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St. Paul's Hospital Millennium Medical College**

Undergraduate Study Program

School of Public Health

**Title: Knowledge, Attitude, and Practice Regarding
Cardiopulmonary Resuscitation (CPR) Among Clinical-Year
Medical Students At SPHMMC: A Cross-Sectional Study**

Investigator: Misganaw Tesfaye (Medical Intern)

**A Research Report Submitted to the School of Public Health, St. Paul's Hospital
Millennium Medical College in Partial Fulfillment of the Requirements for the
Undergraduate Degree of Doctor of Medicine.**

Addis Ababa, Ethiopia

March, 2026

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List of Abbreviations and Acronyms

AAU: Addis Ababa University

AED: Automated External Defibrillator

AHA: American Heart Association

ALS: Advanced Life Support

BLS: Basic Life Support

CPR: Cardiopulmonary Resuscitation

ETB: Ethiopian Birr

IRB: Institutional Review Board

IT: Information Technology

KAP: Knowledge, Attitude, and Practice

PI: Principal Investigator

SPHMMC: St. Paul's Hospital Millennium Medical College

SPSS: Statistical Package for the Social Sciences

Abstract

Background: Cardiac arrest is a major global health issue and a leading cause of preventable death. Cardiopulmonary resuscitation (CPR) is a critical life-saving skill for medical professionals. Prompt initiation of CPR significantly increases survival rates. (1) Clinical-year medical students are often present during emergencies and are expected to initiate CPR; however, studies about knowledge, attitude and practice among them are unavailable.

Objective: To assess the knowledge, attitude, and practice (KAP) regarding CPR among clinical-year medical students at St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa, Ethiopia.

Methods: An institution-based cross-sectional study was conducted among 196 clinical-year medical students at SPHMMC. Stratified random sampling was used to ensure proportional representation. Data were collected using a structured, self-administered questionnaire adapted from the 2020 American Heart Association (AHA) CPR guidelines and the National Health Care Provider Solutions (NHCPS) BLS practice test. Knowledge consisted of 13 items, attitude of 5 items (score range 3–15), and practice of 10 items. Knowledge and practice were categorized using an 80% cutoff, while attitude was classified using an 80% cutoff of the total attitude score. Data were entered and analyzed using SPSS version 25. Descriptive statistics were computed. Chi-square test was used to assess associations. Statistical significance was declared at $p < 0.05$. Ethical clearance was obtained from the SPHMMC IRB

Results: The mean age of participants was 23.57 ± 1.96 years. Only 16 respondents (8.2%) demonstrated adequate knowledge of CPR, while 180 (91.8%) had inadequate knowledge. Additionally, 147 students (75.0%) had poor CPR practice, whereas only 49 (25.0%) demonstrated good practice, despite a highly favorable attitude observed in 192 (98.0%) participants. Knowledge, Attitude and Practice levels varied across academic years, with knowledge and practice improving with increasing academic

year; however, even among interns, only 12.3% demonstrated adequate knowledge and 17.5% demonstrated good practice.

CPR training exposure ($p = 0.027$, $p < 0.001$) and ICU experience ($p = 0.071$, $p = 0.012$) showed significant associations with knowledge and CPR practice. Students who had CPR training were significantly more likely to have good practice compared to those without training.

Conclusion: Although clinical-year medical students demonstrated a highly favorable attitude toward CPR, only a small proportion achieved adequate knowledge (8.2%) and good practice (25.0%), with deficiencies observed across all academic levels. While competence improved with increasing clinical seniority, it remained suboptimal even among interns. CPR training and ICU exposure were significantly associated with better performance, highlighting a critical gap between theoretical awareness and practical competence.

Keywords: Cardiopulmonary resuscitation, Knowledge, Attitude, Practice, Clinical medical students, Ethiopia

1. Introduction

1.1. Background

Cardiopulmonary resuscitation (CPR) is a critical life-saving procedure used in cases of cardiopulmonary arrest to maintain vital organ perfusion until spontaneous circulation is restored. According to global estimates, cardiac arrest remains a leading cause of death both in-hospital and out-of-hospital, with survival largely dependent on the immediate initiation of CPR. Early recognition and prompt, high-quality CPR significantly improve survival rates and neurological outcomes following cardiac arrest (1).

Medical students, particularly those in their clinical years, are often among the first responders to cardiac emergencies in hospital settings. As such, they are expected to have a sufficient level of knowledge, a positive attitude, and practical readiness to perform CPR effectively. However, studies conducted across various countries including India, Iran, and those in the Middle East and Europe have consistently demonstrated that while most medical students have a favorable attitude toward CPR, their knowledge and practical skills are often inadequate.(2–6). Only a small proportion of students report feeling confident enough to perform CPR independently, highlighting a critical gap in clinical preparedness.(7)

Across African countries such as Egypt, Nigeria, Uganda, and Kenya, the same trend is evident. Although most students and junior doctors express strong interest and positive attitudes toward CPR training, actual knowledge levels are frequently suboptimal, and hands-on experience is limited or absent.(8–13) The few who do receive training often demonstrate better knowledge and more willingness to apply CPR techniques.(8–12)

In Ethiopia, various institutional studies, including those conducted at Jimma University, the University of Gondar, Dilla University, and Tikur Anbessa Specialized Hospital, have highlighted similar challenges. While some students report moderate to good knowledge, practical exposure and confidence in performing CPR are notably low.(14–18) Factors such as prior training, exposure to critical care

settings, and access to CPR guidelines significantly influence students' competence.(15,19)

Given that CPR is a core emergency skill expected of all future physicians, it is crucial to assess the status of knowledge, attitudes, and practices (KAP) among clinical-year medical students to identify gaps and inform curriculum development.

1.2. Statement of the Problem

Sudden cardiac arrest is a major public health concern globally and in low- and middle-income countries like Ethiopia. The timely initiation of cardiopulmonary resuscitation (CPR) is a critical determinant of survival rates and neurological outcomes following cardiac arrest.(1)

Despite its proven efficacy, numerous studies across various countries consistently reveal inadequate CPR knowledge and practical skills among medical students. For instance, in Iran, only 7% of interns believed they could independently perform complete CPR (7) and in some Indian studies, only 4% of participants possessed complete theoretical knowledge.(5) This trend of suboptimal preparedness is similarly observed across African nations. In Egypt, only 6.2% of medical students demonstrated adequate CPR knowledge (8), while in Nigeria, studies have shown that as few as 12.8% of students possess good knowledge levels.(10)

In Ethiopia, institutional studies corroborate these findings; for example, at the University of Gondar, only 25.1% of health professionals had good knowledge (15), and at Jimma University Medical Center, this figure was only 31.4%.(19) Furthermore, even when theoretical knowledge is moderate, practical skills remain alarmingly low, with mean skill scores for interns reported as low as 3.77 out of 10.(16)

At St. Paul's Hospital Millennium Medical College (SPHMMC), clinical-year medical students are actively involved in patient care and are frequently present during emergencies. However, there is a notable scarcity of data regarding their actual preparedness to perform CPR. Without comprehensive baseline data on the CPR-related knowledge, attitude, and practice of clinical-year students at SPHMMC,

it is challenging to design targeted interventions or advocate for necessary curriculum changes. This study aims to address this critical gap by assessing the current levels of knowledge, attitude, and practice related to CPR among clinical year medical students at SPHMMC, thereby providing essential evidence to inform educational improvements and enhance emergency preparedness.

1.3 Significance of the Study

This study is significant because by identifying gaps in knowledge and practice among clinical-year students, the findings can contribute to improved emergency preparedness and patient outcomes. Furthermore, the study supports capacity building by guiding how medical schools allocate resources toward essential life-saving skills. It also provides a basis for advocating for national policies that mandate Basic Life Support (BLS) and Advanced Life Support (ALS) training for all healthcare students prior to graduation. Lastly, the study will serve as a valuable reference point for future research aimed at evaluating the long-term impact of curriculum reforms or training interventions on CPR competence among medical students in Ethiopia.

2. Literature Review

2.1. Knowledge of Clinical Medical Students Regarding CPR

2.1.1. Global Context

Knowledge of cardiopulmonary resuscitation (CPR) among medical students varies significantly across the globe, often falling below expected standards for future healthcare providers. In a cross-sectional study conducted in Karnataka among 100 medical interns and junior residents, the mean knowledge scores were 22.63 ± 4.211 for interns and 22.06 ± 3.788 for junior residents, with 52% of the participants having fair knowledge and only 8% showing poor knowledge, suggesting relatively better awareness than reported elsewhere in India.(2)

Conversely, a study from Vijayawada found that 36% of MBBS interns and 46% of nursing interns had poor knowledge scores based on the 2010 AHA guidelines. Despite a median knowledge score of 6, this reflects inadequate CPR knowledge among both medical and nursing students.(3) Similarly, a large-scale study in the Middle East involving 2,114 students from Syria, Iraq, and Jordan reported only moderate CPR knowledge, with average scores significantly differing by country (18.3–24.3). Notably, students who had undergone BLS training were five times more likely to have a higher knowledge score, underscoring the positive impact of formal instruction.(6)

Further emphasizing this gap, a study evaluating procedural knowledge among undergraduate students reported that only 1.2% knew the correct compression-to-ventilation ratio, and just 20.4% were aware of the correct sequence of CPR. Although general awareness was good, technical knowledge remained insufficient.(4) Another study found that while 76.07% of participants had theoretical knowledge about BLS, only 4% had complete knowledge, and the majority had never received formal training.(5)

In Iran, only 7% of interns believed they could independently perform complete CPR, with a significant portion scoring in lower knowledge groups despite high interest in learning the skills.(7) A similar trend was observed among medical and nursing

students in another Indian study, where untrained participants scored significantly lower in theoretical CPR knowledge than trained ones (24.36% vs. 9.25%).(20)

Across European countries, only 49.3% of medical students recognized basic indicators of cardiac arrest, and less than 60% could identify appropriate AED use or CPR rate. Although most had attended BLS courses, critical knowledge gaps were evident.(21) Lastly, in Tamil Nadu, the average CPR knowledge score among medical students was just 4.55 out of 6, with knowledge declining as students progressed through their training, highlighting the need for consistent refresher education.(22)

2.1.2. African Context

Across various African countries, studies consistently report inadequate CPR knowledge among medical students and healthcare professionals.

In Upper Egypt, a cross-sectional study at Beni-Suef University Hospital revealed that only 31.7% of junior doctors and 6.2% of medical students demonstrated adequate knowledge of CPR. However, those with prior training performed significantly better, and most participants had positive attitudes toward learning CPR.(8)

A study in Nigeria among university students found that only 29.7% had received CPR training, though 82.5% were aware of CPR. Despite the low training rate, 77.3% of those trained felt confident to perform CPR. This suggests a substantial gap between awareness and actual competency, highlighting the need for more structured education.(9)

Similarly, among undergraduate students at the University of Port Harcourt, only 12.8% had good CPR knowledge, while 60.1% had poor knowledge. Medical students performed better than non-medical ones. Despite this, 95.3% were willing to undergo training, showing strong potential for improvement if access to education is improved.(10)

In Osun State, Nigeria, only 40% of physicians had attended BLS or ALS training, and just 30% knew how to operate an AED, indicating that CPR knowledge is

disproportionately concentrated among healthcare providers in tertiary institutions. (11) A multi-institutional study in Southern Nigeria showed that 96.3% of students had good CPR knowledge, although 86.1% had never practiced CPR. The study highlighted the need for repeated exposure and skill application to complement theoretical knowledge. (12)

A study across eight universities in Uganda revealed that only 29.3% of students had good CPR knowledge, with prior BLS training significantly associated with better scores. Despite the poor knowledge levels, nearly all participants expressed a desire for CPR to be included in the curriculum. (13)

2.1.3. Ethiopian Context

In Ethiopia, several institutional studies have identified widespread deficiencies in CPR knowledge, even among clinical-year students and practicing professionals.

At Jimma University, 93.3% of clinical year students were reported to have good CPR knowledge, though the majority lacked practical experience. However, the authors noted that knowledge, attitude, and practice were still not considered sufficient or safe overall. (14) At the University of Gondar, only 25.1% of health professionals had good knowledge of CPR. Previous training, exposure to cardiac arrest, and reading CPR guidelines were strong predictors of knowledge. (15)

Another study at the same hospital showed that interns and nurses had moderate knowledge but low skill levels. For instance, the mean skill score for interns was only 3.77 out of 10, reflecting a serious gap between knowledge and competence. (16) In Debre Markos Referral Hospital, 77.8% of healthcare providers had inadequate CPR knowledge, and only 10.2% correctly answered the site of chest compressions, showing serious knowledge deficiencies. (23)

At Dilla University, 56.9% of graduating students had good CPR knowledge. Prior training and clinical exposure were significantly associated with better scores, highlighting the importance of experiential learning. (17) Likewise, a 2020 study among interns from Tikur Anbessa and Yekatit 12 Hospitals found average CPR

knowledge scores to be below 50%, reinforcing the need for structured curriculum integration.(18)

Finally, at Jimma University Medical Center, only 31.4% of healthcare professionals demonstrated good CPR knowledge. Those with ICU experience, prior training, and cardiac arrest exposure were significantly more knowledgeable, suggesting that clinical rotations and repeated training can enhance knowledge retention.(19)

2.2. Attitudes of Clinical Medical Students Regarding CPR

2.2.1. Global Context

Globally, attitudes toward CPR among medical students are generally positive, even when their knowledge or skills are lacking. In Karnataka, 90% of participants had a positive attitude toward CPR, despite variability in knowledge scores(2) Similarly, in Vijayawada, although knowledge levels were poor, medical and nursing students showed good attitudes toward CPR, suggesting a readiness to learn if given the opportunity. (3)

In the Middle East, a multicountry study involving students from Syria, Iraq, and Jordan found that although CPR knowledge was moderate, students expressed strong willingness to attend CPR training programs, and those who had received such training demonstrated better attitudes toward performing CPR.(6)

A study in Tamil Nadu, India, showed that attitude improved with advancing years of study, even though knowledge declined. Most students were willing to perform CPR, although they expressed reluctance in out-of-hospital settings due to fear of infection or lack of confidence.(22) Similar trends were noted in Europe, where most final-year students who had attended CPR training reported confidence and willingness to perform CPR, although knowledge gaps remained.(21)

2.2.2. African Context

In Africa, most studies report strongly positive attitudes toward CPR among students and healthcare providers, despite limited training or skill application.

In Upper Egypt, 95% of junior doctors and 91% of students reported positive attitudes toward CPR training, even though only a minority had sufficient knowledge.(8) In Nigeria, studies consistently report strong interest in acquiring CPR skills. At the University of Port Harcourt, 56.7% of students had positive attitudes, and over 90% were willing to attend formal training (18). Another Nigerian study among non-medical students also reported that 92.6% supported the inclusion of CPR in university curricula.(10)

In Uganda, while only 29.3% of medical students had good knowledge, nearly all participants (99.1%) believed BLS was essential, and 97.7% wanted it added to their curriculum. (13) In Southern Nigeria, 70.4% of students had positive attitudes, though practical exposure was limited.(12) These findings point to a receptive audience in African medical institutions, ready for curriculum-based CPR training.

2.2.3. Ethiopian Context

Studies in Ethiopia uniformly show favorable attitudes among both students and healthcare workers toward CPR and training.

At Jimma University, while 93.3% of students had good knowledge, many lacked practical exposure; still, the majority showed a favorable attitude toward CPR and its importance in clinical training.(14) In another study at Jimma University Medical College, 40% of health professionals had favorable attitudes, with prior exposure and training significantly linked to better attitudes.(19)

At the University of Gondar, 60.8% of professionals had a positive attitude toward CPR. This was significantly associated with factors like training and access to guidelines.(15) Similarly, Debre Markos Referral Hospital reported that 64.2% of

participants had unfavorable attitudes, indicating institutional variation and the need for targeted interventions.(23)

At Dilla University, 51.5% of graduating students had favorable attitudes, with training and exposure strongly associated with better outlooks.(17) Students from Tikur Anbessa and Yekatit 12 Hospitals also showed good attitudes, despite low knowledge scores, reinforcing the value of integrating structured CPR education into the curriculum(18)

2.3. Practices of Clinical Medical Students Regarding CPR

2.3.1. Global Context

Globally, CPR practice rates remain low among medical students, mostly due to limited training opportunities or lack of exposure to real emergencies.

In Karnataka, only 34% of participants had independently performed CPR, while 63% had assisted in it.(2) In Vijayawada, the practice score was low, reflecting the disconnect between theoretical knowledge and actual hands-on experience.(3) Similarly, in a large Middle Eastern study, students with prior CPR training scored significantly higher in application-based questions, and yet many had never practiced CPR on real patients.(6)

In Iran, only 7% of interns felt confident performing full CPR and most students identified a need for emergency departments and continuous training to bridge the skill gap.(7) In Tamil Nadu, just 12.9% had ever practiced CPR, with fears and lack of confidence cited as major barriers.(22)

2.3.2. African Context

African studies consistently show low CPR practice despite awareness and positive attitudes.

In Upper Egypt, only a small percentage of junior doctors and medical students had practical CPR experience, though prior training correlated positively with higher practice levels.(8) In Nigeria, a multi-campus study showed that while 96.3% had good knowledge, 86.1% had never practiced CPR (20). At the University of Port

Harcourt, only 14.2% had performed CPR, showing a critical need for practical sessions.(10)

Ugandan medical students similarly demonstrated low practice scores, with less than one-third having good knowledge and almost none having practical exposure. Yet, they strongly supported its inclusion in the curriculum.(13)

2.3.3. Ethiopian Context

Ethiopian institutions also report low levels of CPR practice, even among senior medical students and interns.

At Jimma University, 80.7% of students had never practiced CPR, highlighting the gap between knowledge and clinical readiness. At Jimma University Medical College, only 28.6% of healthcare professionals demonstrated good practice, with ICU experience and BLS training significantly improving outcomes.(19)

In the University of Gondar, the skill score among interns was only 3.77 out of 10, indicating a lack of preparedness to apply CPR in real settings.(16) At Debre Markos Referral Hospital, 88.9% had unsafe practices, and basic CPR steps like compression depth and site were poorly known.(23)

At Dilla University, only 51.5% had good practice, despite more than half having good knowledge. Clinical exposure, training, and anesthesia education were key contributors to improved practice.(17) In a study among interns at TASH and Yekatit 12 Hospitals, the mean practice score was below 55%, with structured training and clinical attachments identified as crucial for improvement.(18)

3. Objectives of the Study

3.1 General Objective

- To assess the knowledge, attitude, and practice regarding cardiopulmonary resuscitation (CPR) among clinical-year medical students at St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa, Ethiopia.

3.2 Specific Objectives

- To determine the level of knowledge about CPR among clinical-year medical students at SPHMMC.
- To elucidate the attitude of clinical-year medical students toward CPR.
- To assess the practice related to CPR among clinical-year medical students.

4. Methodology

4.1. Study Area and study period

The study was conducted at St. Paul's Hospital Millennium Medical College (SPHMMC), located in Addis Ababa, the capital city of Ethiopia. St. Paul's hospital was established in 1968 Gregorian Calendar by the late Emperor Haile Selassie and re-organized as St Paul's Hospital Millennium Medical College through a decree of the Council of Ministers in 2010 Gregorian Calendar, though the medical school opened in 2007 Gregorian calendar. A board, under the Federal Ministry of Health, governs it. It has more than 2800 clinical, academic and administrative support staff that provide medical specialty services to patients referred from all over the country, teaching medicine and nursing students and doing basic and applied researches. While the inpatient capacity is more than 700 beds, the hospital sees an average of 1200 emergency and outpatient clients daily.(24)

The college admits medical students from across the country and offers a competency-based, integrated- curriculum. Clinical training begins in the third year (C1), continues through the fourth year (C2), and culminates in the internship year.

The institution's busy clinical departments offer diverse exposure to real-time emergencies and patient care, making it a suitable setting for assessing CPR-related knowledge, attitudes, and practices among clinical-year medical students.

The data collection took place from August 7, 2025, to October 17, 2025.

4.2 Study Design

A cross-sectional study design was used.

4.3 Population

4.3.1 Source population

The source population for this study comprises all clinical-year medical students enrolled at St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa, Ethiopia during the 2025/2026 academic year.

4.3.2. Study population

The study population consists of all selected clinical-year medical students who meet the eligibility criteria at SPHMMC. The study population includes:

- New C1 students (starting clinical attachment),
- Old C1 students (continuing clinical training),
- C2 minor and C2 major students (advanced clinical stages),
- Medical interns (final-year students).

The total estimated number of eligible students is approximately 333.

4.4. Eligibility Criteria

4.4.1. Inclusion Criteria:

- All clinical-year medical students (C1, C2, and interns) enrolled at SPHMMC during the study period.
- Students who are willing to participate and provide informed consent.

4.4.2. Exclusion Criteria:

- Students who are critically ill, on extended leave, or unavailable during the data collection period.
- Those who decline consent or fail to complete the questionnaire.

4.5. Sample size Determination and Sampling Technique

4.5.1 Sample Size Determination

The sample size for this study was determined using the single population proportion formula, assuming a 95% confidence level, a 5% margin of error, and an estimated proportion (p) of practice on CPR assumed to be 0.5. Since no prior study was conducted specifically at SPHMMC among this population, a proportion of 50% was used to maximize the sample size.

$$n = \frac{Z_{\alpha/2}^2 p(1-p)}{d^2} = \frac{1.96^2 \cdot 0.5(1-0.5)}{(0.05)^2} = 384$$

Where:

- n = initial sample size
- Z = Z-value at 95% confidence level = 1.96
- p = estimated proportion = 0.5
- d = margin of error = 0.05

Since the total population (N) is less than 10,000 ($N = 333$), a finite population correction was applied:

$$nf = \frac{n}{1+n-1/N} = \frac{384}{1+384-1/333} = \frac{384}{2.153} \approx 178$$

After adjusting for a 10% non-response rate:

$$n_{\text{final}} = 178 + (0.10 \cdot 178) \approx 196$$

Thus, the final sample size is 196 clinical-year medical students.

4.5.2 Sampling Method and Procedure

A stratified random sampling technique was employed to ensure proportional representation of students across their clinical years. The study population was divided into five strata based on academic level:

- New C1
- Old C1
- C2 Minor
- C2 Major
- Interns

The total number of students in each group was obtained from the registrar office. The proportional allocation formula was used to determine how many participants to select from each stratum:

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

Where:

- n_i = sample size from stratum i
- N_i = total number of students in stratum i
- N = total population (333)
- n = final sample size (196)

The calculated sample size for each stratum were as follows:

Academic Year	Estimated Population (Ni)	Calculation (ni = (Ni/333) * 196)	Actual Sample (ni)
New C1	47	$(47/333) * 196 \approx 27.66 \approx 28$	28
Old C1	60	$(60/333) * 196 \approx 35.31 \approx 35$	35
C2 Minor	58	$(58/333) * 196 \approx 34.13 \approx 34$	34
C2 Major	71	$(71/333) * 196 \approx 41.79 \approx 42$	42
Intern	97	$(97/333) * 196 \approx 57.14 \approx 57$	57
Total	333	196	196

4.6. Study Variables

4.6.1. Dependent Variables

- Knowledge about CPR (adequate / inadequate)
- Attitude toward CPR (favorable / unfavorable)
- Practice of CPR (good / poor)

4.6.2. Independent Variables

These are variables that may influence knowledge, attitude, or practice, and could be analyzed descriptively or for subgroup comparisons:

- Age
- Sex
- Year of study (new C1, old C1, C2 minor, C2 major, intern)
- CPR teaching/training
- ICU attachment

4.7. Operational Definitions

Knowledge: was assessed using 13 multiple-choice questions adapted from the 2020 AHA guidelines and previous studies. Each correct answer was scored as 1 and incorrect or “don’t know” answers as 0, giving a total score ranging from 0–13. Based on Bloom’s modified cut-off point, a score of $\geq 80\%$ (≥ 11 out of 13) was considered adequate knowledge, while a score of $< 80\%$ (< 11) was considered inadequate knowledge.

Attitude: was measured using 5 items on a 3-point Likert scale (Yes = 3, Not sure = 2, No = 1), for a total score ranging from 5–15. Using Bloom’s cut-off, a score of $\geq 80\%$ (≥ 12 out of 15) was considered a favorable attitude, while a score of < 12 was considered an unfavorable attitude

Practice: assessed with 10 items related to CPR performance, scored as 1 for correct and 0 for incorrect responses, with a total score of 0–10. A score of $\geq 80\%$ (≥ 8 out of 10) was considered good practice, while a score of < 8 was considered poor practice

4.8. Data Collection Tools and Techniques

Data was collected using a structured, self-administered questionnaire prepared in English and delivered via Google Forms. The questionnaire was developed based on the 2020 American Heart Association (AHA) Guidelines for CPR and Emergency Cardiovascular Care, and included four sections:

1. Sociodemographic Information – age, sex, academic year, ICU attachment and CPR training/teaching
2. Knowledge Assessment – multiple-choice questions covering CPR components such as compression rate and depth, CPR sequence, AED use, and basic emergency response steps
3. Attitude Assessment – Likert-scale statements assessing beliefs, willingness, and confidence in performing CPR
4. Practice Assessment – prior training, exposure to CPR situations, frequency of practice, and self-assessed readiness

The questionnaire was pre-tested on 5%–10% of clinical-year students from a similar medical institution to ensure clarity, consistency, and reliability. Necessary revisions were made based on feedback.

4.9. Data Processing and Analysis

After data collection, all responses submitted through Google Forms were exported to Microsoft Excel for initial screening, cleaning, and coding. Incomplete or duplicate entries were removed. The cleaned data set was then imported into Statistical Package for Social Sciences (SPSS) version 25 for analysis.

Descriptive statistics (frequencies, percentages, means, SD) summarized findings. Chi-square test was applied to assess associations. Statistical significance was set at $p < 0.05$. Results were presented in tables and figures.

4.10. Data Quality Control

To ensure data quality, the questionnaire was pre-tested on 5%–10% of clinical-year medical students at a same institution not included in the final study. Feedback from the pre-test was used to revise unclear or ambiguous questions.

The Google Form included required fields and logic checks to prevent missing or invalid responses. The principal investigator monitored submissions daily, checking for completeness and duplicate entries. Incomplete or inconsistent responses were excluded during data cleaning.

During analysis, data were checked for coding errors and cleaned in Microsoft Excel before importing to SPSS. All data were backed up securely in password-protected storage.

4.11. Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board (IRB) of St. Paul's Hospital Millennium Medical College (SPHMMC). A formal letter of support was also secured from the college administration before initiating data collection.

Participants received a brief explanation of the study's purpose, procedures, and their rights via the first section of the Google Form. Informed consent was obtained electronically before accessing the questionnaire. Participation was entirely voluntary, and students had the right to decline or withdraw at any time without penalty.

The questionnaire did not collect any personal identifiers, ensuring full anonymity. Data were kept strictly confidential and stored in a password-protected Google account accessible only to the principal investigator. Results were reported in aggregate form, with no individual-level data disclosed.

5. Results

5.1. Socio-Demographic Characteristics of Clinical-Year Medical Students at SPHMMC

A total of 196 clinical-year medical students participated in the study, yielding a 100% valid response rate. The mean age of the respondents was 23.57 years ($SD \pm 1.96$), with ages ranging from 20 to 27 years. Half of the participants were male (98, 50.0%) and half were female (98, 50.0%).

Three-quarters of respondents (147, 75.0%) reported having worked in an intensive care unit (MICU, PICU, or SICU) for at least two weeks. In addition, 153 participants (78.1%) had received CPR training, while 43 (21.9%) reported no prior CPR training.

Regarding academic level, interns constituted the largest proportion (57, 29.1%), followed by C2 major students (42, 21.4%), old C1 students (35, 17.9%), C2 minor students (34, 17.3%), and new C1 students (28, 14.3%).

Table 1 – Sociodemographic Characteristics of Clinical-Year Medical Students at SPHMMC (N = 196) in 2025 G.C

Variable	Category	Frequency (n)	Percentage (%)
Sex	Male	98	50.0
	Female	98	50.0
Age (years)	Mean $\pm$ SD	23.57 $\pm$ 1.96	—
	Range	20–27	—
Academic year	New C1	28	14.3
	Old C1	35	17.9
	C2 Minor	34	17.3
	C2 Major	42	21.4
	Intern	57	29.1
ICU experience (≥ 2 weeks)	Yes	147	75.0
	No	49	25.0
CPR training	Yes	153	78.1
	No	43	21.9

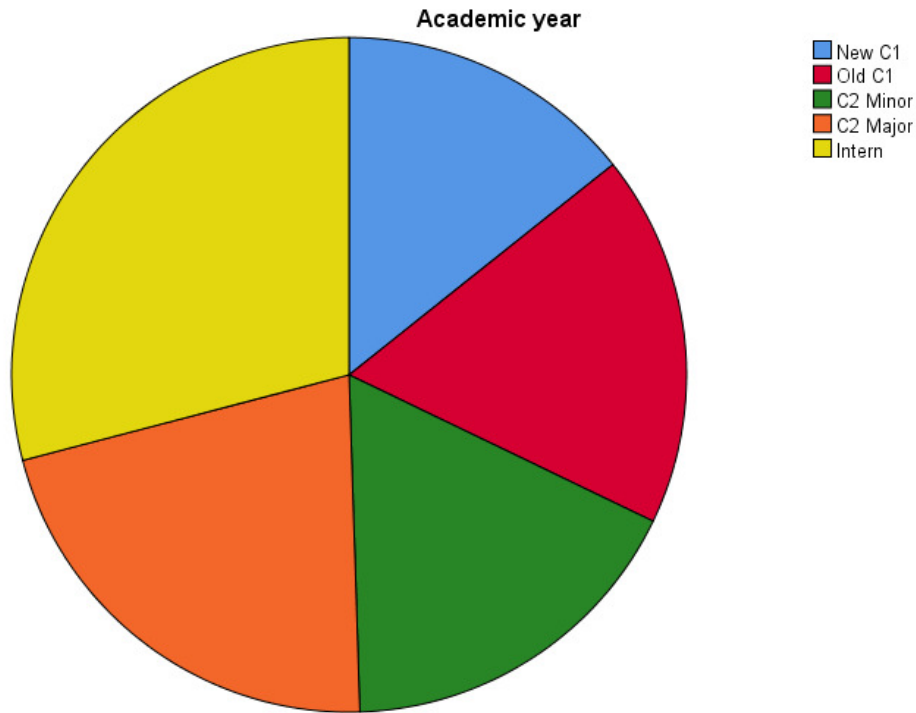


Figure 1 – distribution of participants among academic years

5.2 Knowledge of Clinical-Year Medical Students Regarding CPR

Based on the 80% cutoff point used to classify knowledge level, only 16 respondents (8.2%) demonstrated adequate knowledge of CPR, whereas 180 (91.8%) had inadequate knowledge. The mean knowledge score was 5.95 ± 2.68 . Higher proportions of incorrect responses were observed in questions related to compression depth in children and neonates, compression rate, and management of advanced airways.

Table 2A –Description of knowledge item questions on CPR among clinical medical students at SPHMMC (N = 196) in 2025 G.C

No.	Knowledge Item	Correct (n)	Correct (%)	Incorrect (n)	Incorrect (%)
1	Possible consequence of giving ventilations with excessive pressure or rate	138	70.4	58	29.6
2	First response when finding an unresponsive person on the road while alone	154	78.6	42	21.4
3	Next step after shouting and shaking an unresponsive person	79	40.3	117	59.7
4	Correct chest compression location in adults	94	48.0	102	52.0
5	Correct compression point for infants	81	41.3	115	58.7
6	Immediate action when witnessing a collapse with no breathing	73	37.2	123	62.8
7	Correct compression depth in adults	91	46.4	105	53.6
8	Correct compression depth in children	55	28.1	141	71.9
9	Correct compression depth in neonates	78	39.8	118	60.2
10	Recommended compression rate for adults and children	74	37.8	122	62.2
11	Next step if newborn heart rate is <60 bpm despite CPR	99	50.5	97	49.5
12	Drug/intervention NOT used for treating post-arrest hypotension	98	50.0	98	50.0
13	First action for a responsive choking victim	53	27.0	143	73.0

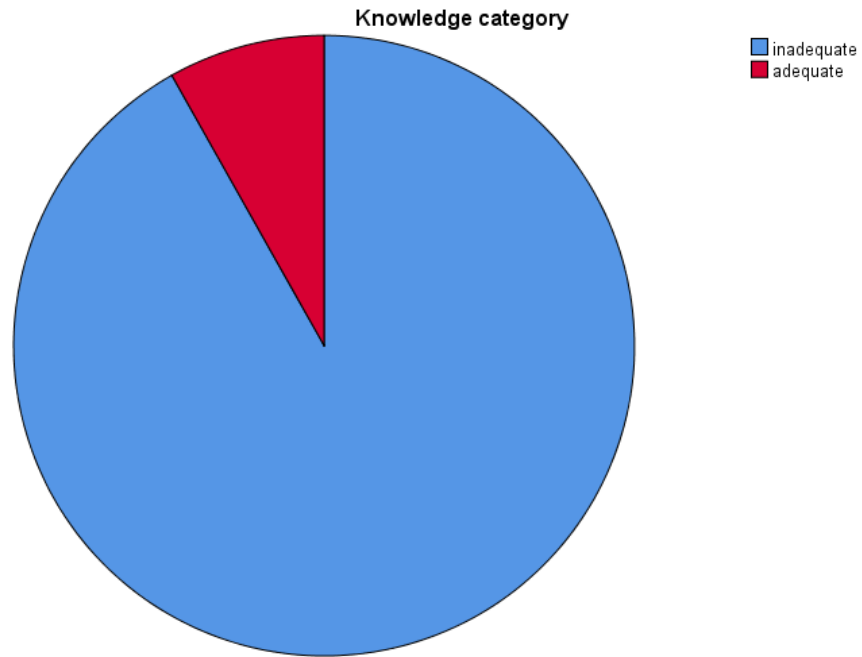


Figure 2- knowledge level of clinical students of SPHMMC regarding CPR

Analysis of knowledge by academic year revealed a progressive increase in mean scores from New C1 (4.29 ± 2.12) to Interns (7.02 ± 2.68). The proportion of students with adequate knowledge was notably higher in the more senior years, with C2 Major students at 14.3% and Interns at 12.3%, compared to only 3.6% in New C1 and 2.9% in both Old C1 and C2 Minor groups.

Table 2B: CPR Knowledge Level and Mean Scores by Academic Year (N = 196)

Academic Year	N	Adequate Knowledge n (%)	Mean Knowledge Score ($\pm$ SD)
New C1	28	1 (3.6%)	4.29 ± 2.12
Old C1	35	1 (2.9%)	4.80 ± 2.25
C2 Minor	34	1 (2.9%)	5.74 ± 2.33
C2 Major	42	6 (14.3%)	6.76 ± 2.64
Intern	57	7 (12.3%)	7.02 ± 2.68
Total	196	16 (8.2%)	5.95 ± 2.68

Bivariate analysis using the chi-square test showed that CPR training was significantly associated with CPR knowledge level ($\chi^2 = 4.90$, $p = 0.027$). ICU experience demonstrated a borderline association with knowledge ($\chi^2 = 3.27$, $p = 0.071$). Sex and age were not significantly associated with knowledge level. Although academic year did not reach statistical significance in the Pearson chi-square test, a significant linear trend was observed, indicating increasing knowledge with advancing academic level.

Table 2 C: Association Between independent Variables and CPR Knowledge Using Chi Square Test (N = 196)

Variable	χ^2 (Chi square)	df	p-value
Sex	0.272	1	0.602
Age (years)	7.923	7	0.339
Academic year	6.728	4	0.151
ICU experience (≥ 2 weeks)	3.267	1	0.071
CPR training (Yes/No)	4.896	1	0.027

5.3 Attitude of Clinical-Year Medical Students Regarding CPR

The overall attitude of respondents toward CPR was highly favorable. Using an 80% cutoff of the total attitude score (≥ 12 out of 15), 192 participants (98.0%) demonstrated a favorable attitude, while only 4 participants (2.0%) had an unfavorable attitude.

The mean attitude score was 13.39 ± 1.98 . Nearly all respondents believed that BLS is necessary for medical students (98.5%) and that CPR saves lives (90.8%). The majority also expressed willingness to undergo CPR training with hands-on practice (96.4%) and supported inclusion of CPR training in the medical curriculum (98.5%).

Table 3A: Description of Attitude item questions on CPR among clinical medical students at SPHMMC (N = 196) in 2025 G.C

Variable	Category	frequency	percentage %
Do you believe BLS is necessary for medical students?	No	1	0.5%
	Not sure	2	1.0%
	Yes	193	98.5%
	Total	196	100.0%
Have you ever voluntarily performed CPR?	No	137	69.9%
	Performed, but not voluntarily	10	5.1%
	Yes	49	25.0%
	Total	196	100.0%
Do you believe CPR can save lives?	No	0	0.0%
	Not sure	18	9.2%
	Yes	178	90.8%
	Total	196	100.0%
Would you like to undergo CPR training with hands-on practice under supervision?	No	0	0.0%
	Not sure	7	3.6%
	Yes	189	96.4%
	Total	196	100.0%
Should CPR training be included in your curriculum?	No	0	0.0%
	Not sure	3	1.5%
	Yes	193	98.5%
	Total	196	100.0%

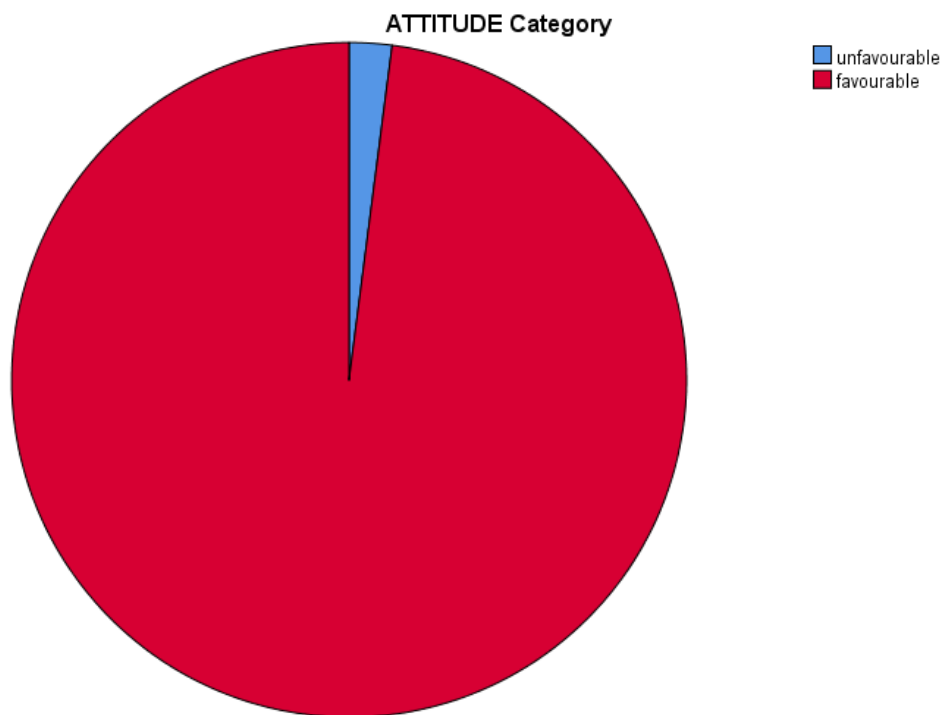


Figure 3- Attitude level of clinical students of SPHMMC regarding CPR

Attitude toward CPR remained consistently high across all academic years. Favorable attitudes were reported by 100% of C2 Major, C2 Minor, and Interns, while New C1 and Old C1 students reported 92.9% and 95.2% respectively. The mean attitude score also showed a slight upward trend with seniority, peaking at 14.02 ± 1.14 among Interns.

Table 3B: CPR Attitude Level and Mean Scores by Academic Year (N = 196)

Academic Year	N	Favorable Attitude n (%)	Mean Attitude Score ($\pm$ SD)
New C1	28	26 (92.9%)	12.86 ± 1.35
Old C1	35	33 (95.5%)	12.91 ± 0.92
C2 Minor	34	34 (100.0%)	13.35 ± 1.01
C2 Major	42	42 (100.0%)	13.31 ± 1.24
Intern	57	57 (100.0%)	14.02 ± 1.14
Total	196	192 (98.0%)	13.39 ± 1.21

Bivariate analysis using the chi-square test showed that ICU experience and CPR training were significantly associated with attitude toward cardiopulmonary resuscitation. All students with ICU exposure and those who had received CPR training demonstrated favourable attitudes toward CPR ($p < 0.001$ for both). Academic year showed a borderline association with attitude ($p = 0.098$), with interns demonstrating higher favourable attitudes. Sex and age were not significantly associated with attitude toward CPR.

Table 3C: Association Between independent Variables and CPR Attitude Using Chi Square Test (N = 196)

Variable	χ^2	Df	p-value
Sex	1.021	1	0.312
Age	7.577	7	0.371
Academic year	7.826	4	0.098
ICU experience	12.250	1	<0.001
CPR training	14.529	1	<0.001

5.3 Practice of Clinical-Year Medical Students Regarding CPR

The mean practice score among respondents was 5.39 ± 2.11 . Based on the 80% cutoff point used to classify practice level, only 49 students (25.0%) demonstrated good practice, while the majority, 147 students (75.0%), had poor CPR practice.

Correct responses were relatively higher for identifying the appropriate pulse check site in adults (71.9%) and the correct compression-to-ventilation ratio for a lone rescuer (58.7%). However, very low correct response rates were observed for ventilation frequency with an advanced airway (19.4%) and recognition of BLS sequence and AED operation steps.

Table 4A: Description of Practice item questions on CPR among clinical medical students at SPHMMC (N = 196) in 2025 G.C

Variable	Correct (n)	Correct (%)	Incorrect (n)	Incorrect (%)
<i>“The 5 links in the adult Chain of Survival include all of the following EXCEPT:”</i>	84	42.9	112	57.1
<i>“How often should rescuers switch roles when performing 2-rescuer CPR?”</i>	66	33.7	130	66.3
<i>“The initial Basic Life Support (BLS) steps for adults are:”</i>	95	48.5	101	51.5
<i>“Where should you attempt to perform a pulse check in adult?”</i>	141	71.9	55	28.1
<i>“The compression to ventilation ratio for the lone rescuer giving CPR to victims of ANY age is:”</i>	115	58.7	81	41.3
<i>“The proper steps for operating an AED are:”</i>	71	36.2	125	63.8
<i>“The 2010 AHA Guidelines for CPR</i>	65	33.2	131	66.8

<i>recommended BLS sequence of steps is:”</i>				
<i>“Signs of severe airway obstruction include all of the following EXCEPT?”</i>	63	32.1	133	67.9
<i>“In an adult with an advanced airway in place during 2-rescuer CPR, breaths should be administered how often?”</i>	38	19.4	158	80.6
<i>“The critical characteristics of high-quality CPR include which of the following?”</i>	127	64.8	69	35.2

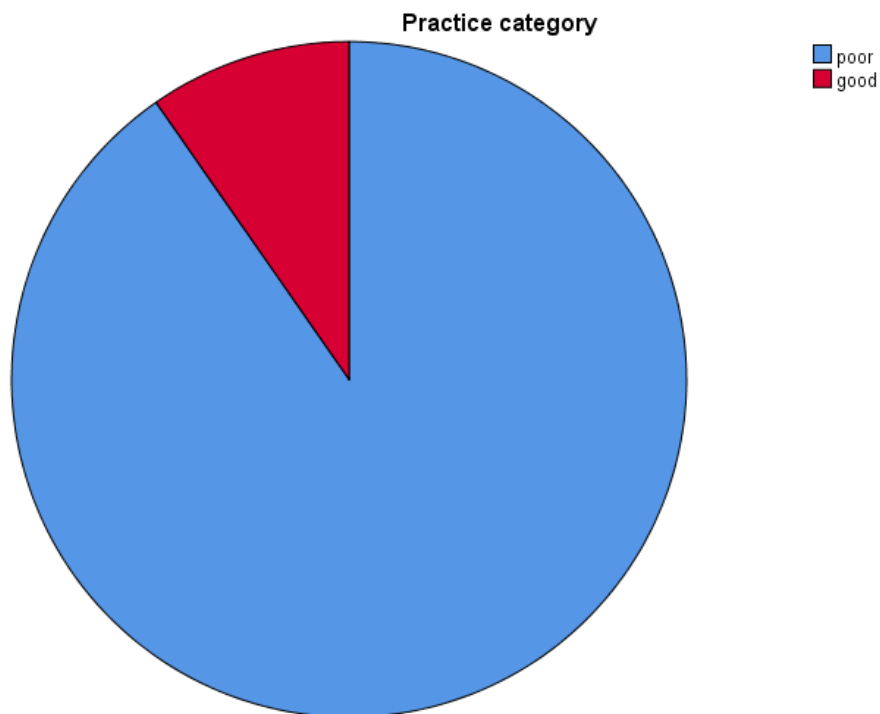


Figure 4- Practice level of clinical students of SPHMMC regarding CPR

CPR practice levels demonstrated variation by academic year. Good practice was most frequently observed among Interns (17.5%) and C2 Major students (11.9%), while it was significantly lower among C2 Minor (5.9%), New C1 (3.6%), and Old C1 (2.9%) students. The mean practice score increased from 3.74 ± 1.88 in Old C1 to 4.95 ± 2.18 among Interns.

Table 4B: CPR Practice Level and Mean Scores by Academic Year (N = 196)

Academic Year	N	Good Practice n (%)	Mean Practice Score ($\pm$ SD)
New C1	28	1 (3.6%)	4.11 ± 1.97
Old C1	35	1 (2.9%)	3.74 ± 1.88
C2 Minor	34	2 (5.9%)	4.47 ± 2.05
C2 Major	42	5 (11.9%)	4.40 ± 2.01
Intern	57	10 (17.5%)	4.95 ± 2.18
Total	196	49 (25.0%)	5.39 ± 2.11

Chi-square analysis showed that **ICU experience** ($\chi^2 = 6.28$, $p = 0.012$) and **CPR training exposure** ($\chi^2 = 14.72$, $p < 0.001$) were significantly associated with practice level. Sex, and age group were not significantly associated with practice level ($p > 0.05$). Academic year showed a borderline association with practice ($p = 0.051$), with interns demonstrating higher mean practice level.

Table 4C - Association Between independent Variables and CPR Practice Using Chi Square Test (n = 196)

Variable	χ^2	Df	p-value
Sex	3.12	1	0.077
Age group	1.84	1	0.175
Academic year	9.46	4	0.051
ICU experience	6.28	1	0.012
CPR training (Yes/No)	14.72	1	<0.001

6. Discussion

This study assessed the knowledge, attitude, and practice regarding cardiopulmonary resuscitation among clinical-year medical students at St. Paul's Hospital Millennium Medical College. The findings revealed a discrepancy between attitude and actual knowledge and practice, highlighting important gaps in CPR competence.

6.1 Knowledge of CPR

This study demonstrated that the majority of respondents (91.8%) had inadequate knowledge of CPR based on the 80% cutoff point. This finding is consistent with studies conducted at Gondar University, Jimma University, Addis Ababa University, and Debre Markos University, where insufficient CPR knowledge among medical students was reported. (15,18,23) Similar findings have also been observed in studies from other low- and middle-income countries, suggesting that inadequate CPR knowledge remains a common challenge. (8,13)

Notably, critical deficiencies were identified in pediatric resuscitation knowledge. Only 55 respondents (28.1%) correctly identified the appropriate chest compression depth in children, and 78 respondents (39.8%) correctly identified the compression depth in neonates. These findings highlight significant gaps in essential pediatric CPR competencies, which are crucial for improving survival outcomes in infants and children.

The low knowledge scores observed in this study may be attributed to limited exposure to structured CPR training, lack of regular refresher courses, and insufficient emphasis on practical CPR skills during undergraduate medical education. Although many students had some form of CPR training, the training may have been theoretical rather than hands-on, leading to poor retention of critical knowledge.

6.2 Attitude towards CPR

In contrast to knowledge and practice, the attitude of clinical-year medical students toward CPR was favorable. Nearly all participants believed that CPR is necessary for medical students, saves lives, and should be incorporated into the medical curriculum. This finding aligns with studies from Ethiopia and other countries, where positive attitudes toward CPR have been consistently reported.(3,13)

The favorable attitude observed in this study may be explained by increased awareness of the importance of CPR and exposure to emergencies during clinical training. However, positive attitude alone does not translate into adequate competence without regular skills-based training.

6.3 Practice of CPR

Despite favorable attitudes, only one-quarter of respondents demonstrated good CPR practice. This finding is comparable to studies conducted in Jimma University and other African institutions, which also reported poor CPR practice among medical students.(13,19,25)

CPR training exposure and ICU experience were significantly associated with better CPR practice in this study. Students who had received CPR training were more likely to demonstrate good practice, underscoring the importance of structured and repeated CPR training with hands-on components. ICU exposure likely enhances familiarity with real-life resuscitation scenarios, improving confidence and skill retention.

Notably, a clear discrepancy was observed between reported CPR training and actual practice performance. Although a majority of respondents (153, 78.1%) reported having received CPR training, only 49 (25.0%) demonstrated good CPR practice. This gap suggests that the training received may have been inadequate, outdated, infrequent, or primarily theoretical without sufficient hands-on components. This finding highlights the need for continuous, competency-based CPR training with emphasis on practical skill acquisition and retention.

6.4 The Level of Knowledge, Attitude and Practice by Academic Year (Strata)

A key finding of this study was the variation in CPR competence across different academic years. Knowledge and practice scores generally improved as students progressed through their clinical training. Interns and C2 Major students demonstrated higher levels of adequate knowledge and good practice compared to their junior counterparts (New C1 and Old C1). This trend is likely due to increased clinical exposure, repeated encounters with emergency situations, and the cumulative effect of medical education. However, even among the most senior students (Interns), the proportion with adequate knowledge (12.3%) and good practice (17.5%) remained alarmingly low. This suggests that while clinical seniority brings some improvement, it is not a substitute for strengthening structured, formal CPR training. The high favorable attitude across all years indicates that students at all levels are receptive to such training, providing a fertile ground for interventions.

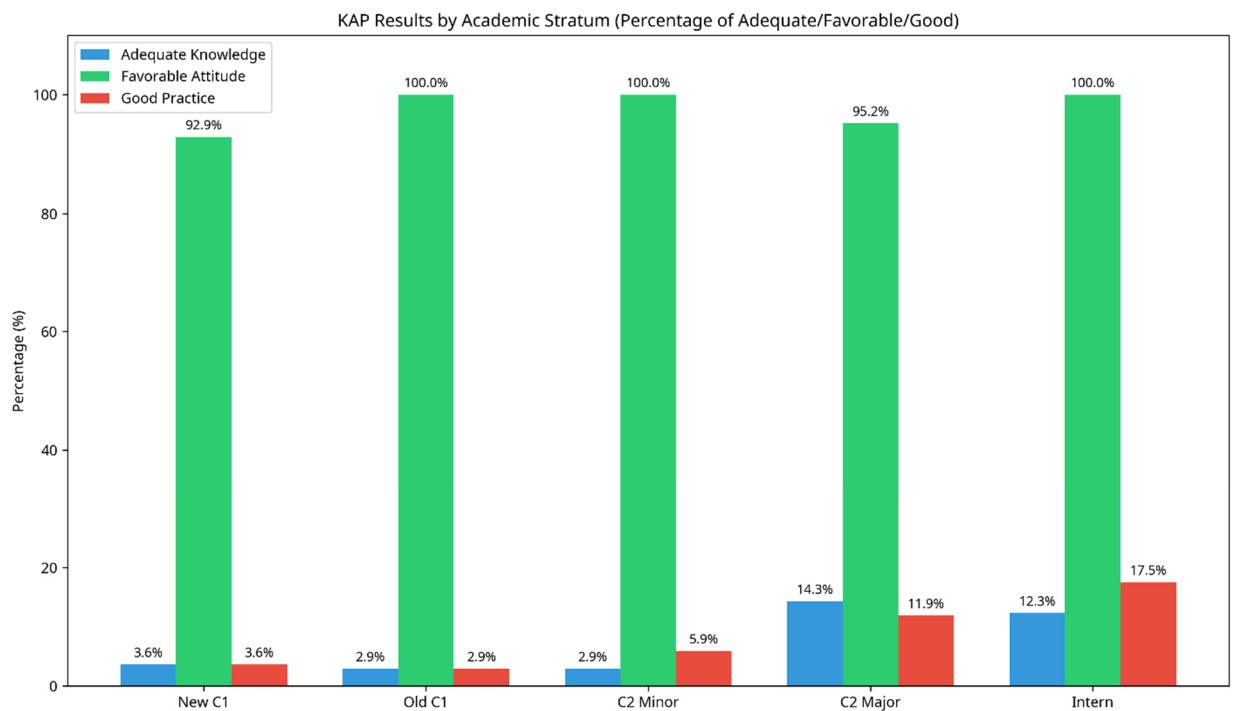


Figure 5- KAP level of clinical students of SPHMMC regarding CPR by academic year

7. Strengths and Limitations

7.1 Strengths

- The study used a standardized questionnaire adapted from the 2020 AHA CPR guidelines, enhancing comparability with other studies.
- Use of predefined and evidence-based cutoff points strengthened the validity of knowledge, attitude, and practice classification.

7.2 Limitations

- The cross-sectional study design limits the ability to establish causal relationships between associated factors and CPR competence.
- Practice was assessed using self-administered questions rather than direct observation, which may not reflect actual CPR performance.

8. Conclusion

This study found that although clinical-year medical students at SPHMMC had a highly favorable attitude toward CPR, their knowledge and practice were inadequate across all academic years. While there was a progressive improvement in knowledge and practice with advancing academic years, the overall competence remained low even among final-year interns. CPR training exposure and ICU experience were significant predictors of better CPR competence. These findings indicate a critical gap between theoretical awareness and practical readiness to perform CPR among future physicians.

9. Recommendations

Based on the findings of this study, the following recommendations are proposed:

- For SPHMMC School of medicine and Educators: Given the high prevalence of inadequate CPR knowledge (91.8%) and poor practice (75.0%) among clinical year medical students, it is recommended to critically evaluate and enhance current CPR training methodologies.
- For Clinical Departments (e.g., ICU): The significant association between ICU experience and improved CPR competence suggests that clinical exposure to emergency and intensive care settings events should be strengthened.
- Encourage collaboration with certified CPR training centers to ensure adherence to international guidelines.
- For Future Research: The observed discrepancy between reported CPR training (78.1%) and actual good practice (25.0%) warrants further investigation into the quality, frequency, and content of existing CPR training programs. Future studies could explore the effectiveness of different training modalities and their long term impact on skill retention and performance.

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11. Annexes

Annex I: Study Participant Information Sheet

Title of the Study: Knowledge, Attitudes, and Practices Regarding Cardiopulmonary Resuscitation (CPR) Among Clinical-Year Medical Students at SPHMMC: A Cross-Sectional Study

Principal Investigator: Dr Misganaw Tesfaye Molla, Medical intern, St. Paul's Hospital Millennium Medical College (SPHMMC), misganaw271612@gmail.com, +251966203232

You are invited to participate in a research study assessing the knowledge, attitude, and practice (KAP) of clinical-year medical students regarding cardiopulmonary resuscitation (CPR) at SPHMMC. The aim of this study is to identify potential gaps and inform future improvements in CPR training and preparedness among future physicians.

If you agree to participate, you will be asked to complete a structured questionnaire. It contains questions related to your knowledge of CPR, your attitude toward it, and your personal or training-related experiences in performing CPR. Completing the questionnaire will take approximately 10–15 minutes.

There are no anticipated risks associated with participating in this study. Your participation may benefit medical education and improve CPR training practices at SPHMMC and similar institutions.

All information you provide will be kept strictly confidential. No personal identifiers will be collected, and your responses will be stored securely and used solely for research purposes. The data will be reported only in aggregate form and will not be linked to you in any way.

Participation in this study is entirely voluntary. You have the full right to decline to participate or to withdraw at any point without any negative consequence.

If you have any questions or concerns, you may contact the principal investigator using the contact information provided above.

Annex II: Consent form

I hereby acknowledge that I have read and understood the information provided in the Study Participant Information Sheet for the research study titled "Knowledge, Attitude, and Practices Regarding Cardiopulmonary Resuscitation (CPR) Among Clinical-Year Medical Students at SPHMMC: A Cross-Sectional Study"

I understand that my participation in this study is entirely voluntary, and I have the right to withdraw at any time without penalty. I understand the purpose of the study, the procedures involved, and any potential risks or benefits associated with participation.

I agree to participate in the study and consent to the collection and use of my survey responses for research purposes. I understand that my confidentiality will be protected, and my responses will be anonymized in any reports or publications resulting from this study.

Participant's Signature: _____

Date: _____

Annex III: Questionnaire

Dear Participant,

I, Misganaw Tesfaye, a medical intern at St. Paul's Hospital Millennium Medical College (SPHMMC) conducting a study titled:

"Knowledge, Attitudes, and Practices Regarding Cardiopulmonary Resuscitation (CPR) Among Clinical-Year Medical Students at SPHMMC"

This research is conducted as partial fulfillment of the Requirements for the undergraduate Degree of Doctor of medicine.

The aim of the study is to assess your knowledge, attitude, and practice (KAP) regarding CPR, which is essential for improving medical education and emergency care in clinical settings.

Your participation is voluntary, and all responses will be kept anonymous and confidential. No personal identifiers will be collected. Thank you for your cooperation!

A. Socio-Demographic Information

1. Sex:

1) Male 2) Female

2. Age: _____

3. Academic Year:

1) New C1 2) Old C1 3) C2 Minor 4) C2 Major 5) Intern

4. Have you ever worked in an ICU (MICU, PICU, SICU) for at least 2 weeks?

1) Yes 2) No

5. Have you ever had formal teaching on CPR? (Multiple answers allowed) 1)

None 2) Lectures 3) Practical Demonstrations 4) Role Plays 5) CPR Guidelines Reading

B. Knowledge Questions (Choose the best answer for each)

1. What is a possible consequence of giving ventilations with excessive pressure or rate? 1) Hemothorax 2) Spasm of vocal cords 3) Pneumothorax 4) Tissue damage in oropharynx

2. When you find someone unresponsive in the road and you are alone, what is your first response?

1) Open the airway 2) Start chest compressions 3) Ensure scene safety
4) Give two breaths

3. If someone is unresponsive after shouting and shaking, what is your next step?

1) Start CPR 2) Activate EMS 3) Place in recovery position 4) Observe

4. Where is the correct chest compression location in adults?

1) Left chest 2) Right chest 3) Center on lower half of sternum 4) Xiphisternum

5. Where is the compression point for infants?

1) One finger below nipple line 2) Intermammary line 3) One finger above nipple line 4) Xiphisternum

6. You witness a man collapse, unconscious and not breathing. What should your friend do?

1) Check pulse 2) Begin CPR 3) Call EMS 4) Open the airway

7. What is the correct compression depth in adults?

1) At least 2 inches 2) 2½–3 inches 3) 1–1½ inches 4) 1½ inch

8. What is the correct compression depth in children?

1) 2 inches 2) 2–2½ inches 3) 1–1½ inches 4) ½–1 inch

9. What is the correct compression depth in neonates?

1) 1½–2 inches 2) 2–2½ inches 3) 1 inch 4) Approximately 1½ inch

10. Rate of compressions for adults and children:

- 1) At least 100/min 2) Approx. 100/min 3) 80/min 4) 120/min

11. If newborn HR is <60 bpm despite CPR, next step:

- 1) Administer epinephrine 2) Provide CPAP 3) Check for pneumothorax 4) Start dopamine

12. Which is NOT used for treating post-arrest hypotension?

- 1) IV/IO fluids 2) Lidocaine infusion 3) Vasopressors 4) Treat underlying cause

13. Responsive choking victim at lunch table — your first action:

- 1) Abdominal thrusts 2) Chest compressions 3) Confirm obstruction 4) Back blows

C. Attitude Questions (Choose one per question)

1. Do you believe BLS is necessary for medical students?

- 1) Yes 2) No 3) Not sure

2. Have you ever voluntarily performed CPR?

- 1) Yes 2) No 3) Performed, but not voluntarily

3. Do you believe CPR can save lives?

- 1) Yes 2) No 3) Not sure

4. Would you like to undergo CPR training with hands-on practice under supervision?

- 1) Yes 2) No 3) Not sure

5. Should CPR training be included in your curriculum?

- 1) Yes 2) No 3) Not sure

D. Practice Questions

1. Which of the following is NOT one of the 5 links in the adult Chain of Survival?

- 1) Early CPR 2) Post-cardiac arrest care 3) Advanced airway placement
- 4) Rapid defibrillation

2. How often should rescuers switch during 2-rescuer CPR?

- 1) After each cycle 2) After 2 cycles 3) After 5 cycles 4) After 10 cycles

3. Initial BLS steps in adults:

- 1) Assess → 2 breaths → defib → CPR
- 2) Assess → EMS + AED → check pulse → CPR
- 3) Check pulse → rescue breaths → assess → defib
- 4) Assess → CPR → 2 breaths → defib

4. Where to check the pulse in an adult victim?

- 1) Carotid 2) Brachial 3) Ulnar 4) Temporal

5. Compression-to-ventilation ratio for lone rescuer for all age groups:

- 1) 15:1 2) 15:2 3) 30:1 4) 30:2

6. Correct AED use steps:

- 1) On → pads → shock → analyze rhythm
- 2) On → pads → analyze → clear → shock
- 3) Pads → check pulse → shock → analyze
- 4) Check pulse → pads → analyze → shock

7. Current BLS sequence (2020 AHA):

- 1) CAB (compressions-airway-breathing)
- 2) ABCP (airway-breathing-check pulse)
- 3) ABC (airway-breathing-compressions)
- 4) CAC (compressions-airway-compressions)

8. Which of these is NOT a sign of severe airway obstruction?

- 1) Poor air exchange
- 2) High-pitched noise
- 3) Unable to cry
- 4) Wheezing between coughs

9. In adult 2-rescuer CPR with advanced airway, how often should breaths be given?

- 1) Every 5 sec
- 2) Every 5–6 sec
- 3) Every 6–8 sec
- 4) Every 10–12 sec

10. High-quality CPR includes:

- 1) Start within 10 sec
- 2) Push hard, fast
- 3) Minimize interruptions
- 4) All of the above

(Adapted and prepared from: 2020 AHA guidelines for CPR and ECC and BLS practice test of National Health Care Provider Solutions available at <https://www.nhcps.com/bls-certificationpractice-test#question>, 2020.)

Annex IV: Assurance of Investigator

The undersigned agrees to accept responsibility for the scientific, ethical and technical conduct of the research Project and for provision of required progress reports as per terms and conditions of the Research and Publication Directorate and or /School of Public Health of St Paul's Hospital Millennium Medical College.

Name of the student: Misganaw Tesfaye

Signature: 

Date: 17/7/18 E.C

Approval of Advisors

Name of the Public health advisor: Dr. Melsew Getnet

Signature: 

Date: 17/7/18 E.C

Name of the Clinical advisor: Dr. Adey Abebaw

Signature: 

Date: 17/7/18 E.C