KNOWLEDGE, ATTITUDE AND PRACTICE OF BASIC LIFE SUPPORT AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN.

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A ONE YEAR PROJECT PRESENTED TO THE DEPARTMENT OF COMMUNITY HEALTH IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MBBS) DEGREE.

SUPERVISOR
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FEBRUARY, 2026

DECLARATION

We hereby declare that this research project titled **KNOWLEDGE, ATTITUDE AND PRACTICE OF BASIC LIFE SUPPORT AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN** will be conducted under supervision and has not been submitted in part or full for any purpose.

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CERTIFICATION

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DEDICATION

This work is dedicated to God Almighty, whose divine grace, mercy, and strength sustained us throughout the duration of this project.

We extend our deepest appreciation to our families and friends; their unwavering moral and financial support, combined with their patient understanding, served as a constant source of motivation. Our heartfelt gratitude also goes to our teachers, whose invaluable mentorship and guidance were essential in navigating the complexities of this endeavor

ACKNOWLEDGEMENT

We give all the glory to God for His exceeding abundant grace and the supply of strength throughout this journey. This project was made possible under the expert guidance and steadfast oversight of our supervisor, Prof. A.N. Ofili. We are immensely grateful for her mentorship, patience, and the invaluable insights she provided, which were instrumental in the successful completion of this research.

IHENYEN EHITIEMORIA

This project would not have been possible without some notable key persons who contributed immensely to the success of this work. These include my lovely parents Mr. A.A. Ihenyen, Mrs. Magdalene Ihenyen, my amazing brothers Osemenkhian Ihenyen, Ebosetale Ihenyen, and Omoaghe Ihenyen, as well as my Uncle Mr. Francis Ukadike, My pastor and Mentor Pst. Raw Omorede, my indefatigable editor Paulina A.J. and my wonderful cousin Mr. Oseremen.

ISIBOR DAVID EDEOGHOSA

I am deeply grateful to my parents, Mr. and Mrs. Isibor, for their constant support and sponsorship. My sincere thanks go to my colleagues Jeremiah, Success, Faith, Erica, Emmanuel, and Nadja for their contributions to this success. I also thank my mentors, Pst. Mike Okunbor, Pst. Ephraim Oghieaga, and Pst. Dickson Asemota, for their invaluable guidance.

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LIST OF ABBREVIATIONS

ACLS: Advanced Cardiac Life Support

AED: Automated External Defibrillator

ALS: Advanced Life Support

BLS: Basic Life Support

CAB: Compressions-Airway-Breathing

CMUL: College of Medicine, University of Lagos

CPR: Cardiopulmonary Resuscitation

H_0: Null Hypothesis

H_1: Alternative Hypothesis

IBM: International Business Machines

KAP: Knowledge, Attitude, and Practice

MBBS: Bachelor of Medicine, Bachelor of Surgery

PEA: Pulseless Electrical Activity

SCA: Sudden Cardiac Arrest

SPSS: Statistical Package for the Social Sciences

VF: Ventricular Fibrillation

VT: Ventricular Tachycardia

WHO: World Health Organization

ABSTRACT

Background: Basic Life Support (BLS) is a critical life-saving intervention for individuals experiencing cardiac arrest, respiratory distress, or airway obstruction. Medical students, as future frontline healthcare providers, are expected to possess adequate knowledge, positive attitudes, and competent practical skills in BLS. However, studies have reported deficiencies in these areas among medical students globally.

Objective: This study aimed to assess the knowledge, attitude, and practice of Basic Life Support among clinical medical students at the University of Benin, Edo State, Nigeria.

Methods: A descriptive cross-sectional study was conducted among 452 clinical medical students (400L to 600L) at the University of Benin. A stratified random sampling technique was used to select participants. Data were collected using a structured, self-administered questionnaire adapted from previous studies and based on the American Heart Association (AHA) 2020 BLS guidelines. The questionnaire assessed socio-demographic characteristics, knowledge (13 items), attitude (7 items on a Likert scale), and practice (10 items) of BLS. Data were analyzed using IBM SPSS version 27.0. Descriptive statistics were presented as frequencies and percentages. Associations between categorical variables were tested using the Chi-square test, and logistic regression was used to identify predictors of good KAP. A p-value < 0.05 was considered statistically significant.

Results: A total of 452 questionnaires were distributed and retrieved, yielding a 100% response rate. The mean age of respondents was 22.92 ± 2.74 years, and 59.5% were male. Overall, only 30.8% of respondents demonstrated good knowledge of BLS, while 69.2% had poor knowledge. Knowledge improved significantly with academic level ($p < 0.001$), with 600-level students showing the highest proportion of good knowledge (43.6%). Female students had significantly better knowledge than males ($p = 0.029$). Regarding attitude, 78.5% of respondents demonstrated a good attitude towards BLS, while 21.5% exhibited a poor attitude. The majority (96.0%) agreed that BLS is necessary for medical students, and 91.4% supported its inclusion in the medical school curriculum. However, practice levels were markedly low, with 86.5% demonstrating poor practice. Only 13.5% had good practice scores. Mannequin training was significantly associated with better practice ($p = 0.026$). Major barriers to BLS acquisition and performance included limited availability of BLS training (68.8%), lack of practice opportunities (67.9%), fear of causing harm (56.9%), and fear of legal consequences (50.9%). Furthermore, 57.7% of respondents did not believe their medical school provided adequate BLS training, and 70.8% were uncomfortable using an Automated External Defibrillator (AED).

Conclusion: This study revealed significant gaps in the knowledge and practice of BLS among clinical medical students at the University of Benin, despite a generally positive attitude towards its importance. The lack of formal training, inadequate hands-on practice with mannequins, and psychological barriers such as fear were identified as major hindrances.

Keywords: Basic Life Support, Knowledge, Attitude, Practice, Medical Students, University of Benin, Cardiopulmonary Resuscitation.

DEFINITION OF TERMS

Advanced Cardiac Life Support (ACLS): a set of clinical interventions for the urgent treatment of cardiac arrest, stroke, and other life-threatening medical emergencies that goes beyond Basic Life Support, including advanced airway management, cardiac monitoring, and administration of medications.

Advanced Life Support (ALS): a level of care that includes advanced medical procedures such as intravenous access, drug administration, and cardiac rhythm interpretation, typically provided by trained healthcare professionals.

Automated External Defibrillator (AED): a portable electronic device that automatically diagnoses life-threatening cardiac arrhythmias such as ventricular fibrillation and pulseless ventricular tachycardia and delivers a electric shock to restore a normal heart rhythm.

Basic Life Support (BLS): a type of emergency care that healthcare providers and public safety professionals provide to individuals experiencing cardiac arrest, respiratory distress, or obstructed airway, consisting of initial assessment, airway maintenance, chest compressions, and expired air ventilation.

Cardiopulmonary Resuscitation (CPR): an emergency procedure performed to manually preserve intact brain function by maintaining blood circulation and breathing in a person who has gone into cardiac arrest.

Chain of Survival: a sequence of critical actions that maximize the chance of survival from sudden cardiac arrest, including early recognition, early CPR, rapid defibrillation, advanced life support, and integrated post-cardiac arrest care.

Chest Compression: the act of applying rhythmic pressure to the lower half of the sternum to manually pump blood through the heart and maintain circulation to vital organs during cardiac arrest.

Compressions-Airway-Breathing (CAB): the 2020 American Heart Association recommended sequence for Basic Life Support, prioritizing chest compressions before airway management and rescue breathing.

Emergency Medical Services (EMS): a system that provides emergency medical care and transportation to individuals experiencing medical emergencies, activated by calling designated emergency numbers.

Mannequin: a realistic anatomical model of the human body used for teaching and practicing cardiopulmonary resuscitation and other life support techniques in a simulated environment.

Pulseless Electrical Activity (PEA): a cardiac rhythm where organized electrical activity is present on the electrocardiogram but there is no measurable pulse or effective cardiac contraction.

Rescue Breathing: the act of providing artificial ventilation by exhaling into the mouth of a person who is not breathing adequately to maintain oxygenation.

Simulation-based Learning: an educational method that uses realistic scenarios and mannequins to replicate clinical situations, allowing students to practice and develop skills in a controlled, safe environment.

Sudden Cardiac Arrest (SCA): the abrupt loss of heart function, breathing, and consciousness, typically caused by an electrical disturbance in the heart that disrupts its pumping action.

Ventricular Fibrillation (VF): a life-threatening cardiac arrhythmia characterized by rapid, disorganized electrical activity in the ventricles, resulting in ineffective pumping of blood and sudden cardiac arrest.

Ventricular Tachycardia (VT): a fast heart rhythm originating from the ventricles that can be life-threatening and may lead to ventricular fibrillation and cardiac arrest if not promptly treated

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Basic Life Support (BLS) is a type of care that health care providers as well as public safety professionals provide to anyone experiencing cardiac arrest, respiratory distress or obstructed airway breathing. The key elements of BLS consist of initial assessment, airway maintenance, chest compression and expired air ventilation. This includes detection of sudden cardiac arrest (SCA), activation of the emergency response system, early Cardio Pulmonary Resuscitation (CPR) and rapid defibrillation with an Automated External Defibrillator (AED). Basic Life Support is important to provide relief to someone undergoing a cardiac arrest or respiratory distress.[1]

Cardiac arrest which happens suddenly is a significant contributor to mortality on a global scale. A significant proportion of individuals experiencing cardiorespiratory arrest are neonates and infants who have cardiac illnesses. In order to reduce mortality rates associated with severe cardiac and respiratory conditions, it is imperative that healthcare practitioners, including undergraduate medical students during their clinical training, have constant access to the most current emergency protocols. [2]

Since cardiac arrest is one of the major causes of death around the world, acquiring knowledge and skill regarding BLS which is an important component of cardiopulmonary resuscitation (CPR) will help to improve survival rate as well as quality of life and ultimately reduce morbidity and mortality. CPR helps to maintain the oxygenated blood circulation in the body and

it is continuously done until the heart can be restarted. Although people seem to be aware of the concept of BLS, most of the time is has been observed that the attitude and skill level is not sufficient. A good knowledge regarding BLS and CPR should be cultivated within individuals especially healthcare professionals so that they can engage in life saving measures in case of an emergency.[1]

Research has shown that the lack of knowledge, attitude, and practice to assist with cardiopulmonary resuscitation at the scene of emergency have affected the number of cardiac arrest victims who received initial cardiopulmonary resuscitation management, therefore knowledge and ability to perform basic life support treatment must be possessed by everyone. These skills can indirectly reduce the risk factors, adverse effects and severity of cardiac arrest cases in order to reduce the risk of death and provide a good prognosis for the victim. Proper practice is also important in ensuring success rates in cardiopulmonary resuscitation or first aid in general, it requires a good level of knowledge and skill training as a medical student before dealing with patients directly.[3] These situations often require quick and appropriate action to minimize risk, save lives, or reduce the adverse effects caused by these circumstances. Therefore, a good understanding of Basic Life Support and readiness to respond to emergency situations is essential.[4]

1.2 Statement of Problem

Cardiac arrest and respiratory emergencies are leading causes of morbidity and mortality worldwide. According to the World Health Organization (WHO), cardiovascular diseases, including sudden cardiac arrest, are the leading cause of death globally, accounting for 17.9 million in 2019 (about 38% of deaths). Immediate intervention through Basic Life Support (BLS)

has been proven to significantly improve survival rates by maintaining oxygenated blood circulation during emergencies.[5]

Despite its importance, studies indicate that medical students often have inadequate knowledge, attitudes, and practices (KAP) regarding BLS. For instance, a study at Dilla University found that only 56.9% of graduating medical students had good knowledge of BLS, 51.5% demonstrated good practice and many of them had not received (BLS) training[6]. Similarly, research among medical and nursing students in Pakistan revealed deficiencies in BLS training and application and it was concluded that medical and nursing students had less than satisfactory knowledge of BLS.[7]

A research study in South western Nigeria showed that only half (51%) of respondents had undergone BLS training but they showed poor knowledge as only 28.5% could identify the steps. Despite high awareness, the actual knowledge and practice of BLS were suboptimal. The research showed that inadequate incorporation of BLS into the curriculum, coupled with poor accessibility to training resources and a lack of simulation-based learning, has led to insufficient emphasis on emergency care during clinical rotations.[8]

These findings suggest that current medical education may not sufficiently equip students with the necessary BLS skills, potentially compromising patient outcomes during emergencies.

1.3. Justification

Basic Life Support (BLS) encompasses essential procedures that can sustain life during critical emergencies such as cardiac arrest, respiratory failure, or choking. The prompt application of BLS techniques by bystanders significantly enhances survival rates in out-of-hospital cardiac

arrest scenarios. University medical students representing a substantial and educated segment of the population, are strategically positioned to act as immediate responders in emergencies within academic settings and the broader community.[1]

Despite the recognized importance of BLS, studies indicate a deficiency in the knowledge and practical application of these skills among university medical students. For instance, research conducted among final-year medical students in University of Ibadan in Nigeria revealed that while 82.5% had heard of cardiopulmonary resuscitation (CPR), only 29.7% had undergone formal training, and only 77.3% of the trained individuals felt confident in performing CPR.[9]

Furthermore, a study assessing the awareness and perceptions of BLS among staff, students, and residents of the University of Ibadan highlighted significant gaps in both awareness and training, underscoring the necessity for comprehensive BLS education programs within university environments.[10]

Evaluating the knowledge attitude and practice of BLS among university medical students is imperative to help Identify Knowledge gaps, assess attitudes, factors and practice of BLS in responding to emergency conditions. In addition, conducting a comprehensive assessment of the knowledge attitude and practice of BLS among medical university students can help in the implementation of effective training BLS programs as medical students are the future front liners in responding to life threatening conditions such as respiratory distress and cardiac arrest.

1.4. OBJECTIVES

1.4.1. General objective

To Assess knowledge attitude and practice of basic life support among medical students in University of Benin in order to identify gaps, improve BLS training and Emergency Medicine services and response.

1.4.2. Specific objectives

1. To assess the level of knowledge of Basic Life Support (BLS) techniques among medical students at the University of Benin.
2. To observe the attitude of University of Benin medical students toward learning and performing BLS in emergency situations.
3. To determine the level of practice of BLS techniques among University of Benin medical students.
4. To identify factors influencing knowledge, attitude, and practice of BLS among University of Benin medical students.

1.5. Research Questions

1. What is the level of knowledge of Basic Life Support (BLS) among medical students at the University of Benin?

2. What is the attitude of University of Benin medical students towards learning and performing BLS?

3. To what extent do University of Benin medical students practice BLS techniques?

4. What factors influence the knowledge, attitude, and practice of BLS among University of Benin medical students?

1.6 Hypothesis

1. H_0: There is no significant level of knowledge of BLS techniques among medical students at the University of Benin.

   H_1: There is a significant level of knowledge of BLS techniques among medical students at the University of Benin.

2. H_0: University of Benin medical students do not have a positive attitude toward learning and performing BLS in emergency situations.

   H_1: University of Benin medical students have a positive attitude toward learning and performing BLS in emergency situations.

3. H_0: There is no significant level of practice of BLS techniques among University of Benin medical students

H_1: There is a significant level of practice of BLS techniques among University of Benin medical students.

4. H_0: There are no significant factors influencing the knowledge, attitude, and practice of BLS among University of Benin medical students.

   H_1: There are significant factors influencing the knowledge, attitude, and practice of BLS among University of Benin medical students.

CHAPTER TWO

LITERATURE REVIEW

2.1 Knowledge of Basic Life Support (BLS)

A cross-sectional study aimed at assessing the knowledge of Basic life support among medical students was conducted on graduating class students of Dilla University, College of Medicine and Health Science from 10th of September 2021 to 13th of December 2021. A total of 167 participants were selected by a systematic random sampling technique. Data was checked manually for completeness and then coded and entered into EPI info version 7 and exported to SPSS version 25 software (IBM) for analysis. A P-value of less than 0.05 was taken as statistically significant. The result showed that among 167 graduating class students who participated in the study, 56.9% had good knowledge towards basic life support. [6]

An interventional study aimed at assessing the knowledge of Basic life support among medical students carried out on the 1st of July 2018 was conducted at Zaki Auditorium, Allama Iqbal Open University, and Islamabad. A pre and post BLS training session self-administered questionnaire was used. The sampling method employed was the convenience sampling method. Data was collected by administering questionnaires in which descriptive and inferential statistics were performed using Statistical Package for Social Science (SPSS), version 23.0 (IBM, Armonk, NY, USA).Pre-and post- workshop scores of the participants were analyzed through a paired t-test and the level of statistical significance was kept at 0.05. A total of 128 medical students participated in the study. The results showed that 74 .22% got the meaning of CPR correct pre BLS workshop as compared to 100% post the BLS workshop. There was also a

significant increase among participants who felt they had sufficient knowledge on BLS from 7.03% pre-workshop to 90.63% post workshop. Only 3.90% participants pre-workshop knew what to do when they saw an unresponsive individual as compared to 36.71% participants post workshop.[11]

A descriptive, cross-sectional study was conducted at a tertiary care Medical College in Tamil Nadu from July 2019 to August 2019. A total of 100 final year medical students participated in the study in which a convenience sampling method was used. A P value of 0.144 was taken to be statistically significant. Data was collected by administering structured questionnaires and IBM SPSS version 22 was used for statistical analysis. Results showed that out of the 100 participants 62% were able to expand the term BLS, 99% had knowledge of setups where BLS can be performed, only 1% had the knowledge of individual components of BLS while 31% had knowledge of rate of chest compressions per minute. Fifty-three percent (53%) and forty-three percent(43%) had knowledge of rate of chest compressions to breaths during BLS and knowledge of correct location for chest compression respectively. Twenty-four (24%) had knowledge of BLS sequence to be followed and correct response for depth of chest compressions during CPR for an adult was given by thirteen (13%) and Fifteen (15%) knew that CAB stands for Compressions Airway Breathing.[12]

A descriptive, cross sectional study aimed at assessing the knowledge of Basic Life Support among medical students was conducted at 12 medical schools in south West region of Nigeria. University of Lagos, Lagos State. Data collection was done through a Google form containing a structured, self-administered questionnaire, coded, and analyzed using the Statistical Package for Social Sciences (SPSS) version 26 Software. Students in their 2nd (200 level) to 6th year (600

level), enrolled in the Southwestern medical schools participated in the study a total of 553 responses were recorded from November 2020 and January 2021. A P value of less than 0.05 was taken to be statistically significant. Results showed that out of the 553 responses, 439 responses were analyzed based on their knowledge of BLS in which 99.5% respondents knew the full meaning of BLS, 95.4% could correctly identify an Automated External Defibrillator (AED), 91.3% knew where BLS could be performed, 65.4% were aware of when to start CPR, 60.6% knew the correct placement of the hands when performing CPR in adults. Sixty-two (62%) responded that they knew the next step if unwilling to do mouth-to-mouth ventilation was to carryout compression-only CPR. Also knowledge of BLS for children was particularly poor as only 21.9% knew the compression-ventilation ratios for children.[8]

2.2 Attitudes toward learning and performing BLS

A descriptive, cross-sectional study aimed at assessing the attitude of Basic Life Support (BLS) among undergraduate medical students was done between May and July 2012 at Tamil Nadu, India. A pre tested semi-structured questionnaire was administered. A simple random sampling method was used to assess the participants. A sample size of 241 students participated in the study. Data of the responses were recorded in Microsoft Office Excel 2007 and the Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 16. A P value of less than 0.05 was taken as statistically significant. The results showed that 103 participants reported no reluctance in performing BLS either inside or outside hospital settings. One hundred and thirty-eight (57.3%) reported reluctance in performing CPR outside hospital settings while 21 participants (8.7%) expressed reluctance in performing CPR in hospital. The reason reported was lack of confidence.[13]

A cross-sectional study on the attitude about basic life support was conducted at the Medical College of JU, Jeddah, Saudi Arabia, between 1st of July to 30th of October 2019. A semi structured questionnaire was used. A total of 108 students participated in the study which included first, second and third year preclinical students in JU. Data was collected in an anonymous fashion, and Statistical analysis was performed with the SPSS version 21.0 for Windows. Results showed that 86.5%–88.5% believed BLS is necessary and opined that BLS course should be mandatory and that BLS training should be part of the curriculum. Furthermore, 16.3% of the students declared that they were either unfavourable or hesitant in performing mouth-to-mouth ventilation for a person of same or opposite gender.[14]

A cross-sectional survey aimed at investigating the attitude of Cardio Pulmonary Resuscitation (CPR) in the southern part of Nigeria, using clinical students in the Colleges of Medicine from the University of Benin (UNIBEN), University of Lagos (UNILAG) and University of Nigeria, Nsukka (UNN) was conducted between the months of March to November 2022. A sample size of 978 participants from different medical and healthcare disciplines was required for this study. The number of participants for each department in each university was calculated using proportionate sampling method. Included in this study were male and female medical, dental, physiotherapy and nursing students in their 4th, 5th and 6th year that consented to participate in the study. Simple random sampling method was used for this study. Data was collected and analyzed using the Statistical Package for Social Sciences Software version 24.0. Alpha level was set at p less than 0.05 of significance. Results showed that 304 (70.4%) had a positive attitude towards CPR 344 (79.6%) strongly agreed to CPR training course being mandatory for all clinical students, 336 (77.8%) strongly agreed that basic life support should also be

mandatory and added to the academic curriculum, 296 (68.5%) strongly agreed that an established CPR team would be of good outcome for cardiac arrest victims.[15]

2.3 Practice of Basic Life Support

A cross -sectional study to determine the level of awareness and practice of the Lebanese University medical students and trainees on BLS was carried out in 2021. A total of 330 participants were selected using simple random sampling technique. Data was collected online by using Google Form containing a structured questionnaire, the link to the 'Google Forms' survey was sent to students and junior doctors through whatsapp and all statistical analysis was performed using IBM SPSS. A Confidence interval of 95% and the significance level was set at 5%. The results showed that out of 330 medical students, 93% had poor practice level, mean practice score was 4.76 ± 1.8 over 10 (47.60%) with a minimum of 0 over 10 and a maximum of 10 over 10 and only 3.3% of medical trainees demonstrated an adequate practice levels about BLS.[16]

A cross-sectional study was conducted to assess practice of Basic Life Support among graduating class students of Dilla University, college of medicine and health science, Ethiopia in 2021. A total of 167 students were selected using a systematic random sampling technique. The data as collected using a structured questionnaire and entered into EPI info and exported to SPSS (IBM) for analysis. The strength of statistical association was measured by odds ratios (OR) with a 95% confidence interval where P-values, less than 0.05 were declared as statistically significant. The results showed that among the study participants, 86(51.5%) good practice towards basic life support, above half (52%) of the study participants gave correct answers for

what they have to do when they gate unconscious patients but only 25.7% of the study participant gave correct answers for the correct sequence of the use of AED defibrillator.[6]

A cross-sectional descriptive e-survey was done in 2021 to assess practice, accessibility and barriers to BLS training amongst medical students in South-Western Nigeria involving 2nd – 6th year medical students enrolled in 12 regional medical schools in Nigeria. A total of 553 students were selected using a random sampling technique. Data collection was via a Google form containing a structured questionnaire created from previous similar studies, data was cleaned, coded, and analyzed using the SPSS Software. The relationship between qualitative variables was determined using bivariate and multivariate analysis such that $p < 0.05$ was considered statistically significant. The results showed that only 51.3% of the participants had prior training, 35.4% had ever done Cardiopulmonary Resuscitation, most respondents reported no confidence in performing BLS (67.1%) or in using an Automated External Defibrillator (85.7%). Half (51.3%) of respondents had undergone BLS training and 4.4% of those were in 200 level, 11.6% in 300 level, 24.4% in 400 level, 27.1% in 500 level and 32.4% in 600 level.[8]

2.4 Factors influencing knowledge, attitude, and practice of Basic Life Support

A cross-sectional study was conducted to assess factors influencing knowledge of Basic Life Support among graduating class students of Dilla University, College of Medicine and Health Science, Ethiopia in 2021. A total of 167 students were selected using a systematic random sampling technique. The data as collected using a structured questionnaire and entered into EPI info and exported to SPSS (IBM) for analysis. The strength of statistical association was measured by odds ratios (OR) with a 95% confidence interval where P-values, less than 0.05 were declared as statistically significant. The results showed that BLS training, advanced life

support training and exposure to persons in need of Basic Life Support was significantly associated with the knowledge score. In this regard those trained for BLS and Advanced Life Support (ALS) were nearly fourteen-times and about twenty-eight times more knowledgeable compared with those that have no training of BLS and ALS respectively. Furthermore, those having 1–3 and greater than 3 exposures with persons in need of BLS were found to be nearly sixteen and nearly twenty-seven times more knowledgeable as compared with their counterpart.[6]

A cross sectional study to assess Basic Life Support (BLS) education satisfaction and CPR-related self-efficacy among undergraduate nursing students enrolled in 3 universities in Korea was done in 2017. A total of 107 students were selected using simple random sampling. Data collection was done using a questionnaire and analyzed using SPSS. A P-value less than 0.05 was taken as statistically significant. The results showed a significant correlation between BLS education satisfaction and CPR self-efficacy.[17]

A cross sectional study was done in 2023 to evaluate awareness, perceptions and factors affecting BLS amongst students and staff in University of Ibadan, Nigeria. A total of 545 respondents were selected using a multi stage sampling technique. The data was collected using a structured questionnaire, analyzed using IBM SPSS. A p value less than 0.05 was taken to be statistically significant. The results showed that 79.4% expressed fear of harming a victim by making mistakes during BLS, 93.5% were unwilling to perform mouth-to-mouth resuscitation due to fear of contracting infections show that fear is a major factor affecting BLS practice.[10]

CHAPTER THREE

METHODOLOGY

3.1. Study Area

The study was conducted within the College of Medical Sciences at the University of Benin, located in Benin City, Edo State, Nigeria. Edo State is an inland state in central southern Nigeria; it is bounded in the north and east by Kogi State, in the south by Delta State, and in the west by Ondo State. Edo State was formed on August 27, 1991, when Bendel State was split into Edo and Delta States. Edo State is made up of 18 Local Government Areas, and the major first languages spoken in the state are Edo, Estako, Esan, Akoko Edo, Okpameri, and Ijaw. The capital of Edo State is Benin City, the largest city in Edo State, situated on a branch of the Benin River and lying along the main highways from Lagos to the eastern states. The city is also linked by roads to Sapele, Siluko, Okene, and Ubiaja. Benin City is home to several Nigerian institutions, notably the University of Benin.[19]

The University of Benin (UNIBEN) is a government-owned tertiary institution, established on the 23rd of November, 1970, by the then military administration of Midwest State led by Colonel Samuel Osaigbovo Ogbemudia. The University was established first as the Midwest Institute of Technology. After attaining the status of a full-fledged university in line with the requirements of the National Universities Commission on the 1st of July, 1971, the name was changed to the University of Benin. The Institution became a federal government-owned university on the 1st of April, 1975. The University, which commenced academic activities at the site of the Old Teachers' Training College on Ekehuan Road (which is now one of the campuses of the University - the Ekehuan Campus) with 109 students, now has an estimated

student population of 60,000 spread across its two campuses. The University has 15 Faculties, 1 College, and 3 Institutes. Among the 15 faculties is the Faculty of College of Medical Sciences. The college was created in 1975 and is composed of three schools and one institute. The four schools include the School of Medicine, School of Dentistry, School of Basic Clinical Sciences, and School of Basic Medical Sciences.[20]

3.2. Study Design

A descriptive cross-sectional study design was used for this study.

3.3. Study Population

The study was carried out among medical students at the University of Benin who were in their clinical years (typically from 400 to 600 level). The students were selected based on the premise that they were more likely to have undergone formal BLS training as part of their curriculum and were expected to have a higher level of exposure to emergency medical care during clinical postings.

3.4. SELECTION CRITERIA

3.4.1. Inclusion Criteria

i. Medical students in their clinical years (400 to 600 levels) at the University of Benin.

ii. Students who had completed at least one clinical posting in a hospital setting.

iii. Students who voluntarily consented to participate in the study.

3.4.2. Exclusion Criteria

i. Medical students in their pre-clinical years (100 to 300 level).

ii. Students who declined to participate in the study.

iii. Students who were absent during the data collection period.

3.5. Study Duration

The study was carried out over one year, which spanned from January 2025 to February 2026. A one-year duration was chosen to allow for:

i. Topic Submission: January 2025

ii. Introduction Submission: January 2025

iii. Literature Review Submission: February 2025

iv. Methodology: March - April 2025

v. Data Collection: April -November 2025

vi. Data Analysis and Interpretation: December -January 2025

vii. Discussion, Conclusion, and Submission: January - February 2026

3.6. Scope of Study

This study focused on assessing the knowledge, attitude, and practice (KAP) of Basic Life Support (BLS) among medical students at the University of Benin. It evaluated their understanding of BLS principles, attitudes toward its importance, and their practical skills in

performing BLS. The study did not include other healthcare professionals or students outside the medical field.

3.7. Sample Size Determination

The sample size (n) was calculated using Cochran's formula for descriptive studies [21].

$$n = \frac{Z^2pq}{d^2}$$

Where:

n = Minimum sample size

z = Standard normal deviation set at 1.96 (at 95% confidence interval)

p = Estimated proportion of an attribute that is present in a population

d = Desired level of precision

q = 1 – p

The value of p was set at 0.21 based on a 2024 cross-sectional study conducted among medical students in Saudi Arabia, which reported that 21.2% of participants achieved a high knowledge score in Basic Life Support assessment[22].

p = 21.2% = 25/100 = 0.21.2

q = 1 – 0.212 = 0.788

d = 0.050

Substituting in the above formula:

$$n = \frac{(1.96)^2 \times (0.212 \times 0.788)}{(0.05)^2}$$

$$n = \frac{(3.8416) \times (0.1671)}{0.0025}$$

$$n = \frac{0.6419}{0.0025}$$

$n = 256.76 \approx 257$

To make room for non-response, a 10% non-response rate was added to the minimum sample size, utilizing the formula for non-response rate:

$nf = n / (1 – nr)$

Where:

n = Minimum sample size = 257

nr = Non-response rate = 10% = 0.10

nf = Final sample size after non-response adjustment

$$nf = \frac{257}{(1 – 0.10)}$$

$$nf = \frac{257}{0.90}$$

$nf = 285.56 \approx 286$

Given that a stratified random sampling technique was utilized, a design effect was employed to adjust the estimated sampling variance. The design effect was set at 1.5.

$n_{adjusted}$ = nf × Design Effect

$n_{adjusted}$ = 286 × 1.5

$n_{adjusted}$ = 429

The final adjusted sample size for this study is 429 students. However a total of 452 students participated in this study.

3.8. Sampling Technique

A stratified random sampling technique was used to ensure representation across all clinical levels (400, 500, and 600 levels). The students were stratified based on their academic level, and a proportional number of participants were randomly selected from each stratum.

The total number of students in the Faculty of Medicine, from 400L to 600L (N) is 787, it includes:

400 Level: 294 students

500 Level: 181 students

600 Level: 312 students

Total (N) = 294 + 181 + 312 = 787 students

Final Sample Size (n): 429 students

Sampling Fraction = n / N

Sampling Fraction = 429 / 787

Sampling Fraction = 0.5451 (approximately 0.55)

The sample size for each academic level was calculated by multiplying the population of that level by the sampling fraction.

400 Level: 294 × 0.5451 = 160.26 ≈ 160 students

500 Level: 181 × 0.5451 = 98.66 ≈ 99 students

600 Level: 312 × 0.5451 = 170.07 ≈ 170 students

Total

160 (400L) + 99 (500L) + 170 (600L) = 429 students

3.9. DATA MANAGEMENT

3.9.1. Data Collection Method

Questionnaires

Data were collected using a standardized, structured self-administered questionnaire. The questionnaire was distributed to participants during their lecture break or clinical posting break time, which typically spanned from 12 pm to 1 pm.

3.9.2 Tools For Data Collection

The data required for the study were collected using a self-administered questionnaire that was developed in line with the research objectives and adapted from a previous study conducted in Lebanon in 2024[16]. The instrument incorporated the AMERICAN HEART ASSOCIATION (AHA) guidelines for BLS 2020. It consisted of both open-ended and close-ended questions, as well as measuring tools adopted from previous studies. The questionnaire was broadly divided into four sections labeled A to D, each addressing a specific research objective. It comprised a mix of multiple-choice questions, Likert scale items, and categorical responses to ensure a balance between comprehensive data collection and ease of completion. The structured format was designed to allow for efficient analysis within a reasonable time frame of 10–15 minutes.

SECTION A: SOCIODEMOGRAPHIC FACTORS

The aim of this section was to collect data on the sociodemographic characteristics of respondents, including their age (as of their last birthday), gender, religion, ethnic group, academic level, marital status, and who was financially responsible for them. The purpose of this section was to determine the socio demographic factors among medical students influencing their knowledge, attitude, and practice towards basic life support.

SECTION B: KNOWLEDGE OF BASIC LIFE SUPPORT

This section utilized the AHA (AMERICAN HEART ASSOCIATION) guideline for BLS 2020, a standardized instrument for assessing knowledge of Basic Life Support. It consisted of 13 multiple-choice questions and aimed to assess the participants' level of knowledge of basic life support. This section provided a quantitative measure of the level of knowledge, allowing for statistical analysis and comparisons across clinical academic levels (400-600 level).

Scoring

1 point was awarded for each correct answer and 0 points for incorrect answers, with a total possible score of 13.

Good Knowledge: 8 points or more (≥60%)

Poor Knowledge: < 8 points (<60%)

SECTION C: ATTITUDE TOWARDS BASIC LIFE SUPPORT

This section also utilized the AMERICAN HEART ASSOCIATION (AHA) guideline for BLS 2010. It was a vital tool to ascertain attitude towards BLS. The section consisted of 7 questions, where each statement was graded on a Likert scale of (15), with higher scores indicating a more positive attitude towards BLS. This section helped to assess the attitude of medical students (400-600 level) towards Basic Life Support.

Scoring

Strongly Agree (SA) = 5

Agree (A) = 4

Undecided (UD) = 3

Disagree (D) = 2

Strongly Disagree (SD) = 1

Total possible score = 35

Good Attitude: ≥26 points (≥75%)

Poor Attitude: < 26 points (<75%)

SECTION D: PRACTICE OF BASIC LIFE SUPPORT

This section adapted the AMERICAN HEART ASSOCIATION (AHA) guideline for BLS 2010. The practice of BLS was assessed using 10 multiple-choice questions. This section showed the extent of practice students had undergone during their BLS training.

Scoring

1 point was awarded for each correct answer; 0 points for incorrect answers, with a total possible score of 10.

Good Practice: ≥ 6 points (≥ 60%)

Poor Practice: < 6 points (< 60%)

SECTION E: FACTORS AFFECTING KNOWLEDGE ATTITUDE AND PRACTICE OF BLS

This section of the questionnaire to explored barriers to BLS acquisition and performance, as well as respondents' perceptions of their training adequacy and prior exposure to BLS scenarios. Participants were asked to identify factors that hindered their ability to acquire or perform BLS skills from a list of options. Furthermore, close-ended questions were included to assess whether respondents believed their medical school provided adequate BLS training, whether they had received hands-on practice with mannequins or in real-life scenarios, their comfort level with using an Automated External Defibrillator (AED), and whether they had ever performed CPR or other BLS measures in a real emergency.

3.9.3. Data Analysis

Data obtained from the responses to the structured self-administered questionnaire were entered manually and statistically analysed using the IBM Statistical Package for Social Sciences Version 27 (SPSS 27.0). Data cleaning was performed to remove incomplete or incorrect entries. Descriptive statistics (frequencies, percentages) were calculated to summarize each item. The chi square test was used to assess associations between categorical variables. Regression analysis was conducted to identify significant predictors of BLS practice, considering factors like year of study, knowledge score, training, and confidence. All significance testing used a p value threshold of < 0.05, and the findings were interpreted to guide recommendations for CPR training.

3.9.4. Data Presentation

a) Tables (For categorical and numerical data)

i. Frequency Tables – To present socio demographic characteristics, such as age distribution, gender, and academic level.

ii. Descriptive Statistics Tables – To present the mean, standard deviation, and percentages for continuous variables like age.

b) Graphs and Charts (For visual representation)

i. Pie Charts – To show proportions, such as the percentage of students' attitudes towards BLS.

The following statistical tests were carried out:

i. Uni variate analysis

ii. Chi Square Test – To assess associations between categorical variables.

iii. Regression Analysis – To identify significant predictors of BLS Practice, considering factors like year of study, knowledge score, and training.

3.10. Ethical Considerations

Ethical approval was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital (UBTH), with the protocol number DM/E/A/VOL.VII/148654912567 to ensure the study complied with ethical guidelines. Permission was also sought from the School of Medicine, University of Benin. Verbal informed consent was obtained from the respondents only after they had been briefed on the intended purpose of the study and assured of the confidentiality of their information. They were informed of their right to withdraw from the self-administered interview at any time without any consequences or harm.

3.11. LIMITATIONS OF THE STUDY

i. The findings were limited in their generalizability because the study focused exclusively on medical students. Consequently, the results could not be easily applied to students in other academic disciplines or the general population, whose training and exposure to BLS differ significantly.

ii. Another potential limitation was non response bias. This occurred when certain students declined to participate, which may have skewed the results if those who opted out possessed different levels of BLS knowledge or confidence compared to those who participated.

CHAPTER FOUR

RESULTS

This chapter presents the analysis and interpretation of data collected from medical students in their clinical years (400L to 600L) at the University of Benin. A total of 452 self-administered questionnaires were distributed to consenting participants who met the inclusion criteria. All 452 distributed questionnaires were retrieved, yielding a 100% response rate. The retrieved instruments were thoroughly examined for completeness and accuracy, and all were found suitable for data analysis. The findings are organized into sections according to the research objectives, as follows:

Section A: Socio-demographic characteristics of respondents

Section B: Knowledge of Basic Life Support (BLS) among respondents

Section C: Attitude of respondents towards Basic Life Support (BLS)

Section D: Practice of Basic Life Support (BLS) among respondents

Section E: Factors influencing knowledge, attitude and practice of BLS among respondents.

SECTION A: SOCIO DEMOGRAPHIC CHARACTERISTICS

TABLE 1A: SOCIAL DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Variables	Frequency (n=452)	Percentage
Age		
15-19	27	6.0
20-24	343	75.9
25-29	71	15.7
>29	11	2.4
Mean±	22.92 ± 2.74	
Sex		
Male	269	59.5
Female	183	40.5
Marital status		
Single	444	98.2
Married	8	1.8
Religion		
Christian	445	98.5
Islam	5	1.1
Others	2	.4
Academic Level		
400Level	169	37.4
500Level	104	23.0
600Level	179	39.6

The socio-demographic profile of the 452 respondents is summarized in the table 1A above. The majority of the participants (75.9%) were within the 20–24 year age bracket, followed by those aged 25–29 years (15.7%). The mean age of the study population was 22.92 ± 2.74 years.

In terms of gender distribution, more than half of the respondents were male (59.5%), while females accounted for 40.5% of the sample. The population was mostly single (98.2%) with only 8 participants being married (1.8%) and predominantly identified as Christian 98.5%.

Regarding their academic standing, the respondents were all in their clinical or senior years, with the highest proportion being in 600 Level (179 participants, 39.6%), followed by 400 Level (169 participants, 37.4%) and 500 Level (104 participants, 23.0%).

TABLE 1B: SOCIAL DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS (continued)

Variables	Frequency (n=452)	Percentage
Ethnicity		
Benin	129	28.5
Esan	76	16.8
Igbo	70	15.5
Urhobo/Isoko	54	11.9
Yoruba	47	10.4
Afemai	41	9.1
Ijaw	18	4.0
Hausa	6	1.3
Ibibio	5	1.1
Igarra	3	0.7
Others*	3	0.7

*Efik, Tiv, Izon

The ethnic distribution of the 452 participants surveyed reveals a diverse population with a strong concentration of groups from the South-South and South-West regions of Nigeria.

The Benin ethnic group represents the largest demographic in the study, accounting for over a quarter of the total sample (28.5%). This is followed by the Esan and Igbo groups, which constitute 16.8% and 15% the population, respectively. Collectively, these three groups make up the majority of the study's participants.

Mid-range representation is seen among the Urhobo/Isoko (11.9%), Yoruba (10.4%), and Afemai (9.1%) ethnicities. The least represented groups were Ijaw (2.0%), while the Hausa, Ibibio, and Igarra each contribute less than 2% to the total count. Other minority tribes were Efik, Tiv and Izon

SECTION B: KNOWLEDGE OF BASIC LIFE SUPPORT

TABLE 2 KNOWLEDGE OF BASIC LIFE SUPPORT

Variable	Frequency(n=452)	Percentage
Abbreviation of BLS*		
Basic Life Support	429	95.0
Best Life Support	20	4.4
Basic Life Services	2	0.4
Basic Lung Support	1	0.2
First response to unresponsive person on road		
Look for safety	248	54.9
Open Airway	132	29.2
Start Chest Compression	67	14.8
Give two breaths	5	1.1
Immediate response after unresponsiveness		
Start CPR	252	55.8
Put him in recovery position	97	21.5
Activate EMS	73	16.2
Observe	30	6.6
Location for Chest Compression		
Centre of the chest on the lower half of the breast bone	251	55.5
Left side of the Chest	88	19.5
Right side of the chest	59	13.1
Xiphisternum	54	11.9
Location for chest compression in infants		
One finger breadth below the nipple line	226	50.0
One finger breadth above the nipple line	73	16.2
At xiphisternum	86	19.0
At the intermammary line	67	14.8
How to give rescue breathe in infants		
Ventilation for mouth to mouth with nose pinched	234	51.8
Mouth to mouth without nose pinched	105	23.2
Mouth to mouth and nose	80	17.7
Mouth to nose only	33	7.3

* Basic Life Support

The vast majority of respondents (429 Participants 94.9%) demonstrated a high level of correct identification of the abbreviation BLS as Basic Life Support. When assessing the first action to take upon encountering an unresponsive person, a slight majority (248 participants, 54.9%) correctly prioritized Scene Safety (Look for safety). However, a significant proportion of the sample (29.2%) erroneously prioritized airway management before ensuring the safety of the environment.

Only 16.2% (73 participants) correctly identified that activating Emergency Medical Services is the immediate priority after confirming unresponsiveness. The majority of respondents (55.8 %,) incorrectly suggested starting CPR immediately, omitting the vital step of calling for professional medical assistance. Knowledge of compression landmarks for adults was relatively high, with 55.5% (251 participants) correctly identifying the center of the chest on the lower half of the breastbone.

Knowledge of infant resuscitation showed mixed results as half of the respondents (50.0%) correctly identified the location as one finger breadth below the nipple line. There was a marked deficiency in pediatric ventilation knowledge among respondents as only 17.7% correctly identified the Mouth to mouth and nose technique required for infants. More than half (51.8%) incorrectly applied the adult mouth-to-mouth with nose pinched technique to the infant model.

TABLE 2B: KNOWLEDGE OF BASIC LIFE SUPPORT (continued)

Variable	Frequency(n=452)	Percentage
Depth of compression in adults during CPR*		
At least 2 inches	207	45.8
2.5 - 3 inches	163	36.1
1 - 1.5 inches	53	11.7
1.5 inch	29	6.4
Depth of compression in Children during CPR (All except)		
2 - 2.5 inches	179	39.6
1 - 1.5 inches	110	24.3
0.5 - 1 inch	100	22.1
2 inches	63	13.9
Depth of Compression in neonates during CPR		
1 inch	181	40.0
1.5 - 2 inches	99	21.9
Approximately 1.5 inch	87	19.2
2 - 2.5 inches	85	18.8
Abbreviation of AED**		
Automated External Defibrillator	275	60.8
Automated Electrical Defibrillator	138	30.5
Advanced Electrical Defibrillator	24	5.3
Advanced External Defibrillator	15	3.3
Abbreviation of EMS***		
Emergency Medical Services	295	65.3
Emergency Management Services	78	17.3
Effective Medical Services	62	13.7
External Medical Support	17	3.8
First response to responsive choking friend		
Give abdominal thrusts	286	63.3
Give back blows	83	18.4
Confirm foreign body aspiration by talking to him	45	10.0
Give chest Compressions	38	8.4

*Cardio Pulmonary Resuscitation

**Automated External Defibrillator

*** Emergency Medical Services

The study showed that less than half of the participants (207 participants, 45.8%) correctly identified the required depth of at least 2 inches. A significant proportion (36.1%) believed a deeper compression (2.5–3 inches) was necessary. There was considerable confusion regarding children, with only 13.9% choosing the standard 2 inches. The majority (39.6%) over-estimated the depth at 2–2.5 inches.

Knowledge of neonatal depth was the lowest across all categories. Only 19.2% (87 participants) correctly identified the depth as approximately 1.5 inches. The most common response was 1 inch (40%).

Knowledge of the systems and tools that support the Chain of Survival was moderate to good 60.8% correctly identified the abbreviation Automated External Defibrillator(AED). However, a notable 30.5% confused External with Electrical. About 65.3% respondents accurately identified this term the abbreviation EMS as Emergency Medical Services.

Table 2B also showed that 63.3% of respondents correctly identified abdominal thrusts (the Heimlich maneuver) as the primary intervention for choking, 18.4% suggested Back blows.

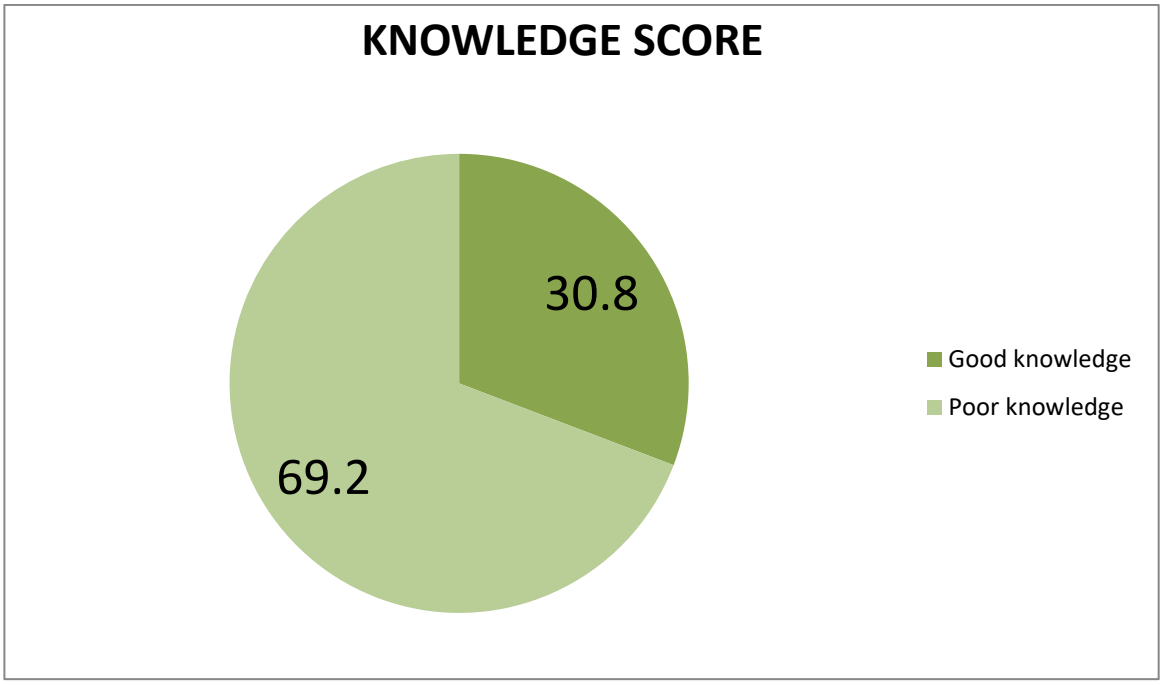

FIGURE 1 : OVERALL KNOWLEDGE OF BLS

Figure 1 above shows that 30.8% of respondents demonstrated good knowledge of BLS while 69.2% exhibited poor knowledge.

TABLE 3: KNOWLEDGE OF BLS AND SELECTED FACTORS

	Knowledge of BLS			
Variable	Poor(%)	Good(%)	Test Statistics	P-Value
Sex				
Male	197(73.2)	72(26.8)	4.958	**0.029**
Female	116(63.4)	67(36.6)		
Current Academic Level				
400Level	139(82.2)	30(17.8)	27.279	**<0.001**
500Level	73(70.2)	31(29.8)		
600Level	101(56.4)	78(43.6)		
Trained with mannequin				
Yes	124(62.0)	76(38.0)	8.849	**0.004**
No	189(75.0)	63(25.0)		
Lack of confidence				
Yes	181(69.1)	81(30.9)	0.008	1.000
No	132(69.5)	58(30.5)		
Performed BLS in real life*				
Yes	37(69.8)	16(30.2)	0.009	1.000
No	276(69.2)	123(30.8)		

***Basic Life Support

Table 3 shows that there is statistically significant association between sex and BLS knowledge (chi square = 4.958, p = 0.029). Female respondents demonstrated a higher proportion of good knowledge (36.6%) compared to their male counterparts (26.8%).

There is a highly significant relationship observed between knowledge of BLS and current academic level (chi square= 27.279, p < 0.001), knowledge levels improved progressively with

seniority. Only 17.8% of 400-level students possessed good knowledge, this figure rose significantly to 43.6% among 600-level students.

Respondents who had undergone training with a mannequin were significantly more likely to have good BLS knowledge (38.0%) compared to those who had not (25.0%). This association was statistically significant (chi^2 = 8.849, p = 0.004).

There was no Statistical significant difference in knowledge between those who expressed a lack of confidence and those who did not (p = 1.000). Similarly, having performed BLS in a real-life emergency did not significantly result in better knowledge scores (p = 1.000), with nearly 70% of those with real-life experience still falling into the Poor knowledge category.

TABLE 4: LOGISTIC REGRESSION OF KNOWLEDGE AND SELECTED FACTORS

Factor	B	Odds Ratio	Cl 95%		p-value
			Lower	Upper	
Sex of respondent	-0.406	0.666	0.437	1.017	0.060
Current Academic Level in Medical School 500 vs 400L	0.628	1.873	1.043	3.363	**0.036**
Current Academic Level in Medical 600L vs 400L	1.249	3.488	1.930	6.301	**<0.001**
Training with Mannequin	0.003	1.003	0.587	1.715	0.990
lack of confidence	.014	1.014	0.666	1.544	0.949
Performed BLS in Real situation*	0.108	1.114	0.570	2.178	0.752

*Basic Life Support

This shows that Students in the 500 Level were 1.87 times more likely to have good BLS knowledge than 400 Level students (Odds ratio = 1.87) and it is statistically significant with a significance value of 0.036. The effect was even more pronounced for final-year students. Students in the 600 Level were 3.49 times more likely to demonstrate good knowledge compared to the reference group (Odds Ratio = 3.488 $p < 0.001$).

Although females performed better in simple percentages, when adjusted sex was not a statistically significant predictor ($p = 0.060$). Having trained with a mannequin is not statistically significant ($p = 0.990$).

Neither a lack of confidence ($p = 0.949$) nor having performed BLS in a real-life setting ($p = 0.752$) showed any statistical significance,

SECTION C: ATTITUDE TO BLS AMONG RESPONDENTS

TABLE 5: ATTITUDE OF RESPONDENTS TO BLS

Variable	Frequency(n=452)	Percentage
BLS is necessary for all medical students		
Strongly Agree	343	75.9
Agree	91	20.1
Undecided	13	2.9
Disagree	2	0.4
Strongly Disagree	3	0.7
I am confident I can perform BLS when needed		
Strongly Agree	84	18.6
Agree	98	21.7
Undecided	143	31.6
Disagree	87	19.2
Strongly Disagree	40	8.8
I am willing to perform CPR when necessary		
Strongly Agree	125	27.7
Agree	194	42.9
Undecided	117	25.9
Disagree	12	2.7
Strongly Disagree	4	0.9
Mouth to mouth ventilation is acceptable for same gender		
Strongly agree	136	30.1
Agree	155	34.3
Undecided	113	25.0
Disagree	30	6.6
Strongly Disagree	18	4.0
Mouth to mouth ventilation is acceptable for opposite gender		
Strongly Agree	122	27.0
Agree	154	34.1
Undecided	132	29.2
Disagree	25	5.5
Strongly Disagree	19	4.2

Table 5 above shows that a combined 96.0% of respondents either strongly agreed (75.9%) or agreed (20.1%) that BLS is essential for all medical students. This indicates a very high level of professional buy-in and recognition of the skill's value.

The table also shows that 70.6% of respondents expressed a willingness to perform CPR when necessary and in contrast, only 40.3% felt confident in their ability to actually perform the skill. and nearly one-third (31.6%) remained undecided about their confidence.

Regarding ventilation 64.4% agreed or strongly agreed they would perform ventilation on someone of the same gender, this dropped slightly to 61.1% for a member of the opposite gender. Approximately 25–29% of respondents were undecided about performing mouth-to-mouth ventilation regardless of gender.

Variable	Frequency(n=452)	Percentage%
I am willing to attend a formal BLS training		
Strongly Agree	259	57.3
Agree	146	32.3
Undecided	36	8.0
Disagree	11	2.4
Strongly Disagree	0	0.0
BLS should be a part of medical school curriculum*		
Strongly Agree	290	64.2
Agree	123	27.2
Undecided	31	6.9
Disagree	2	.4
Strongly Disagree	6	1.3

TABLE 5B: ATTITUDE OF RESPONDENTS TO BLS (continued)

*Basic Life Support

Nearly 90% of respondents expressed a clear desire to attend a formal BLS training course (Strongly Agree: 57.3%; Agree: 32.3%). Also, 91.4% of the participants agreed or strongly agreed that BLS should be an integral part of the medical school curriculum. This suggests that students do not view BLS as an optional extracurricular skill, but as a core competency that should be officially recognized and assessed within their medical degree.

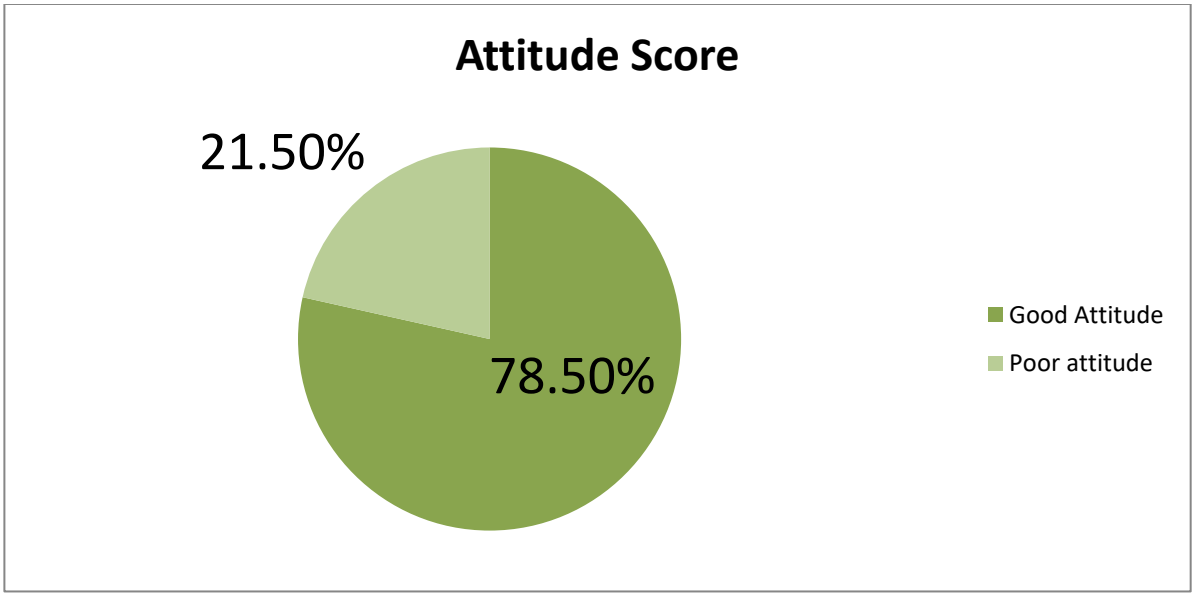

FIGURE 2: OVERALL ATTITUDE OF RESPONDENTS TO BLS

The chart shows that 78.5% of respondents had poor attitude towards BLS while 21.5% had good attitude towards BLS.

TABLE 6: ASSOCIATION BETWEEN ATTITUDE TO BLS AND SELECTED FACTORS

	Attitude to BLS			
Variable	Poor(%)	Good(%)	Test Statistics	P-Value
Sex				
Male	54(20.1%)	215(79.9%)	0.757	0.415
Female	43(23.5%)	140(76.5%)		
Current Academic Level				
400Level	48(28.4%)	121(71.6%)	7.807	**0.02**
500Level	19(18.3%)	85(81.7%)		
600Level	30(16.8%)	149(83.2%)		
Trained with mannequin				
Yes	35(17.5%)	165(82.5%)	3.334	0.083
No	62(24.6%)	190(75.4%)		
Lack of confidence				
Yes	68(15.3%)	194(74.0%)	7.468	**0.007**
No	29(26.0%)	161(84.7%)		
Performed BLS in real life*				
Yes	11(20.8%)	42(79.2%)	0.018	1.000
No	86(21.6%)	313(78.4%)		
Knowledge Score				
Good	21(15.1%)	118(84.9%)	4.806	**0.034**
Poor	76(24.3%)	237(75.7%)		

*Basic Life Support

There is a statistically significant relationship between a respondents academic level and their attitude toward BLS (chi square = 7.807, p = 0.02). The highest percentage of Good attitudes was found among 600-level students (83.2%), compared to 71.6% among 400-level students. A significant link exists between Knowledge and Attitude (chi square = 4.806, p = 0.034). Respondents with Good knowledge were more likely to exhibit a Good attitude (84.9%) compared to those with Poor knowledge (75.7%).

A highly significant association was found between self-confidence and attitude (chi square = 7.468, p = 0.007). Interestingly, those who admitted to a lack of confidence actually showed a higher proportion of Good attitudes (74.0%) compared to those without confidence issues (84.7%).

There is no significant difference in attitude between males (79.9% good) and females (76.5% good), with a p-value of 0.415. While mannequin training showed a slight trend toward better attitudes (82.5% against 75.4%), this however did not show statistical significance (p = 0.083). Having performed BLS in real life had no impact on overall attitude (p = 1.000), with nearly identical scores between those who had experience and those who did not. (Table 6)

TABLE 7: LOGISTIC REGRESSION OF ATTITUDE AND SELECTED FACTORS

Factor	B	Odds Ratio	Cl 95%		p-value
			Lower	Upper	
Sex of respondent	0.266	1.305	0.816	2.087	0.266
Current Academic Level in Medical School 500 vs 400L	0.619	0.479	1.005	3.433	**0.048**
Current Academic Level in Medical 600L vs 400L	0.580	1.787	0.941	3.394	0.076
Training with Mannequin	0.218	1.243	0.677	2.283	0.482
lack of confidence	-0.647	0.523	0.321	0.853	0.009
Performed BLS in Real situation	0.078	1.082	0.511	2.290	0.838

Five hundred level (500Level) students are more likely to maintain a good attitude compared to their juniors in the 400 Level (p=0.048)

Lack of Confidence showed a significant association with attitude (p = 0.007) Mannequin Training and Real-life Performance are not statistical significant.

SECTION D: PRACTICE OF BLS AMONGST RESPONDENTS

TABLE 8A: PRACTICE OF BLS AMONGST RSPONDENTS

Variable	Frequency(n=452)	Percentage
Adult chain of survival (except)		
Advanced airway placement	157	34.7
Integrated post cardiac arrest care	117	25.9
Early CPR	91	20.1
Rapid defibrillator	87	19.2
How often rescuers switch roles		
After 5 cycles	148	32.7
After 2 cycles	139	30.8
After each cycle	103	22.8
After 10 cycles	61	13.5
Initial BLS steps for adults*		
Assess victim, activate EMSAED, check pulse, start CPR	127	28.1
Assess victim, start CPR, give 2 breaths, defibrillate	123	27.2
Assess victim, Give 2 breaths, defibrillate, start CPR	118	26.1
Check pulse, give breaths, assess victim, defibrillate	84	18.6
Pulse check location in adult		
Carotid	300	66.4
Brachial	72	15.9
Ulnar	62	13.7
Temporal	18	4.0
Compression to ventilation ratio (lone rescuer)		
30:2	176	38.9
15:2	130	28.8
15:1	78	17.3
30:1	68	15.0
Proper steps for operating AED**		
On AED, attach pads, analyze, clear, deliver shock	142	31.4
On AED, attach pads, shock, analyze	113	25.0
Attach pads, check pulse, shock, analyze	102	22.6
Check pulse, attach pads, analyze, shock	95	21.0

*Basic Life Support

**Automated External Defibrillator

When asked to identify which element does not belong in the adult chain of survival, only 34.7% (157 participants) correctly identified advanced airway placement as the outlier. Regarding the initial sequence of BLS, only 28.1% correctly identified the standard protocol (Assess victim, activate EMS/AED, check pulse, and start CPR). (Table 8A)

Table 8A shows that 66.4% of respondents correctly identified the Carotid artery as the appropriate location for an adult pulse check, however only 32.7% correctly identified that rescuers should switch roles after 5 cycles (approximately every 2 minutes) to maintain high-quality compressions. Nearly a third (30.8%) believed the switch should occur much earlier (after 2 cycles).

Only 38.9% correctly identified the 30:2 ratio for a lone rescuer. The remaining 61.1% provided various incorrect ratios. 142 participants accounting for 31.4% correctly identified the sequence for operating an Automated External Defibrillator (Power on, attach pads, analyze rhythm, clear the victim, and deliver shock. (Table 8A)

TABLE 8B: PRACTICE OF BLS AMONGST RESPONDENTS

Variable	Frequency(n=452)	Percentage
2020 AHA Guidelines BLS sequence*		
Airway, Breathing, Chest Compression	175	38.7
Chest compressions, Airway, Breathing (CAB)	124	27.4
Airway, Breathing, Check Pulse	114	25.2
Chest compression, Airway placement, Breathing	39	8.6
Signs of severe airway obstruction (except)		
Unable to cry	147	32.5
High pitched noise while inhaling	126	27.9
Poor air exchange	123	27.2
May wheeze between coughs	55	12.2
How often rescuers switch roles		
Airway, Breathing, Chest Compression	175	38.7
Chest compressions, Airway, Breathing (CAB)	124	27.4
Airway, Breathing, Check Pulse	114	25.2
Chest compression, Airway placement, Breathing	39	8.6
Breaths frequency with advanced airway		
Every 5 seconds	185	40.9
Every 5-6 seconds	142	31.4
Every 10-12 seconds	87	19.2
Every 6-8 seconds	38	8.4
Critical characteristics of high quality CPR**		
All of the above	256	56.6
Starting Chest compression within 10 seconds	80	17.7
Minimize interruptions	62	13.7
Push hard, push fast	54	11.9

*American Heart Association

**Cardio Pulmonary Resusitation

Table 8B shows that only 27.4% of respondents correctly identified the 2020 AHA recommended sequence of CAB (Chest compressions, Airway, Breathing). The majority of students (38.7%) still prioritize airway and breathing over compressions.

When identifying signs of severe foreign body airway obstruction, only 12.2% of respondent correctly identified that wheezing between coughs is not a sign of severe obstruction. The remaining respondents incorrectly identified signs such as being unable to cry (32.5%) or poor air exchange (27.2%) as the except option. Only 31.4% correctly identified the rescue breath frequency of one breath every 5-6 seconds. More than half of the respondents (56.6%) correctly identified that high-quality CPR involves a combination of rapid initiation (within 10 seconds), pushing hard and fast, and minimizing interruptions. (Table 8B)

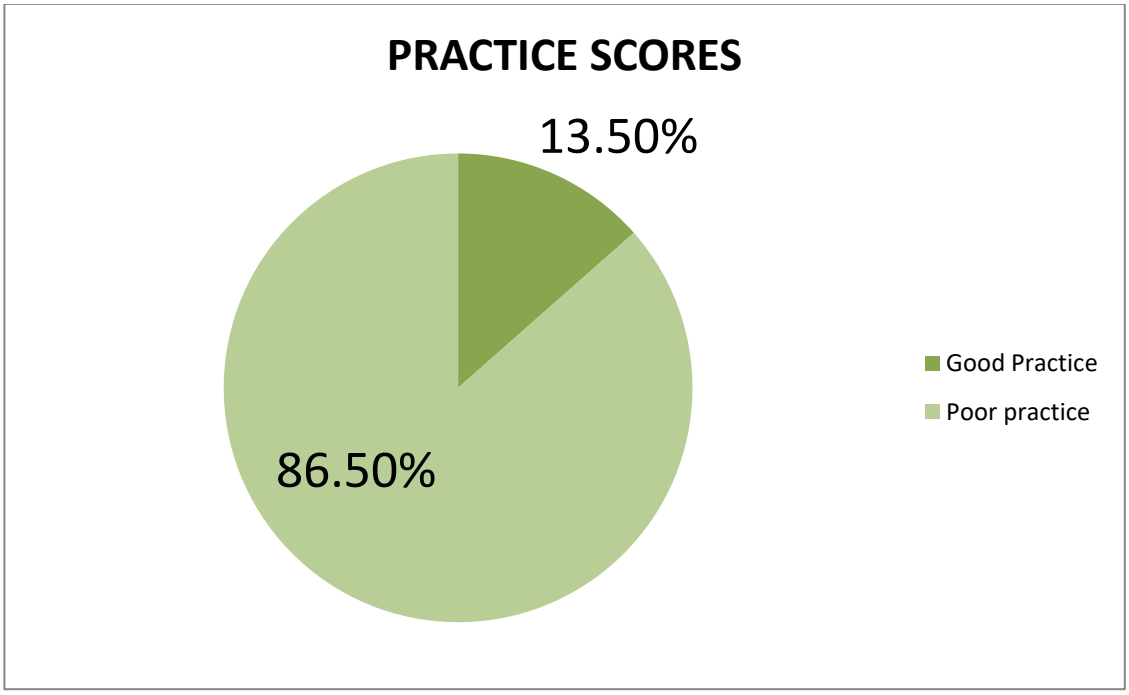

FIGURE 3: OVERALL SCORES FOR PRACTICE OF BLS

Figure 3 shows that 13.5% of respondents showed good practice of BLS while 86.5% showed Poor practice of BLS.

TABLE 9: PRACTICE OF BLS AND SELECTED FACTORS

Variable	Practice of BLS		Test Statistics	P-Value
	Poor Freq(%)	Good Freq(%)		
Sex				
Male	232(86.2)	37(13.8)	0.38	0.889
Female	159(86.9.4)	24(36.6)		
Current Academic Level				
400Level	15(91.7)	30(8.3)	6.952	**0.031**
500Level	89(85.6)	31(14.4)		
600Level	147(82.1)	32(17.9)		
Trained with mannequin				
Yes	165(82.5)	35(17.5)	4.927	**0.026**
No	226(89.7)	26(10.3)		
Lack of confidence				
Yes	232(88.5)	30(11.5)	2.233	0.163
No	159(83.7)	58(16.3)		
Performed BLS in real life*				
Yes	47(88.7)	6(11.3)	0.243	0.622
No	344(86.2)	55(13.8)		
Knowledge score				
Good	108(77.7%)	31(22.3)	13.335	**<0.001**
Poor	283(90.4)	30(9.6)		

*Basic Life Support

There is a statistically significant association between the respondent's academic level and their ability to correctly identify BLS practice protocols (chi square = 6.952, p = 0.031). As practice scores increase from 400 Level (8.3% good practice) to 600 Level (17.9% good practice).

Respondents who had trained with a mannequin showed significantly better practice scores (17.5%) compared to those who had not (25.0% chi square = 4.927, p = 0.026).

The strongest association in the entire table is between the knowledge score and the practice Score (chi square = 13.335, p < 0.001). Respondents with Good baseline knowledge were significantly more likely to achieve good practice scores (22.3%) compared to those with Poor knowledge (9.6%).

No significant difference was found between males and females regarding practice (p = 0.889). Neither confidence (p = 0.163) nor having performed BLS in a real-life situation (p = 0.622) translated into significantly better practice scores.

TABLE 10: LOGISTIC REGRESSION OF PRACTICE SCORES AND SELECTED VARIABLES

Factor	B	Odds Ratio	Cl 95%		p-value
			Lower	Upper	
Sex of respondent	0.158	1.172	0.664	2.069	.585
Current Academic Level in Medical School 500 vs 400L	0.630	0.853	0.483	1.507	0.585
Current Academic Level in Medical 600L vs 400L	0.580	1.787	0.941	3.394	0.076
Training with Mannequin	0.445	1.561	0.771	3.162	0.216
lack of confidence	-0.383	0.682	0.394	1.180	0.171
Performed BLS in Real situation*	-0.289	0.749	0.293	1.912	0.546

*Basic Life Support

Students in the 600 Level were 1.78 times more likely to demonstrate good practice than those in the 400 Level (OR = 1.787, 95% .However, with a p-value of 0.076, this is not statistically significant. Having used a mannequin increased the odds of good practice by 1.56 times, but this was not statistically significant (p = 0.216).

Performing BLS in a real-world setting actually had a negative coefficient (B = -0.289, P=0.546) and is not statistically significant. Lack of confidence showed a negative relationship with good practice (B = -0.383, OR = 0.682), meaning those lacking confidence were roughly 32% less likely to have good practice scores. However, this also did not show statistical significance (p = 0.171).

SECTION E: FACTORS INFLUENCING THE KNOWLEDGE ATTITUDE AND PRACTICE OF BASIC LIFE SUPPORT

TABLE 11: FACTORS INFLUENCING THE KNOWLEDGE ATTITUDE AND PRACTICE OF BLS

Variables	Frequency (n=452)	Percentage
Factors preventing respondent from acquiring or performing BLS skills*		
Limited availability of BLS training	311	68.8
Lack of Practice opportunities	307	67.9
Fear of causing harm	257	56.9
Fear of legal consequences	230	50.9
Lack of confidence	262	42.0
Emotional distress in emergency situation	161	35.6
Lack of awareness on importance of BLS	157	34.7
High cost of BLS certification programs	171	32.8
Believes medical school provides adequate BLS training**		
Yes	261	42.3
No	191	57.7
Has had hands on training with mannequin or practice		
Yes	200	44.2
No	252	55.8
Feels comfortable using an AED***		
Yes	132	29.2
No	320	70.8
Performed CPR in real life******		
Yes	53	11.7
No	399	88.3

*Multiple response

**Basic Life Support

***Automated External Defibrillator

****Cardio Pulmonary Resuscitation

Table showed that 68.8% cited the limited availability of formal BLS training, and 67.9% pointed to a lack of practice opportunities. More than half of the respondents (56.9%) fear causing harm to a victim, while 50.9% fear legal consequences. (Table 11)

Forty two percent (42.0%) of respondents explicitly identified a lack of confidence as a major deterrent. A majority of respondents (57.7%) do not believe that medical school provides adequate BLS training. More than half (55.8%) have never had hands-on training with a mannequin. Eighty eight percent (88.3%) reported having never performed CPR in a real-life situation. Seventy percent (70.8%) of respondents reported that they do not feel comfortable using an Automated External Defibrillator.(Table 11)

CHAPTER FIVE

5.1 Discussion

This study explored the knowledge, Attitude and practice of Basic life support among medical students in the University of Benin. BLS training is vital especially among undergraduate medical students because having the requisite knowledge, attitudes and practice of BLS can help prevent emergency situations such as cardiac arrest, respiratory distress or obstructed airway breathing, promote early intervention in order to reduce mortality rates associated with cardiac and respiratory conditions in both adults and infants thus improving patient condition outcomes.

The respondents in this study comprised of clinical students in their 4th, 5th and 6th year of medical training rotations in the University of Benin, for they all had completed at least one clinical posting and were more likely to have undergone BLS training as part of their curriculum and must have experienced a high level of exposure to emergency medical care during their clinical postings.

A total of 452 respondents participated in the study in which more than half of the respondents were males (59.5%), while females accounted for 40.5% of the sample. The slight predominance of the males might reflect greater willingness or availability to participate in the study.

Academically, a vast majority (39.6%) of the respondents were in 600level indicating they were in their final year of medical training, closely followed by 400level 37.4% and 500level 23.0%.This socio-demographic characteristic is very important for it can help access knowledge gaps, attitude and practice readiness of BLS among medical students across clinical years from 4th year to 6th year.

The vast majority of respondents demonstrated poor knowledge of Basic Life Support, with more than half of the study population falling into this category. Conversely, less than half of the participants exhibited a good knowledge level. While overall knowledge scores were poor, there was a measurable improvement as students progressed through their academic levels. Specifically, more than half of the students in their final clinical year demonstrated better knowledge compared to those in their first clinical year, among whom less than half reached a good knowledge threshold.

This is in contrast with a cross -sectional study aimed at assessing the knowledge of BLS among medical students at Dilla University College of Medicine in 2021 which demonstrated that 56.9% of the respondents had good knowledge[6].

Also, respondents across clinical years from 4^{th} to 6^{th} year demonstrated generally poor knowledge though an increasing level of good knowledge was observed with the highest being the 600 level (43.6%),while respondents in 400level and 500 level had 17.8% and 29.8% respectively.

This trend is likely attributable to the progressive increase in clinical experience and exposure that students gain as they advance through their academic levels. As students move from the 400 to the 600 level, the increased time spent in hospital wards and emergency departments naturally enhances their familiarity with resuscitation concepts.

This is similar to a cross sectional study of Knowledge of BLS among medical students at king Abdul-Aziz University on July 2017. This study revealed general poor knowledge of BLS

among respondents but noted an increasing level of knowledge across clinical years from 4th to 6th year with the 6th year being the highest followed by 4th year and 5th year[21.]

This low level of knowledge among medical students is critical because they are the future frontline responders of emergency conditions such as cardiac arrest or respiratory distress.

There is a clear need for increased instructional time dedicated to Basic Life Support, with a particular emphasis on integrating these skills at the earlier clinical levels.

The study further evaluated the attitudes of medical students toward Basic Life Support. A significant majority of the participants demonstrated a positive attitude towards BLS. Specifically, more than three-quarters of the respondents exhibited a good attitude. Furthermore, the vast majority of participants exceeding nine out of every ten agreed that Basic Life Support should be an integral component of the medical school curriculum.

These findings may be attributed to a strong desire for formal training, which is likely reinforced by the students' awareness of their own technical deficiencies and an overall lack of confidence in their life-saving abilities. It is also worthy of note that as students progress through their academic levels, attitude scores increase significantly, a trend primarily driven by the accumulation of clinical experience and exposure in hospital settings.

This is consistent with a cross-sectional study conducted at Jeddah University, which also found a high level of good attitude among medical students. In that study, a significant majority of respondents demonstrated a good attitude, with nearly nine out of every ten students expressing the belief that Basic Life Support is a necessary skill and advocating for the training to be a mandatory part of the medical curriculum.[14]

Good attitude of medical students to BLS underscores student's willingness and readiness to learn BLS skills and it gives credence to the fact that BLS training is mandatory and an integral to medical students training.

The practice levels of Basic Life Support among medical students were observed to be generally poor, with the vast majority of respondents demonstrating inadequate practice scores. Specifically, more than eight out of every ten participants exhibited poor practice, while only a small minority (less than fifteen percent) showed a good level of practice.

A significant factor influencing these results was hands-on experience; students who had previously undergone training with a mannequin demonstrated a higher proportion of good practice compared to those who had not. Among those with mannequin training, one-quarter achieved good practice scores, whereas among those without such training, only about one out of every ten students reached a good practice threshold.

This finding is consistent with a cross-sectional study on the knowledge, attitude, and practice of Basic Life Support among medical students in Lebanon conducted in 2021. The findings in that study revealed that nearly all respondents demonstrated poor practice. This high rate of deficiency was largely attributed to the fact that the vast majority of the students had not received formal Basic Life Support training.[16]

The poor practice of medical students towards BLS highlights the need for practical hands on training especially with mannequins this will increase mastery of BLS skills and improve better response to emergency conditions such as cardiac arrest or respiratory distress.

It is recommended that the university establish a dedicated, well-equipped simulation laboratory to ensure that every medical student has regular access to high-fidelity mannequins for Basic Life Support training.

The most significant obstacles identified by the students in this study includes limited availability of formal BLS training closely followed by a lack of practice opportunities. These findings suggest that while interest is high, students are hindered by inadequate infrastructure, with over half stating that medical school does not provide sufficient training and they had never used a mannequin.

Psychological barriers also play a major role in performance hesitation. Over half of the students fear causing harm to a victim and legal consequences. Secondary factors include emotional distress in emergencies, a lack of awareness regarding the importance of BLS and high cost of certification.

These findings may be attributed to significant infrastructural gaps, such as the absence or underutilization of simulation laboratories, and a medical curriculum that prioritizes theoretical instruction over hands-on practical training.

These findings aligns with a study done in Ibadan and South-Western Nigeria, which also identified fear of harm and a lack of AED confidence as primary obstacles.[10]

These findings suggest a significant deficiency in hands-on training within the medical curriculum. Consequently, while students demonstrate a professional willingness to intervene, they remain technically unequipped to manage the high-stress demands of a cardiac emergency.

There should be strengthening of mandatory BLS and AED education and certification, simulation labs be expanded, and workshops should be provided to mitigate the fear of causing harm.

5.2 Conclusion

The study shows that although overall attitude towards BLS was generally good, there are significant gaps in Knowledge and practice of BLS amongst medical students in University of Benin. A substantial majority of respondents demonstrated poor knowledge and inadequate practice scores, with final-year students showing better theoretical understanding but still struggling with hands-on proficiency.

The lack of available formal training and insufficient practice opportunities with mannequins were identified as the most significant barriers, leaving more than half of the students feeling technically unequipped for real-life threatening emergencies such as respiratory distresses and cardiac arrest.

5.3 Recommendations

Based on the findings of this study the following recommendations are proposed to relevant stakeholders to improve knowledge, attitude and practice of basic life support.

The Medical and Dental Council of Nigeria should ensure that all instructional materials and practical assessments strictly adhere to the 2020 American Heart Association (AHA) guidelines, specifically emphasizing the "CAB" (Chest compressions, Airway, Breathing) sequence.

To the School of Medicine, University of Benin, it is recommended to invest in a clinical skills laboratory equipped with high-fidelity adult, pediatric, and neonatal mannequins to address the critical lack of hands-on experience. Additionally, the Faculty should partner with Non-Governmental Organisations (NGOs) like the Health Emergency Initiative (HEI) and the Nigerian Red Cross Society to provide regular, standardized BLS workshops. Basic Life Support should be transitioned from an elective or optional seminar to a mandatory, credit-bearing module for all clinical students. Formal training should commence at the 400-level (the first clinical year) to address the significant knowledge and practice deficiencies observed in junior clinical students.

The University of Benin Teaching Hospital (UBTH) Management should prioritize student exposure to real-world emergency protocols and life-saving equipment. This includes ensuring that Automated External Defibrillators (AEDs) and resuscitation carts are highly visible and accessible. Furthermore, the hospital must clearly communicate the legal protections and ethical mandates that support responders during emergency interventions.

APPENDIX

APPENDIX I

INFORMED CONSENT FORM

KNOWLEDGE, ATTITUDE AND PRACTICE OF BASIC LIFE SUPPORT AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN.

INVESTIGATORS:

ISIBOR DAVID EDEOGHOSA

IHENYEN EHITIEMORIA

SUPERVISOR:

PROF. A.N. OFILI

FINANCIAL SPONSORSHIP:

This research project is self-sponsored.

PURPOSE OF THE RESEARCH:

To Assess knowledge attitude and practice of basic life support among medical students in University of Benin in order to identify gaps, improve BLS training and Emergency Medicine services and response.

PROCEDURES AND PROTOCOL INVOLVED IN THE STUDY:

You are kindly requested to complete a questionnaire designed to assess the knowledge, attitude and practice of basic life support among medical students in the university of benin. This questionnaire is for research purposes only.

COMPENSATION:

There will be no financial compensation for participating in this study.

VOLUNTARY PARTICIPATION:

Your participation in this research is completely voluntary. There will be no discrimination against you if you choose not to participate. You are free to change your mind and withdraw from the study at any time, even if you initially agreed to take part.

SIDE EFFECTS:

There is no anticipated adverse effect associated with participating in this study.

BENEFIT:

The benefit of this study includes the provision of useful local data for understanding the trends in Nigeria among undergraduate students and providing recommendations for evidence-based interventions regarding the problem.

CONFIDENTIALITY:

All information and data obtained during this study will be kept confidential. Participant names will not be recorded on the questionnaires, and all collected information will be securely stored in a password-protected file on my personal computer. Any physical copies will be stored in a locked personal document cabinet.

CONTACT INFORMATION:

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Medical Student

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Ethics and Research Committee

University of Benin Teaching Hospital

Benin City.

Email: ubthresearchethics@gmail.com

Phone Number: 07063331337

IF THERE IS ANY PORTION OF THIS CONSENT AGREEMENT THAT YOU DON'T UNDERSTAND, ASK THE FIELD WORKER OR INVESTIGATOR BEFORE SIGNING.

Please sign below if you have agreed to participate in the study.

CERTIFICATION OF CONSENT

I, _____ having the full capacity to consent for myself do thereby to my participation in the research study. The methods and means by which the study will be conducted have been explained to me by Ethical Committee. I have been given the opportunity to ask questions concerning this investigational study, and any such questions have been answered to my full and complete satisfaction. I understand that i may at any time during the study revoke this consent and withdraw myself from the study without prejudice

Name of participant: _____

Signature of participant: _____

Date: _____

APPENDIX II

QUESTIONNAIRE

KNOWLEDGE, ATTITUDE AND PRACTICE OF BASIC LIFE SUPPORT AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN

Dear respondent,

I am a 600L medical student carrying out a one-year project which is designed to assess the Knowledge, Attitude and Practice among medical students in the University of Benin. This questionnaire will aid as a tool for data collection in this research. Your sincere response will be helpful and the information given here will be appreciated and treated with utmost confidentiality.

Thanks for your cooperation and please tick where appropriate ( )

SECTION A: SOCIO DEMOGRAPHIC CHARACTERISTICS

1. Age(in years as at last birthday) _____
2. Sex: Male ( ) Female ( )
3. Marital status: Single ( ) Married ( ) Divorced ( ) Widowed ( )
4. Religion: Christian ( ) Islam ( ) ATR ( ) Others ( )
5. Level of education: _____
6. Current Academic level(in medical school) : _____
7. Occupation: _____
8. Ethnicity: _____
9. Who is financially responsible for you in school : _____

SECTION B : KNOWLEDGE OF BASIC LIFE SUPPORT AMONG RESPONDENTS

Tick the single best option where appropriate

10. What is the Abbreviation of BLS?

    Best Life Support ( ) Basic Life Support ( ) Basic Lung Support ( ) Basic Life Services( )

11. When you find someone unresponsive in the middle of the road what will be your first response? (Note you are alone there)

    Open Airway ( ) Start Chest Compression ( ) Look for safety ( ) Give two breaths ( )

12. If you confirm somebody is not responding to you even after shaking and shouting at him what will be your immediate response

    Start CPR ( ) Activate EMS ( ) Put him in recovery position ( ) Observe ( )

13. What is the location for Chest Compression?

    Left side of the Chess ( ) Right side of the chest ( ) Centre of the chest on the lower half of the breast bone ( ) Xiphisternum ( )

14. What is the location for chest compression in infants?

    One finger breadth below the nipple line ( ) At the intermammary line ( ) One finger breadth above the nipple line ( ) At xiphisternum ( )

15. How do you give rescue breathe in infants?

    Ventilation for mouth to mouth with nose pinched ( ) Mouth to mouth and nose ( ) Mouth to nose only ( ) Mouth to mouth without nose pinched ( )

16. Depth of compression in adults during CPR

    At least 2 inches ( ) $2^{1/2}$ - 3 inches( ) 1-$1^{1/2}$ inches( ) $1^{1/2}$ inch ( )

17. Depth of compression in Children during CPR include all except

    2inches ( ) 2-$2^{1/2}$ inches ( ) 1 -$1^{1/2}$ inches ( ) ½ -1 inch ( )

18. Depth of Compression in neonates during CPR

    $1^{1/2}$ - 2 inches ( ) 2- $2^{1/2}$ inches ( ) 1 inch ( ) Approximately $1^{1/2}$ inch ( )

19. Rate of chest compression in adult and children during CPR

    At least 100/min ( ) Appropriately 100/min ( ) 80/min( ) 120/min( )

20. What does the abbreviation AED stands For

    Automated External Defibrillator ( ) Automated Electrical Defibrillator ( ) Advanced Electrical Defibrillator ( ) Advanced External Defibrillator ( )

21. What does the abbreviation EMS stands for?

    Effective Medical Services ( ) Emergency Management Services ( ) Emergency Medical Services ( ) External Medical Support ( )

22. If you and your friend are having food in a canteen and suddenly your friend starts choking but is responsive what will be your first response?

    Give abdominal thrusts ( ) Give chest Compressions ( ) Confirm foreign body aspiration by talking to him ( ) Give back blows ( )

SECTION C: ATTITUDE TOWARDS BASIC LIFE SUPPORT AMONG RESPONDENTS.

Tick the most appropriate where: **SA= STRONGLY AGREE, A = AGREE UD= UNDECIDED, D = DISAGREE, SD = STRONGLY DISAGREE**

S/N		SA	A	UD	D	SD
23	BLS is necessary for all medical students					
24	I am confident I can perform BLS when needed					
25	I am willing to perform CPR when necessary					
26	mouth to mouth ventilation is acceptable for person of same gender					
27	mouth to mouth ventilation is acceptable for person of opposite gender					
28	I am willing to attend a formal BLS training					
29	BLS should be a part of medical school curriculum					

SECTION D: PRACTICE OF BASIC LIFE SUPPORT AMONG RESPONDENTS

Tick the single best option where appropriate

30. The 5 links in the adult chain of survival include all of the following except?

    Early CPR ( ) Integrated post cardiac arrest care ( ) Advanced airway placement ( ) Rapid defibrillator

31. How often should rescuers switch roles when performing 2 rescuers CPR?

    After each cycle ( ) After 2 cycles ( ) After 5 cycles( ) After 10 cycles ( )

32. The initial Basic Life Support (BLS) steps for adults are?

    Assess the victim, Give 2 rescue breaths, defibrillate, start CPR ( ) Assess the victim, activate EMS & get AED, check pulse, start CPR ( ) Check pulse, give rescue breaths, assess the victim, defibrillate ( ) Assess the victim, start CPR, give 2 rescue breaths, defibrillate ( )

33. where should you attempt to perform a pulse check in adult?

    Carotid ( ) Brachial ( ) Ulnar ( ) Temporal ( )

34. The compression to ventilation ratio for the lone rescuer giving CPR to victims of ANY age is? 15:1 ( ) 15:2 ( ) 30:1( ) 30:2( )

35. The proper steps for operating AED are?

    On the AED, attach electrode pads, shock the patient, analyze the rhythm ( ) On the AED , attach electrode pads, analyze the rhythm, clear the patient, deliver shock ( ) Attach electrode pads, check pulse, shock patient, analyze rhythm ( ) Check pulse, attach electrode pads, analyze rhythm, shock patient ( )

36. The 2020 AHA Guidelines For CPR recommended BLS sequence of steps are?

    Chest compressions, Airway, Breathing,( ) Airway, Breathing, Check Pulse ( ) Airway, Breathing, Chest Compression( ) Chest compression , Airway placement, Breathing ( )

37. Signs of severe airway obstruction include of the following except?

    Poor air exchange ( ) High pitched noise while inhaling ( ) Unable to cry ( ) May wheeze between coughs

38. During 2 rescuer CPR in an adult with an advanced airway in place, breaths should be administered how often?

    Every 5 seconds ( ) Every 5-6 seconds ( ) Every 6-8 seconds( ) Every 10-12 seconds ( )

39. The critical characteristics of high quality CPR include which of the following?

    Starting Chest compression within 10 seconds of recognition of cardiac arrest ( ) push hard, push fast ( ) Minimize interruptions ( ) All of the above ( )

SECTION E: FACTORS AFFECTING KNOWLEDGE ATTITUDE AND PRACTICE OF BASIC LIFE SUPPORT AMONG RESPONDENTS

40. What factors prevent you from acquiring or performing BLS skills? (Select all that apply)

    Lack of confidence in performing CPR ( )

    Fear of causing harm to the patient ( )

    Fear of legal consequences ( )

    Limited availability of BLS training sessions ( )

    High cost of BLS certification programs ( )

    Lack of practice opportunities ( )

    Lack of awareness about the importance of BLS ( )

    Emotional distress in emergency situations ( )

    Other (Please specify): _____

41. Do you believe your medical school provides adequate BLS training? Yes ( ) No( )

42. Have you had hands-on training with a mannequin or real-life scenario practice? Yes ( )

    No ( )

43. Do you feel comfortable using an Automated External Defibrillator (AED)? Yes ( ) No( )

44. Have you ever performed CPR or other BLS measures in a real emergency? Yes ( ) No ( )

APPENDIX III

GANTT CHART

This Gantt chart outlines the research schedule from topic submission through to the final conclusion and submission phase, spanning January 2025 to February 2026.

Timeline Visualization

Activity	Jan '25	Feb '25	Mar '25	Apr '25	May '25	Jun '25	Jul '25	Aug '25	Sep '25	Oct '25	Nov '25	Dec '25	Jan '26	Feb '26
1. Topic Submission	X													
2. Introduction	X													
3. Literature Review		X												
4. Methodology			X	X										
5. Data Collection				X	X	X	X	X	X	X	X			
6. Data Analysis												X	X	
7. Discussion & Submission													X	X

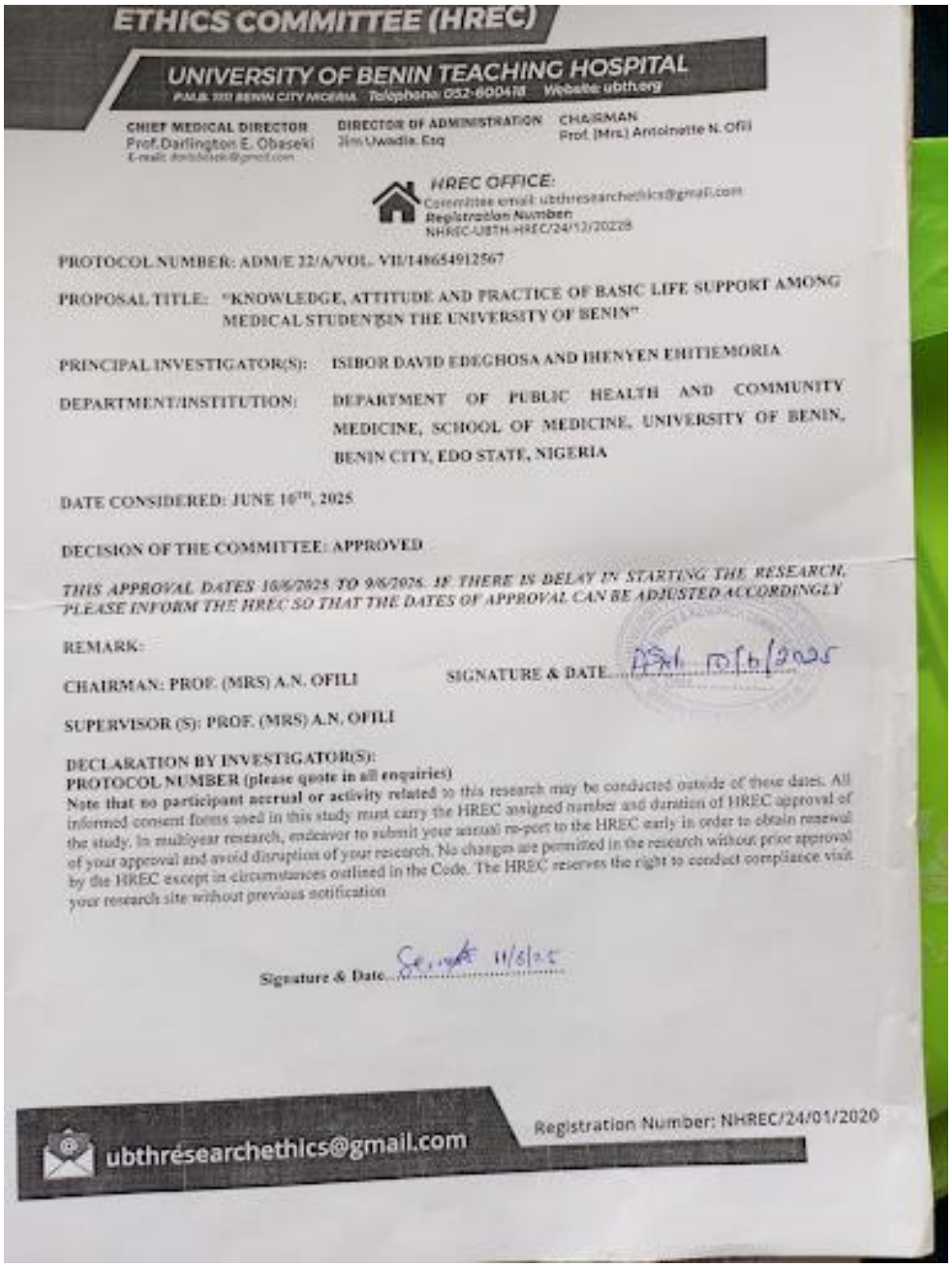
APPENDIX IV

MAP OF THE AREA

Figure 4: MAP SHOWING UNIVERSITY OF BENIN

APPENDIX V

ETHICAL APPROVAL



ETHICS COMMITTEE (HREC)

UNIVERSITY OF BENIN TEACHING HOSPITAL

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NHREC-UBTH-HREC/24/12/20228

PROTOCOL NUMBER: ADM/E 22/A/VOL. VII/14865491256?

PROPOSAL TITLE: "KNOWLEDGE, ATTITUDE AND PRACTICE OF BASIC LIFE SUPPORT AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN"

PRINCIPAL INVESTIGATOR(S): ISIBOR DAVID EDEGHOSA AND IHENYEN EHITIEMORIA

DEPARTMENT/INSTITUTION: DEPARTMENT OF PUBLIC HEALTH AND COMMUNITY MEDICINE, SCHOOL OF MEDICINE, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, NIGERIA

DATE CONSIDERED: JUNE 16TH, 2025

DECISION OF THE COMMITTEE: APPROVED

THIS APPROVAL DATES 16/6/2025 TO 9/6/2026. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY

REMARK:

CHAIRMAN: PROF. (MRS) A.N. OFILI SIGNATURE & DATE 13/6/2025

SUPERVISOR (S): PROF. (MRS) A.N. OFILI

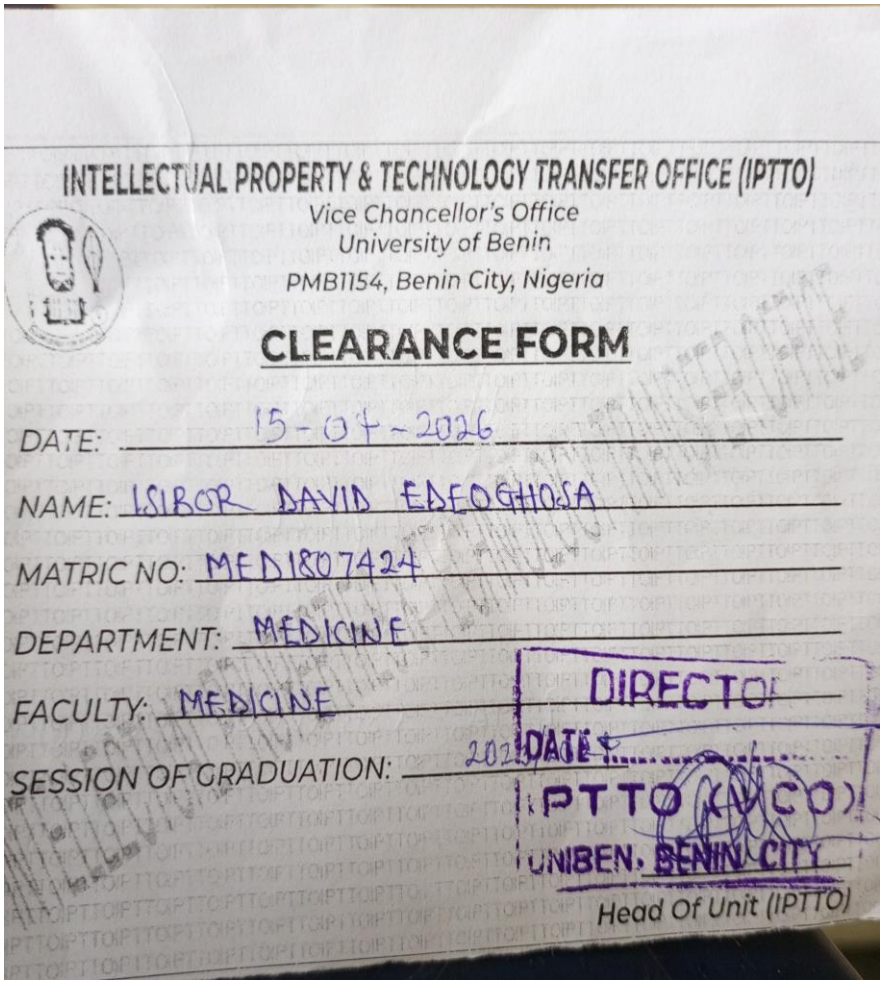
DECLARATION BY INVESTIGATOR(S):
PROTOCOL NUMBER (please quote in all enquiries)
Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear research, endeavor to submit your annual re-port to the HREC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification

Signature & Date 11/6/25

ubthresearchethics@gmail.com Registration Number: NHREC/24/01/2020

APPENDIX VI

CERTIFICATION



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DATE: 15-07-2026

NAME: ISIBOR DAVID EDEOGHOSA

MATRIC NO: MED1807424

DEPARTMENT: MEDICINE

FACULTY: MEDICINE

SESSION OF GRADUATION: 2021

DIRECTOR
DATE
IPTTO (VCO)
UNIBEN, BENIN CITY
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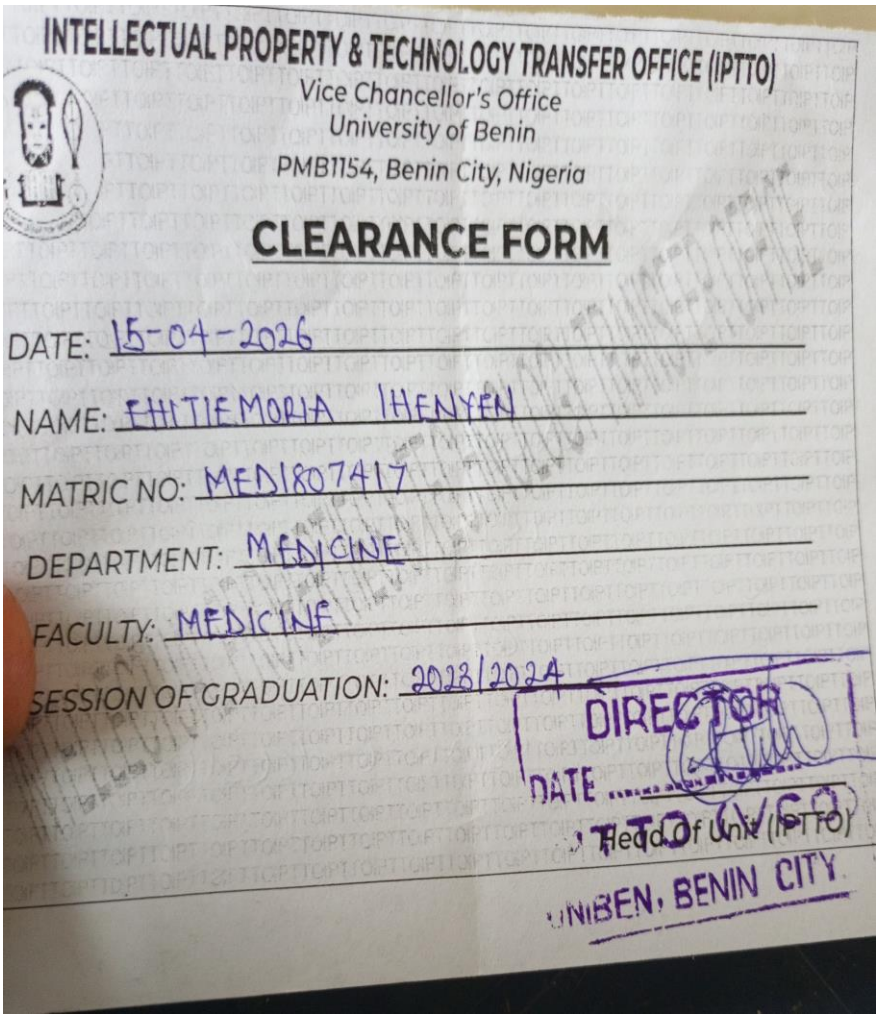

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Vice Chancellor's Office
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CLEARANCE FORM

DATE: 15-04-2026

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MATRIC NO: MED1807417

DEPARTMENT: MEDICINE

FACULTY: MEDICINE

SESSION OF GRADUATION: 2023/2024

DIRECTOR
DATE .....
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IPTTO (V/C)
UNIBEN, BENIN CITY

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