention and involvement of a higher proportion of nurses working in the previous study. Only registered nurses who received BLS learning sessions were included in the Egypt study, and there was a difference in the selection of study subjects in the Yemen study.

Being female was found to be 1.2 times to be knowledgeable as compared with being male. The possible explanation might be due to the fact that being female could have many more exposures and contacts with people having knowledge about basic life support which is more practical in the community than males and in this study proportion of female was higher than male. The work environment of males and females has its own impact on shared information. (Dessalegn et al., 2020).

Being in the age above 26-30 years was 3.8 times more to have good knowledge about basic life support. Whereas, being in the age of >30 years was 2.5 times more knowledgeable as compared with its counterpart (younger age groups). The possible explanation might be due to the fact that as age increase the awareness and exposure also increase, this fact was supported by the study conducted in Saudi Arabia which revealed that those with older age were knowledgeable as compared with younger age (Midani et al., 2019).

In this study the level of good practice about BLS (basic life support) was found to be 28.3% [95% CI (23.7–32.9)]. The result was in line with the study conducted in New Delhi, India (36%) (Sachdeva, 2020) and in the Amhara region, Northwest Ethiopia (28.4%) of the participants had good BLS practice (Kelkay et al., 2018).

However the level of good practice about BLS in this study was lower than the levels of good practice in the Islamic Republic of Iran which is about 67% had good practice (Papi et al., 2020) and in Seremban which reported 45.9% had a good level of practice toward BLS (Isa et al., 2022). Similarly, our finding was lower than the previous report in Addis Ababa, Ethiopia, it was shown that 44.4% had poor BLS practices (Alate, 2019). Additionally, this finding is

lower than study carried out in Addis Abeba(35.5%) (Eyasu Bikamo, 2021).The possible difference could be the tools which the authors used peer to rate the actual practice of nurses, this might influence the result. Early initiation and timely provision of BLS are the critical elements which the nurses has supposed to do it, therefore the nurse has to be the competency so as to deliver high quality BLS. Nurses are the usual and the first responders when an emergency occurs in the hospital set up. The frequency, exposure and repeated performance of life saving maneuvers like BLS make them more competent and skillful in delivering BLS.

As it is shown in multivariate analysis (Table 5) those Nurses being female were 1.2 times more likely to practice BLS as compared to those who were male. Nurses who had knowledge towards BSL are 2 times more likely to practice BLS than nurses who had poor knowledge. Participants who had experienced previous training were 1.5 times more likely to perform BLS as compared to those without such experience; this result is in line with Japan study (Tanigawa et al ,2011 ) and Kelkay et al (2018 )in Amhara, Ethiopia. The possible reason could be explained as many literatures documented the undeniable importance of training on individual psychomotor skill.

## **CHAPTER SEVEN: CONCLUSION**

Basic Life Support (BLS) is the foundation for saving lives after cardiac arrest, respiratory arrest, and choking in adults, children, and infants. In hospital cardiac arrest situations as well as community emergency calls, nurses are frequently the initial responders. In conclusion, the majority of correct measures of BLS for specific knowledge and practice variables were less than 50%, and the overall knowledge level and practice level were less than 50%, which was lower. The study's findings show that for nurses working at public hospitals in Hawassa City, knowledge and practice of BLS were poor, which is a serious problem that needs to be fixed in the future. Being female, age and work experience were found to be significantly associated with nurses good knowledge of BLS. Being female, Nurses who had taken training and, being knowledgeable nurses were found to be significantly associated with the nurses good practice of BLS.

## CHAPTER EIGHT: RECOMMENDATIONS AND LIMITATIONS

### 8.1. Recommendations

Based on the above conclusion, the following are recommended:

- **Provision of ongoing professional development:** The study emphasizes the need for continuous professional development in BLS for nurses. It highlights that knowledge and skills can diminish over time if not regularly reinforced and updated. Therefore, it is crucial to provide opportunities for nurses to participate in refresher courses, workshops, and seminars to ensure their BLS knowledge and practice remains current.
- **Collaboration with healthcare stakeholders:** Collaboration with healthcare stakeholders, including government agencies like Hawassa city administration Health department, professional nursing associations, and hospital management, is crucial for the successful implementation of BLS training programs. Joint efforts can help secure funding, establish policies, and ensure the integration of BLS into healthcare systems.
- **Regular competency assessments:** Implementing regular competency assessments for BLS among nurses is vital. This can be done through practical skills assessments, written exams, or scenario-based simulations. Competency-based assessments ensure that nurses maintain proficiency in BLS and identify any areas that require further training or improvement.
- **Establish BLS committees and champions:** Forming BLS committees within healthcare facilities can promote a culture of BLS excellence. These committees can develop and oversee BLS training programs, monitor compliance, and provide ongoing support and guidance to nurses. Identifying BLS champions among nursing staff can also help drive enthusiasm and motivation for BLS training and practice.

- **Strengthen research and data collection:** Encouraging research on BLS and establishing a robust data collection system can provide valuable insights into the effectiveness of BLS interventions, identify areas for improvement, and contribute to evidence-based practice. Research findings can inform policy decisions, curriculum development, and the implementation of quality improvement initiatives.
- **Community engagement and public awareness:** Engaging the community in BLS education and promoting public awareness about the importance of bystander CPR can significantly impact outcomes in cases of cardiac arrest. Community-based BLS training programs, public demonstrations, and campaigns can empower individuals to recognize emergencies, initiate CPR, and activate emergency medical services promptly.
- Additionally, future researchers better carryout multicenter (including the private sectors) studies to address the problem in a wider context. Further study by using observational checklist and triangulated study design to rule out the factors, and to formulate standards and guide-lines related to basic life support.

## **8.2. Limitations of the study**

- The use of a questionnaire as the sole measure of theoretical knowledge was one of the study's weaknesses. On the other hand, theoretical understanding and psychomotor abilities are both necessary for actual performance.
- This survey does not cover the respondents' attitudes regarding BLS.
- Only governmental hospitals are the subject of this investigation.

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## ANNEXES

### Annex I: Participant information sheet

Dear participants

My name is \_\_\_\_\_ I am working as a data collector in the survey will conduct by Hawassa University, College of Medicine and Health Science, and School of Nursing. This study is to assess knowledge and practice towards Basic Life Support among nurses working at public hospital in Hawassa city, Sidama, Ethiopia, 2023. And all selected nurses who fulfill the criteria during data collection period will be participating in study.

**Purpose:** The purpose of this study is to assess knowledge and practice regarding Basic Life Support among nurses working in public hospitals in Hawassa, Ethiopia. The study's findings may assist health institutions and health workers in taking action based on the findings, as well as new investigators in dealing with them using a large sample size and including private hospitals.

**Risk and benefits:** The risk is that it may take a few minutes of your time. There would not be any direct payment for participating in this study. The study has no direct and immediate benefit for the participating nurses, but in the future, the information generated from the study will help to improve the basic life support knowledge and practice of all nurses.

#### **Procedure**

The questionnaire contain, self administered questionnaire to assess nurses knowledge and practice regarding basic life support and their associated factors in public hospital in Hawassa city, Sidama Region, Ethiopia. In order to effectively attain the objective of the research, we are requesting your help. Your responses will be completely confidential. It is your full right to refuse in responding any question.

#### **Confidentiality**

The information you will provide us for this study will be confidential. The questionnaire will be coded to exclude your names. No reference will be made to anyone except the principal investigator and supervisors.

#### **Rights**

Participation for this study is fully voluntary. You have full right to participate or refuse from this research. You will have the right to withdraw from the study at any time without losing

any of your right, and you will not Expected to answer any question that you will not to answer.

**Person to Contact**

If you want to know more information & any question regarding this research project, you will be able to contact an individual through the following address.

Mrs. Betelhem Demeke,

Mobile: +251913396655

E-mail: [bettydemeke4@gmail.com](mailto:bettydemeke4@gmail.com)

**Annex II: Consent form**

I understand the purpose, the risk and benefit of this study. I also understand that the research will not bring risk and complication to me and to my family. I have been told that if, I feel discomfort to respond to any of the question, I have free right to withdraw it any time, when I wish. I have understood that, the information given and the participation is completely voluntary. I have been told that my answers to the questions will not be given to anyone and not expect to write my name. Now I am giving my consent to participate in the study voluntarily.

\_\_\_\_\_ Yes, I want to participate in the study (Please go to the next page).

\_\_\_\_\_ No, I don't participate in the study (Thank you very much!).

Witness:

Signature \_\_\_\_\_ Date \_\_\_\_\_

Data collector name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_ / \_\_\_\_ / \_\_\_\_

### Annex III: Questionnaires (study instrument)

Dear participant, rate the questions in relation to the knowledge and skills on BLS. You are required to tick where applicable.

Questionnaire code \_\_\_\_\_

Name of the hospital \_\_\_\_\_

#### Part 1: Socio-demographic variable Questions

S.no	Questions	Variable	Code	Skip
1.	Sex	Male	1	
		Female	2	
2.	Age in year			
3.	Religion			
4.	Education level in nursing	Diploma	1	
		Degree	2	
		MSc and above	3	
5.	Work experience in hospital(in years)	<1	1	
		1-5	2	
		6-10	3	
		>10	4	
6.	Did you have training about basic life support (Resuscitation)?	Yes, if yes, answer no 6	1	
		No	2	
7.	When did you take training about basic life support?	Before graduation	1	
		While working(on the job training)	2	
8.	Did you ever involve in patient resuscitation during your nursing experience?	Yes	1	
		No	2	

## Part 2: Knowledge questions towards BLS

S. no	Knowledge questions	Response	Code	Skip
1.	Which CPR steps you follow for unresponsive, not breathing and patient who has no pulse, except in new born care?	A, B, C, D	1	
		C, A, B, D	2	
		D, A, B, C	3	
2.	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	
3.	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	
4	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	
5.	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	
6.	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	
7.	How often should rescuer check pulses	After each cycle	1	

	when performing CPR?	After two cycles	2	
		After five cycles	3	
		After 20 minutes of CPR	4	
8.	Depth of compression in adults during CPR	1½ – 2 inches	1	
		2½ – 3 inches	2	
		1 – 1½ inches	3	
		½ – 1 inch	4	
9.	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	
10.	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	
11.	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	
12.	The ratio of CPR, single-rescuer in the adult is	15:2	1	
		5:1	2	
		30:2	3	
		15:1	4	
13.	In a newborn, the chest compression and ventilation ratio is	15:2	1	
		5:1	2	
		30:2	3	
		3:1	4	
14	If you and your friend are having	Give abdominal thrusts	1	

	food in a canteen and suddenly your friend starts expressing symptoms of choking, what will be your first response?	Give chest compression	2	
		Confirm foreign body aspiration by talking to him	3	
		Give back blows	4	
<b>15.</b>	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	

**Part 3: Practice related questions towards basic life support**

S. no	Practice related question	Response	Code	Skip
1.	Which appropriate maneuver to opening the airway of the injured victim?	Head tilts chin lift	1	
		Jaw thrust	2	
		Head tilt	3	
2.	The five links in the adult Chain of Survival include all of the following <b>EXCEPT:</b>	Early CPR	1	
		Integrated post-cardiac arrest care	2	
		Advanced airway placement	3	
		Rapid defibrillation	4	
3.	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	
4.	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	
5.	Where should you attempt to perform a pulse check in an adult?	Carotid	1	
		Brachial	2	
		Ulnar	3	
		Temporal	4	
6.	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,	2	

		analyze the rhythm, clear the patient, and deliver the shock		
		Attach electrode pads, check pulse, shock patient, and analyze rhythm	3	
		Check pulse, attach electrode pads, and analyze rhythm, shock patient	4	
7.	Which one of the following Sign/s of severe airway obstruction?	Able to cough	1	
		crying	2	
		Unable to cry	3	
8.	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	
9.	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	
10.	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	
11.	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	

