KNOWLEDGE, ATTITUDE AND PRACTICE OF SURGICAL, EMERGENCY MEDICINE AND ANESTHESIOLOGY RESIDENTS TOWARDS CARDIOPULMONARY RESUSCITATION IN BLACK LION HOSPITAL, ADDIS ABABA, ETHIOPIA

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ABSTRACT

Introduction; Sudden cardiac arrest is a catastrophic medical emergency that may occur at any time in the hospital or pre-hospital setting. Cardiopulmonary resuscitation (CPR) and basic life support (BLS) are important life-saving, first-aid skills.

Objectives: The objectives of this study was to assess clinicians' knowledge, attitude and practice about evaluating possible cardiac arrest Patients and recognizing cardiac arrest, appropriate decisions and actions during Cardiopulmonary resuscitation (CPR), and to determine which advanced life support courses had been undertaken and whether they were still valid

Methodology:-A prospective cross sectional institutional based study was conducted to assess the knowledge, attitude and practice of surgery, emergency medicine and anesthesiology residents at Black lion hospital, Addis Ababa, Ethiopia.

Result: -A total 238 residents participated in the study, from these, 195 (81.9 %) were males and the rest females. They were between 25-38 years of age. Majority of the participants got a pass mark on knowledge assessment above 50% with average score of 56.4% while most of participants practiced CPR poorly.

Conclusion: -In general the knowledge of resident is poor, which signifies the need for training regarding CPR. The overall positive attitude is encouraging and poor practice towards CPR should be improved.

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Abbreviations

A.A	Addis Ababa
AAU	Addis Ababa University
AHA	American Heart Association
BLS	Basic Life Support
CPR	Cardiopulmonary Resuscitation
KAP	Knowledge Attitude and Practice
MMV	Mouth to Mouth Ventilation
SPSS	Statistical Package for Social Science

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CHAPTER ONE

1. BACKGROUND.

1.1.Introduction

Cardiopulmonary resuscitation is a combination of rescue breathing and chest compression, which is delivered to the victims who are thought to be in cardiac arrest(1)

Treatment of cardiac and respiratory arrest is an integral part of anesthesia practice. The American Board of Anesthesiology indicates in its Booklet of Information that the "clinical management and teaching of cardiac and pulmonary resuscitation" are some of the activities that define the specialty of anesthesiology. The cardiopulmonary physiology and pharmacology that form the basis of anesthesia practice are applicable to treating the victim of cardiac arrest. However, there is specialized knowledge relating to blood flow, ventilation, and pharmacology under the conditions of a cardiac arrest that must be understood to maintain leadership of the modern cardiopulmonary resuscitation (CPR) team.(2)

Anesthesiologists have contributed many of the elements of modern CPR and continue to be active investigators and teachers in the field. The combined techniques of modern CPR developed primarily from the fortuitous assemblage of innovative clinicians and researchers in Baltimore in the 1950s and early 1960s. Building on the long history of contributions from around the world, these investigators laid the framework for current CPR practice. In the late 1950s, mouth-to-mouth ventilation was established as the only effective means of artificial ventilation. The internal defibrillator was developed in 1933, but it was not applied successfully until 1947. It was another decade before general use was made possible by the development of external cross-chest defibrillation. Despite these advances, widespread resuscitation from cardiac arrest was not possible until Kouwenhoven et al. described success with closed-chest cardiac massage in a series of patients. The final major component of modern CPR was added in 1963, when Redding and Pearson described the improved success obtained by administering epinephrine or other vasopressor drugs.(2)

The ability to respond quickly and effectively to cardiac arrest situation rests on health care team and medical students being competent in emergency lifesaving procedure of cardiopulmonary resuscitation.(1)

The American Heart Association (AHA) resuscitation guidelines recommend that all post graduated students who are in contact with the patients should have regular resuscitation training.(4)

1.2. Statement of the problem

Cardiac arrest is leading cause of death all over the world. WHO estimates that more than 17.5 million people died from cardio vascular diseases such as heart attack and stroke in 2012, and more than three out of four occur in low income countries(5).

Patient with Sudden cardiac arrest can survive if they receive immediate CPR and are treated quickly with defibrillator .To be effective this treatment must be given quickly with in 3to5 minutes after collapse.(6) Pan Africa sudden cardiac death study showed that, in Ethiopia 19.16 per 1000people died fromsudden cardiac death in 2005.(7)

CPR can be lifesaving when provided by well-trained person. In several large investigations the prompt delivery of CPR has served as an important predictor of survival; and might almost double the chance of survival.The probability of survival from cardiac arrest falls by 10-15% per minute without treatment and well performed CPR likely shifts this curve towards a higher probability of survival.(8)

Generally, cardiac arrest is a leading cause of death all over the world, which is possibly true in Ethiopia as well. Knowledge, attitude and practice of physician on CPR are poor in general. In Ethiopia there is no research done on this area. However, Ethiopia might be facing this problem. Residents physicians had to be knowledgeable to save lives. This research aims to get a base line data on knowledge, attitude and practice of CPR among surgical, emergency medicine and anesthesiology residents working in black lion hospital.

1.3. Literature review

Although it is commonly understood and accepted that all physicians, regardless of specialty, should be able to perform CPR, it must be emphasized that CPR almost invariably necessitates rapid interventional follow-up care with ACLS procedures. Anesthesiologists should be capable of rendering such definitive follow-up intervention, whether in the operating room, ICU, emergency department, delivery room, or hospital ward. In the operating room, cardiac arrest is rare. In two studies, cardiac arrests occurring within 12 hours and 24 hours of induction of anesthesia were reviewed to evaluate the role that anesthesia may have contributed to the cardiac event. The somewhat reassuring observation that intraoperative cardiac arrests are rare (1.1/10,000 and 1.4/10,000 in the aforementioned two studies) does not dismiss the need for anesthesiologists to be thoroughly acquainted with ACLS equipment and interventions because when these methods are needed, they must be executed skillfully and decisively. The need for skillful and knowledgeable ACLS intervention in intraoperative cardiac arrest is recognized. Failure to intervene rapidly with ACLS pharmacologic therapy was identified as a major cause of poor outcome in other reports of intraoperative cardiac arrest. It is evident that ACLS is a body of knowledge and skill with which anesthesiologists must be thoroughly familiar.(5)

Knowledge of CPR is an important part of medical student's training but there is still some routine training included in post graduate phycisian in developing countries like Ethiopia, thus, medical graduates when they become general practitioner or post graduate often face difficulty in emergency situations.

The America Heart Association 2015 guidelines, the emphasis on chest compressions quickly and firmly massage in a cardiac arrest at least 100 massage and maximum of 120massage perminutes for all patients with cardiac arrest except infants (babies) less than a month. It is necessary after each massage will be allowed to return to normal chest and chest compressions should be stopped for various reasons. The ratio of chest compressions to breathe even for members of the public in cardiopulmonary resuscitation (Amateur) 2to 30, for babies less than a month in the hospital 3: 1 ratio is recommended. Full breathing at all ages must be given within one minute; with chest rises with each breath of the patient. In those of AED (automated external defibrillator) according to the company, after 2 minutes it is possible to control the heart rhythm (7).

Regarding knowledge of residents about CPR, study done in South African tertiary hospital One hundred doctors participated. None of the participants showed adequate knowledge. The mean total score

was 35.1% (95% CI: 31.7; 38.6). The mean adult CPR score was 40.6% (95% CI: 37.4; 45.6). The mean paediatric CPR

score was 36.6% (95% CI: 37.0; 41.6).

The participants' knowledge of resuscitation was poor. This raises considerable concern about the effectiveness

of the CPR that is performed. This study highlights the need for adequate training of clinicians in the skill of resuscitation and the importance of developing appropriate CPR training programmes that are accessible, innovative and inexpensive(10).

An other study done in Nigeria shows,the response rate was 65% with 65 out of 100 physicians returning the completed questionnaire. Only 40% of respondents had attended a basic and an advanced life support training programme while 30% knew how to operate an automated external defibrellator (AED), seventy percent knew the meaning of AED. Most of the respondents that had attended a basic and an advanced life support programme were residents (80%) while 16% were consultants and the remaining 4% were general practitioners. More males (67%) among the respondents that knew how to operate an AED and majority (56%) were in the age range of 30-40years. 82% of the respondents would prefer to do a chest compression only resuscitation of which 44% were(9).

In India study was done on junior doctors and students. Only 16.41% of all participants and 52% of doctors have received class and/or hands on training. The untrained participants have scored poorly as compared to trained participants in theoretical knowledge and practice of BLS (24.36 % and 53.45% versus 9.25 % and 24.07%) respectively. The mean score for both theoretical knowledge and practice of BLS for trained students was higher than that of the untrained participants and the statistical difference was highly significant - $p<0.0001$. Most of the participants of both trained and untrained group were having very good attitude towards BLS(11).

Other study was also done in Asia The response rate was 80%, with 60 of 75 physicians completing the questionnaire.

The average age of the respondents was 52 years. Sixty percent of them reported that they knew

how to operate an automated external defibrillator (AED), and 38% had attended AED training.

Only 36% were willing to perform mouth-to-mouth ventilation during CPR, and 53% preferred

chest compression-only resuscitation (CCR) to standard CPR. We found those aged <50 years

were more likely to be trained in basic cardiac life support (BCLS) ($P < 0.001$) and advanced

cardiac life support ($P = 0.005$) or to have ever attended to a patient with cardiac arrest

($P = 0.007$). Female physicians tended to agree that all clinics should have AEDs ($P = 0.005$)

and support legislation to make AEDs compulsory in clinics (P 0.001). We also found that a

large proportion of physicians who were trained in BCLS ($P = 0.006$) were willing to perform

mouth-to-mouth ventilation.

Study done in Trinidad and Tobago in emergency departement on 120 emergency physician, Of the 98 respondents, most (79.6%) had been practising emergency medicine for <5 years and

about 38% had had some training in emergency medicine. Most respondents agreed that survival rates

for cardiopulmonary resuscitation (CPR) were poor. However, 41.2% of respondents had performed CPR

>10 times in the past 3 years despite expected futility. More participants in the US study than in the local study thought that the existence of an advance directive was important in making decisions about CPR and that legal concerns should not, but do, affect CPR decisions in practice(13).

study done in croatia about cardiopulmonary resuscitation, chest compression and teamwork shows

The only difference between groups was regarding the male and female ratio, with more male surgeons (45, 55, and 11, $P < 0.001$). All doctors considered CPR as important, but only anesthesiologists knew how often guidelines in CPR change. Approximately 45% of medical doctors, 48% of surgeons and 77% of anesthesiologists reported that they have renewed their knowledge in CPR within the last five years, whereas 34%, 25% and 22% had never renewed their knowledge in the CPR ($P = 0.01$ between surgeons anesthesiologists). Furthermore, chest-compression-only was recognized as a valuable CPR technique by 25.8% of medical doctors, 14.3% of surgeons and 59.3% of anesthesiologists ($P < 0.001$). Anesthesiologists estimated a high risk of infection transmission (62%) and were more likely to refuse mouth-to-mouth ventilation when compared to surgeons (25% vs.10%, $P = 0.01$). Anesthesiologists are most often called for help by their colleagues, only rarely surgeons call their departmental colleagues and nurses to help in CPR(12).

1.4. Rationale of the study:

Cardiac arrest continues to be a major cause of death in much of the world today. Although there are studies done on residents of different department in other universities, there are still no studies done on assessments of knowledge, attitude and practice towards CPR on residents in TASH, Addis Ababa University.

This study was emphasized on assessments of knowledge, attitude and practice on CPR among surgical, emergency medicine and Anesthesiology residents. it initiates respective unit to treat cardiac arrest patients in order to take action and further increment of awareness in Addis Ababa University school of medicine.

CHAPTER TWO

2. OBJECTIVES

2.1 General objective.

To assess the knowledge, attitude, and practice of surgical, emergency medicine and Anesthesiology residents about cardiopulmonary resuscitation in Tikur Anbessa Specialized Hospital, Addis Ababa,Ethiopia.

2.2 Specific objective

To evaluate the knowledge of residents on how to identify and intervene cardiac arrest

To assess the attitude of these professionals about CPR

To evaluate the practice of professionals about CPR

CHAPTER THREE

3. METHODS AND MATERIALS

3.1. Study Area and Period

The study was conducted at Tikur Anbesa specialized hospital, Addis Ababa from April 2017 to December 2017.

3.2. Study design

This study design was a descriptive cross sectional study for KAP of CPR among Surgical, Emergency Medicine and Anesthesiology residents that attend postgraduate class at Tikur Anbessa Specialized hospital, A.A, Ethiopia.

3.3. Source Population

The source population was all surgical, emergency medicine and anesthesiology residents that studied at Tikur Anbesa Specialized hospital, A.A. Ethiopia.

3.4. Study Subjects

The study subjects was the entire surgical, emergency medicine and anesthesiology residents in TASH

3.5. Inclusion and Exclusion criteria

3.5.1. Inclusion criterion

All surgical, emergency medicine and anesthesiology residents exercising their activities in Tikur Anbessa Specialized Hospital.

3.5.2. Exclusion criteria

Residents who have been away from work due to health or their own problem

Residents who refuse as study subject

Residents who are not attaching at BLH at the moment of data collection

Residents of the Orthopedic department

3.6. Sample size determination

By using the statistical formula for single population proportion, taking 50% for the prevalence of KAP of CPR. Maximum tolerable error of 5%, 95% confidence

level and by considering non-response rate 10%, we have got the following minimum size.

$$n = \frac{(Z\alpha/_2)^2 * P\ (1-P)}{d^2}$$

Sample size, n=384

Where
d= Degree of precision = 5%

Z = Confidence level of 95% =1.96

Sample size required for the study become 276 with all the study population included.

3.7. Sampling techniques and procedures for record reviews

A simple random sampling was used to asses KAP of postgraduate surgical, emergency medicine and anesthesiology residents. This study was done on 276 residents. All residents from 1st to 5th year were included.

3.8. Methods of Data Collection

The data was collected by a structured self-administered questionnaire consisting of 3 parts. Part I to assess the knowledge regarding CPR based on the American Heart Association Guidelines for BLS and CPR 2015. Part II was used to assess the attitude of the participants towards CPR. Part III was used assess practice in performing CPR in a needy situation.

3.9. Variables

3.9.1. Dependent variables

- Knowledge of CPR
- Attitude towards CPR
- Practice of CPR

3.9.2. Independent variables

- Socio demographic variables
- Age
- Sex
- Source of information
- exposure in the operation theatre
- exposure in emergency departement
- exposure in intensive care unit
- need and eagerness

3.10. Operational definitions

Attitude: It refers to correct response of residents regarding to CPR for selected emergencies to the structured attitude questionnaire prepared by the investigator for study.

Cardiopulmonary Resuscitation: set of procedures used in patient to attempt to reestablish the respiratory function and blood circulation

Knowledge: Respondent who answers >70% total knowledge question have sufficient knowledge and <70% has in sufficient knowledge about CPR.

Practice: It refers to academic application of knowledge and skills on CPR.

3.11. Data Quality Control

The quality of data was assured by properly designing and pre-testing of the Questioner, proper training of the data collectors and supervisors of the data collection procedures, proper categorization and coding of the questionnaire. Every day, each questioner was reviewed and checked for completeness by the supervisors and principal investigator and the necessary feedback was offered to data collectors.

3.12. Methods Data Analysis and interpretation

After completing to fill the questionnaire, the data was checked, coded and entered to SPSS and cleaning was performed by using SPSS (Statistical Package for Social Science) version 20. Frequencies and cross tabulations was used to check for missing values and variables. An error identified was corrected after revising the original questionnaire.

3.13. Ethical considerations

Permission to carry out the study was obtained from the Institutional Review Board (IRB) of Addis Ababa University College of health science, school of medicine, department of Anesthesiology. Oral informed consent was obtained from participants.

3.14. Dissemination of the result

The study result will be presented to Addis Ababa University, Faculty of Medicine department of Anesthesiology and Critical care and documents will be disseminated to all responsible bodies in the study area, for the hospital where the study is conducted, MOH and Addis Ababa university school of emergency medicine.

CHAPTER FOUR

4. RESULT

Socio demographic characteristics among respondents

The total number of potential study population was 276. total number of respondent is 243(93.8%). Five (5) questionnaires which were incomplete were rejected and not included in the data analysis. There were 238 eligible candidates and of them 195(81.9%) were males. From the eligible candidates 156(65.5%) were general surgery residents, 33(13.9%) were Anesthesiology residents, 25(10.5%) were Emergency medicine residents, 18(7.6%) were Neurosurgery residents and 6(2.5%) were Urology residents. . The age of the subjects ranged from 25 to 38 years (mean 28.20 years). Majority 156(66%) were trained for cardiopulmonary resuscitation of which 102(42.9%) took only one time, 30(12.6%) took the training two times, 13(5.5%) more than three times and 8(3.4%) took three times. from the study subject 92(38.7%) perform CPR monthly on average followed by 76(31.9%) perform annually and 33(13.9%) weekly and 21(8.8%) perform daily.

Table1: Socio-demographic characteristics of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017.

Sex(n=238)	Frequency	%
Male	195	81.9
Female	43	18.1
Total	238	100
Departement of residency(n=238)		
General surgery	156	65.5
Neurosrgery	18	7.6
Urosurgery	6	2.5
Anesthesiology	33	13.9
Emergency medicine	25	10.5
Year of residency(n=238)		
One	94	39.5
Two	63	26.5
Three	51	21.4
Four	26	10.9
Five	4	1.7

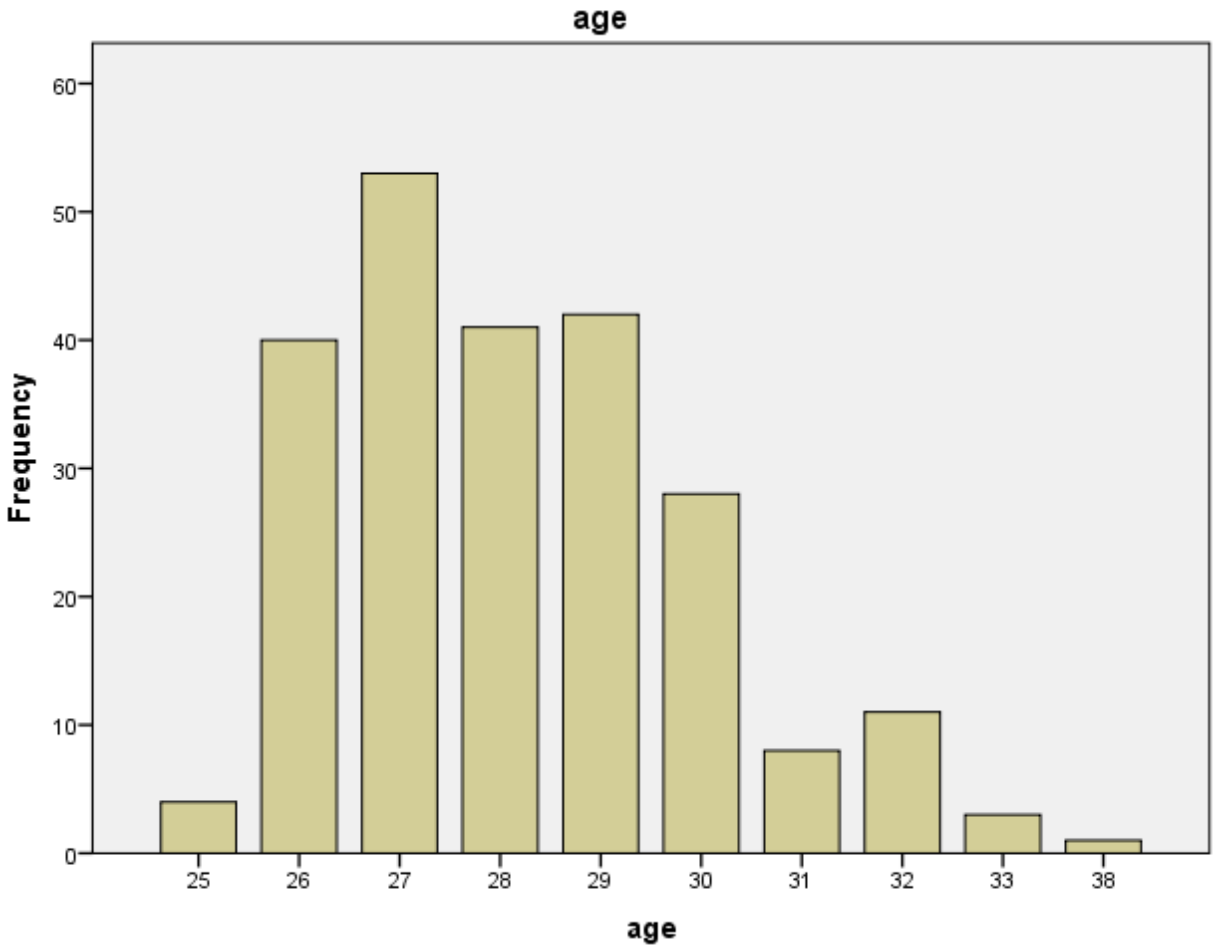


figure 1: showing the frequency and distribution of age through the study subjects

Knowledge towards CPR of Resident physicians

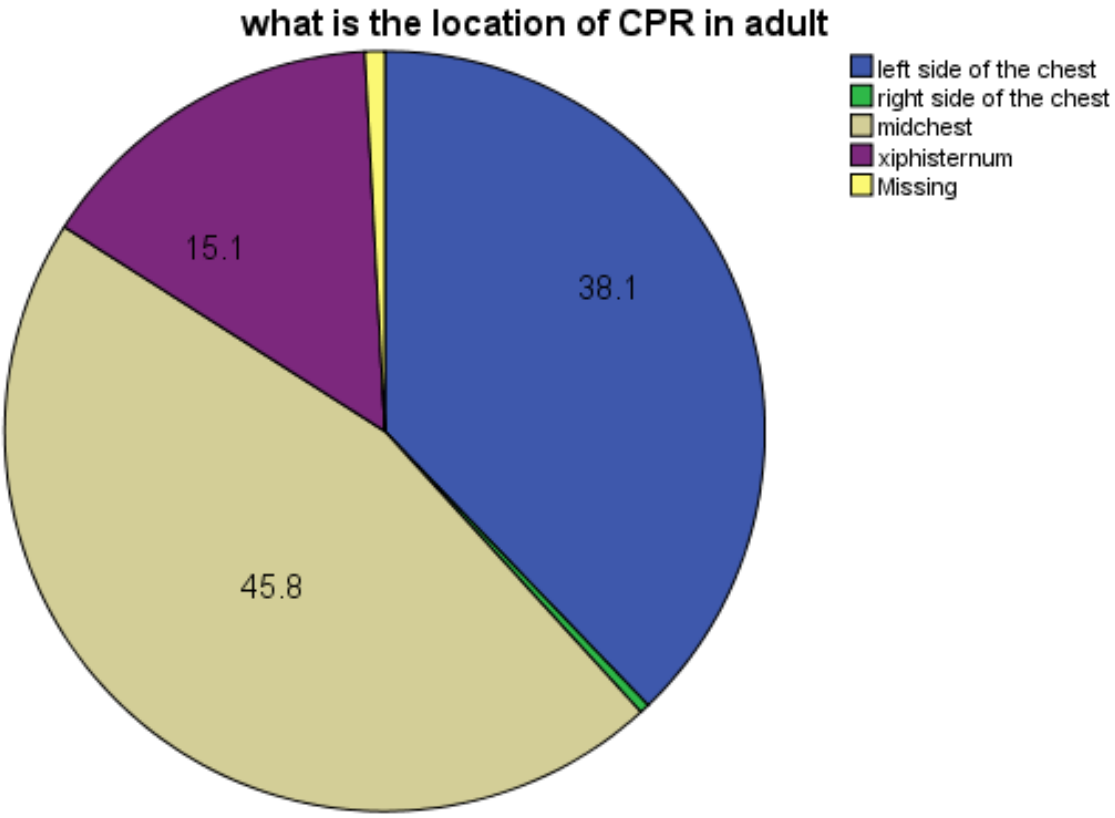
A considerable number of the participants, who knew about the abbreviation of Basic life support(BLS) 231(97.1%), 5(2.1%) know BLS as Best life support. On the other hand 69(29.0%) of those were aware of the new sequence of BLS as Circulation,

Airway and Breathing and the rest 169(71.0%) know as Airway, Breathing and Circulation. from the study participants 149(62.6%) slightly higher on the sternum, 46(19.3%) at intera mammary line, 29(12.2%) at xiphisternum and 10(4.2%) at below intera mammary line for location of CPR in pregnancy. Regarding the Location of CPR in adult 110(46.2%) midchest, 90(37.8%) and 36(15.1%) xiphisternum.

Table2: knowledge towards CPR of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017.

What is the abbreviation BLS(n=238)	Frequency	%
Best life support	5	2.1
Basic life support	231	97.1
Basic life service	2	0.8
Sequence of new BLS(n=238)		
Circulation,airway and breathing	69	29.0
Airway, breathing and circulation	169	71.0

figure 2: showing the percentage of knowledge on the location of CPR in adults



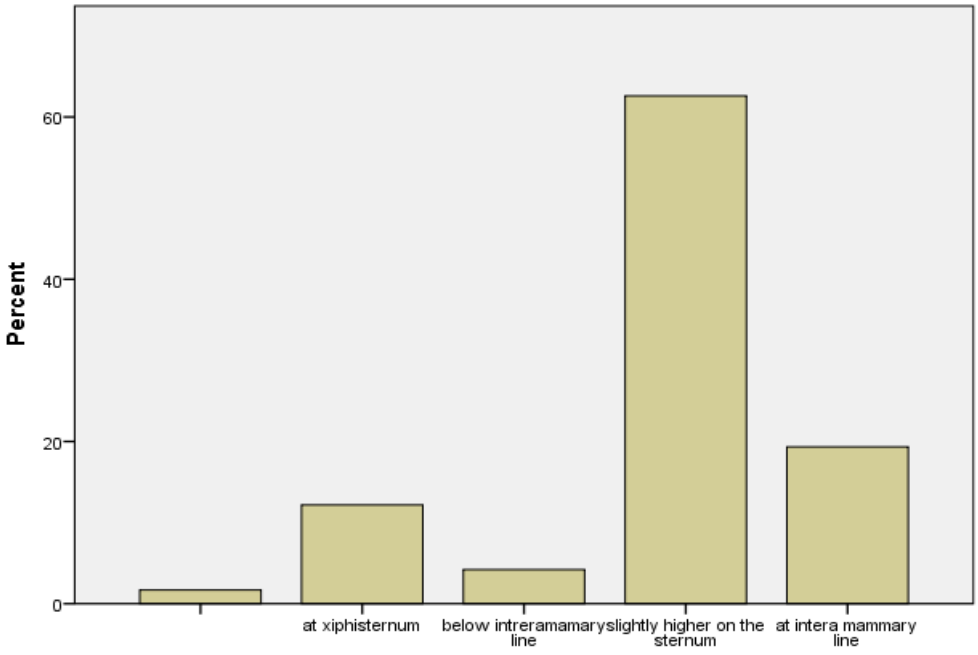


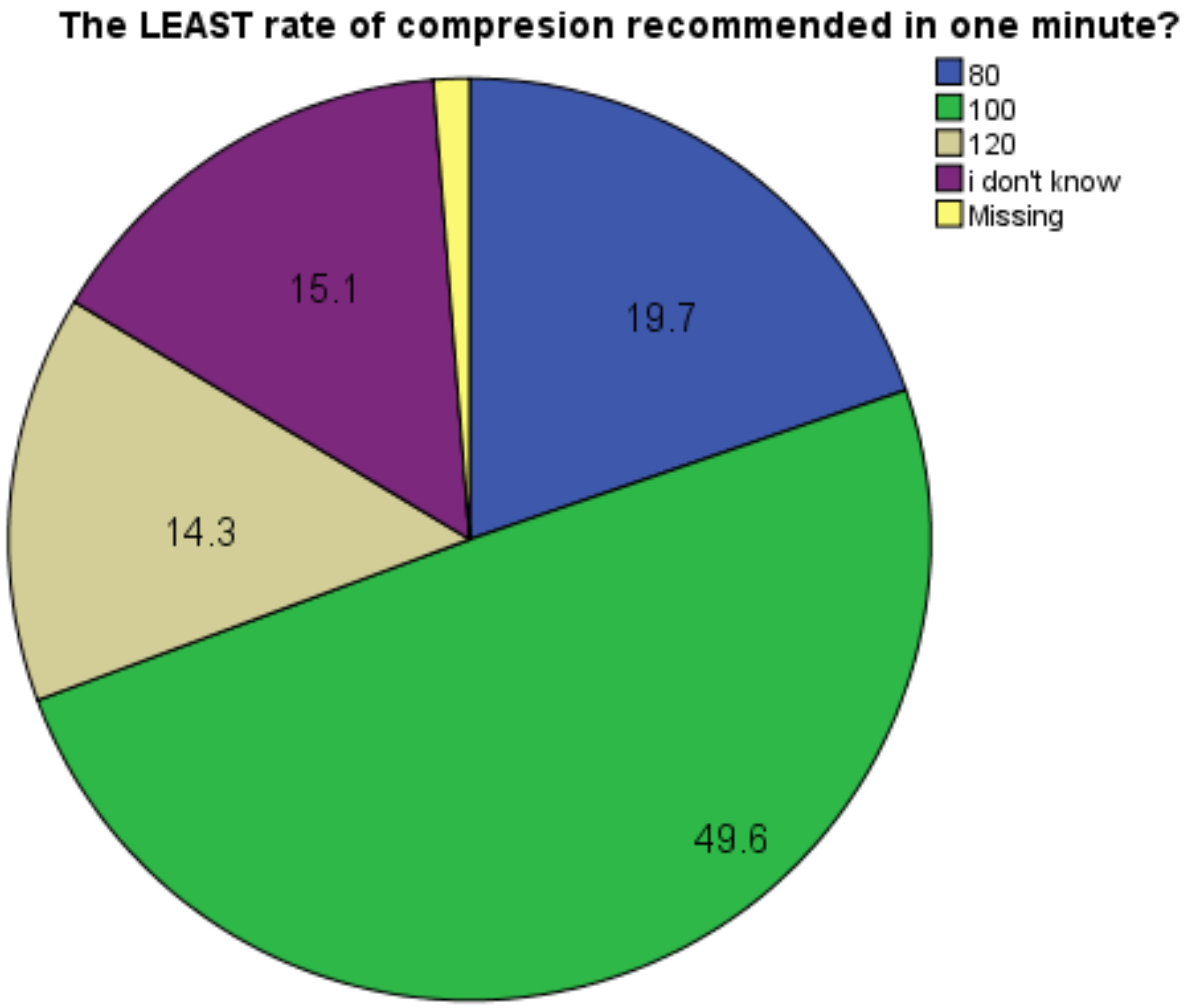
figure 3: location of CPR in pregnancy

Most of the residents knew the position of pregnant women during CPR, 97(40.8%) supine position with firm wedge to support right side of the pelvis and thorax where as 78(32.8%) knew as left lateral position and 56(23.5%) supine position with firm wedge to support left side of the thorax. Regarding the knowledge how to give rescue breathing for infants 93(39.1%) mouth to mouth with nose pinched, 60(25.2%) mouth to mouth and nose, 53(22.3%) mouth to mouth without nose pinched and 25(10.5%) mouth to nose only. On the other hand only 76(31.9%)11/2- 2 inches knew depth of compression in adult during CPR, 49(20.6%)21/2-3 inches, 72(30.3%) 1-1/2inches and 33(13.9%)11/2 inches.

Table3: knowledge towards CPR of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

Position of pregnant woman during CPR(n=232)	frequency	%
Supine position with firm wedge to support left side of the thorax	56	23.5
Supine position with firm wedge to support right side of the pelvis and thorax	97	40.8
Left lateral position	78	32.8
Right lateral position	1	0.4
How do you give rescue breathing in infants(n=231)		
Mouth to mouth with nose pinched	93	39.1
Mouth to mouth and nose	60	25.2
Mouth to nose only	25	10.5
Mouth to mouth without nose pinched	53	22.3
Depth of compression in adults during CPR(n=230)		
11/2 inches	33	13.9
21/2-3 inches	49	20.6
1-1/2inches	72	30.3
11/2- 2 inches	76	31.9
Maneuver used to open airway if not trauma suspected(n=238)		
Insert the finger into the mouth and pull the tongue forward	7	2.9
Jaw trust	67	28.2
Head tilt	7	2.9
Head tilt chin lift	157	66.0

figure 4: showing percentage of the least rate of compression recommended in one minute



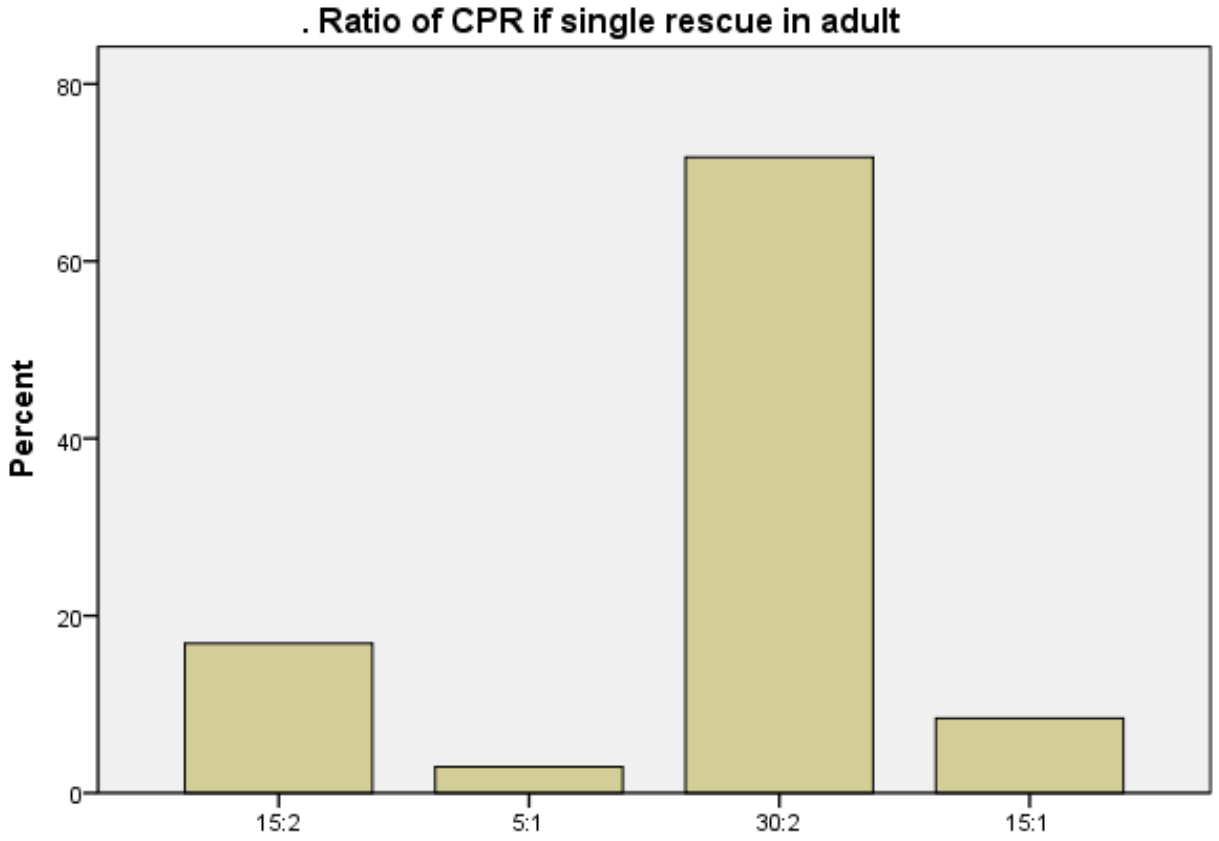


figure5:percentage of Ratio of CPR if single rescue in adult

Majority of the residents knew the abbreviation of AED, 108(45.4%)Automated External Defibrillation, 97(40.8%) automated electrical defibrillation, 15(6.3%) and 15(6.3%)advanced external defibrillator. Most of the study participants knew shockable rhythms were 184(77.3%) ventricullar fibrillation and ventricular tachycardia and 30(12.6%) pulseless electrical activity and asystole. 24(10.1%) didn't know shockable rhythm. From the study participants majority knew the time to deliver shock for shockable rhythms 102(42.9%) as soon as the defibrillator arrives followed by 57(23.9%) two minutes after CPR starts and 56(23.5%) didn't know when to deliver shock. Majority

of the residents knew the best artery to check for pulse during assessing unconscious victim were 205(86.1%) carotid, 16(6.7%) radial, 14(5.9%) and 2(0.8%) brachial. Most of the participants knew the time to assess the return of spontaneous circulation in order to avoid interruption, 135(56.7%) every two minute, 35(14.7%) every one minute, 13(5.5%) after 20 minute and 50(21.0%) didn't know when to assess. Almost all of the residents knew the first choice of drug during cardiac arrest 228(95.8%) Adrenaline and 10(4.2%) Atropine. Majority of the participants stop performing CPR 127(53.4%) when the causality is pronounced death.

Table4: knowledge towards CPR of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

What does the abbreviation AED stands for (n=235)	frequecy	%
Automated external defibrillation	108	45.4
Automated electrical defibrillation	97	40.8
Advanced electrical defibrillator	15	6.30
Advanced external defibrillator	15	6.30
Which one is shockable rhythms(n=238)		
Ventricular fibrillation and ventricular tachycardia	184	77.3
Pulseless electrical activity and asystole	30	12.6
I don't know	24	10.1
When do you deliver shock for shockable rhythms(n=236)		
Two minute after CPR starts	57	23.9
As soon as the defibrillator arrives	102	42.9
After 10 cycles of CPR	21	8.8
I don't know	56	23.5
When assessing unconscious victim for pulse which of the following is the best artery to check?(n=237)		
Radial	16	6.7
Femoral	14	5.9
Carotid	205	86.1
Brachial	2	0.8
When do you assess for return of spontaneous circulation in order to avoid interruption?(n=233)		
Every one minute	35	14.7
Every two minute	135	56.7
After 20 minute	13	5.5
I don't kow	50	21.0
What is the first drug of choice during cardiac arrest?(n=238)		
Atropine	10	4.2
Adrenaline	228	95.8
When can you stop performing CPR(n=232)		
When relieved by another trained in CPR	11	4.6
When you are exhausted	1	0.4

When the causality is pronounced death	127	53.4
All of the above	93	39.1

Association between department of residents and their knowledge towards cardiopulmonary resuscitation was done with chi square test. regarding the sequence of new BLS, 78.8% of anesthesiology and 68.0% of emergency medicine knew the sequence of new BLS where as majority of 88.2% general surgery, 63.2% neurosurgery and 88.9% urosurgery residents knew the old sequence of BLS. The correlation is statistically significant(P=0.01).

Table5: Association between the department of residents and sequence of new BLS of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

			Circulation, Airway and Breathing	Airway, Breathing and Circulation	
Department of residency	general surgery	Count	18	134	152
		% within Department of residency	11.8%	88.2%	100.0%
	Neurosurgery	Count	7	12	19
		% within Department of residency	36.8%	63.2%	100.0%
	Urosurgery	Count	1	8	9
		% within Department of residency	11.1%	88.9%	100.0%
	Anesthesiology	Count	26	7	33
		% within Department of residency	78.8%	21.2%	100.0%
	emergency medicine	Count	17	8	25
		% within Department of residency	68.0%	32.0%	100.0%
Total		Count	69	169	238
		% within Department of residency	29.0%	71.0%	100.0%

On the other hand an association done between department of the resident and their knowledge towards the location for CPR in adults and majority of the emergency

medicine residents knew the location for CPR is 80.0% midchest with significant association(P=0.01).

Table6: Association between the department of residents and location of CPR in adult of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

			left side of the chest	right side of the chest	midchest	Xiphisternum	
Department of residency	general surgery	Count	71	1	64	15	151
		%	47.0%	0.7%	42.4%	9.9%	100.0%
	neurosurgery	Count	7	0	6	5	18
		%	38.9%	0.0%	33.3%	27.8%	100.0%
	urosurgery	Count	3	0	4	2	9
		%	33.3%	0.0%	44.4%	22.2%	100.0%
	anesthesiology	Count	7	0	15	11	33
		%	21.2%	0.0%	45.5%	33.3%	100.0%
	emergency medicine	Count	2	0	20	3	25
		%	8.0%	0.0%	80.0%	12.0%	100.0%
Total		Count	90	1	109	36	236
		%	38.1%	0.4%	46.2%	15.3%	100.0%

Regarding the association between department of the residents and their knowledge towards depth of compression in adults during CPR was done and majority of the (68.4%) neurosurgery residents and (50.0%) anesthesiology and emergency medicine residents knew the depth is 11/2-2 inches.

Table7: Association between the department of residents and depth of compression in adults of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

			1 1/2 inches	2 1/2-3 inches	1-1/2 inches	1 1/2- 2 inches	
Department of residency	general surgery	Count	3	30	53	60	146
		%	2.1%	20.5%	36.3%	41.1%	100.0%
	neurosurgery	Count	0	3	3	13	19
		%	0.0%	15.8%	15.8%	68.4%	100.0%
	urosurgery	Count	0	1	5	3	9
		%	0.0%	11.1%	55.6%	33.3%	100.0%
	anesthesiology	Count	1	9	6	16	32
		%	3.1%	28.1%	18.8%	50.0%	100.0%
	emergency medicine	Count	0	6	6	12	24
		%	0.0%	25.0%	25.0%	50.0%	100.0%
Total		Count	4	49	73	104	230
		%	1.7%	21.3%	31.7%	45.2%	100.0%

Regarding the knowledge of the ratio of CPR if single rescue in adult, residents from department of (92%)emergency medicine, (84.4%) anesthesiology and (84.2%) neurosurgery said 30:2 (P=0.05).

Table8: Association between the department of residents and the ratio of compression to ventilation of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

			15:2	5:1	30:2	15:1	
Department of residency	general surgery	Count	31	7	100	14	152
		%	20.4%	4.6%	65.8%	9.2%	100.0%
	neurosurgery	Count	2	0	16	1	19
		%	10.5%	0.0%	84.2%	5.3%	100.0%
	urosurgery	Count	4	0	4	1	9
		%	44.4%	0.0%	44.4%	11.1%	100.0%
	anesthesiology	Count	3	0	27	2	32
		%	9.4%	0.0%	84.4%	6.2%	100.0%
	emergency medicine	Count	0	0	23	2	25
		%	0.0%	0.0%	92.0%	8.0%	100.0%
Total		Count	40	7	170	20	237
		%	16.9%	3.0%	71.7%	8.4%	100.0%

The knowledge to differentiated shockable rhythm was assessed through the residents of different department and the association was significant (P=0.01). From the study residents (100.0%) urosurgery, (97.0%) anesthesiology, (92.0%) emergency medicine and (69.7%) general surgery knew shockable rhythms were ventricular fibrillation and ventricular tachycardia.

Table9: Association between the department of residents and type of shockable rhythm of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

			ventricular fib. and vetachycardia	pulseless electrical activity and asystole	i don't know	
Department of residency	general surgery	Count	106	25	21	152
		%	69.7%	16.4%	13.8%	100.0%
	neurosurgery	Count	14	2	3	19
		%	73.7%	10.5%	15.8%	100.0%
	urosurgery	Count	9	0	0	9
		%	100.0%	0.0%	0.0%	100.0%
	anesthesiology	Count	32	1	0	33
		%	97.0%	3.0%	0.0%	100.0%
	emergency medicine	Count	23	2	0	25
		%	92.0%	8.0%	0.0%	100.0%
Total		Count	184	30	24	238
		%	77.3%	12.6%	10.1%	100.0%

Practice of residents regarding CPR

Majority of the residents practice for a 25 years old adult found unresponsive, the scene was safe, 127(53.4%) immediate recognition, activation of EMS, early CPR, rapid defibrillation, effective ALS. Followed by 65(27.3%) immediate recognition, early CPR, activation of EMS, rapid defibrillation, effective ALS, 18(7.6%)%) immediate recognition, activation of EMS, rapid defibrillation, early CPR, effective ALS, 17(7.1%)%) activation of EMS, immediate recognition, early CPR, rapid defibrillation, effective ALS. On the other hand when the residents found someone unresponsive in the middle of the road their first response were 123(51.3%) open airway, 91(38.2%) look for safety, 20(8.4%) start chest compression and 2(0.8%) give two breathing. majority of the residents if they didn't want to give mouth to mouth breathing they can give either mouth mask

ventilation or chest compression only or bag mask ventilation. The practice of the participants for an adult unresponsive victim who has been submerged in fresh water and just removed from it, who has spontaneous breathing but unresponsive their first response was 105(44.1%) keep him in recovery position, 60(25.2%) compress the abdomen to remove water, 41(17.2%) CPR for two minute and inform EMS and 18(7.6%) CPR for one minute and inform EMS.

Table10: Practice of residents towards CPR of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

A 25 years old adult found unresponsive, the scene was safe, what statement is correct?(n=227)	frequency	%
immediate recognition, early CPR, activation of EMS, rapid defibrillation, effective ALS	65	27.3
immediate recognition, activation of EMS, early CPR, rapid defibrillation, effective ALS	127	53.4
immediate recognition, activation of EMS, rapid defibrillation, early CPR, effective ALS	18	7.6
activation of EMS, immediate recognition, early CPR, rapid defibrillation, effective ALS	17	7.1
When you find someone unresponsive in the middle of the road, what will be your first response?(n=236)		
Open airway	123	51.7
Start chest compression	20	8.4
Look for safety	91	38.2
Give two breathing	2	0.8
If you do not want to mouth to mouth breathing, the following can be done except (n=238)		
Mouth mask ventilation	28	11.8
Chest compression only	48	20.2
Bag mask ventilation	33	13.9
No CPR	129	54.2
You are witnessing an adult unresponsive victim who has been submerged in fresh water and just removed from it, he has spontaneous breathing but he is unresponsive. what is first step you act?(n=224)		
CPR for two minute and inform EMS	41	17.2
CPR for one minute and inform EMS	18	7.6
Compress the abdomen to remove the water	60	25.2
Keep him in recovery	105	44.1

The Attitude of resident physician regarding CPR

Majority of residents attitude were 159(66.8%) definitely confident of recognizing a person in need of BLS where as 65(27.3%) likely confident. most of participants 143(60.1%)definitely believe that CPR increase the survival rate of patients who faced cardiac arrest and 74(31.1%) likely believe in CPR. On the other hand 165(69.3%) were definitely willing to provide chest compression to stranger and 57(23.9%) likely provide chest compression to stranger.

Table10: Attitude of residents towards CPR of the study participants in Tikur Anbessa Hospital, Addis Ababa , Ethiopia, 2017

	Definitely		Likely		Unlikely		Definitely not		I don't know	
	Freq.	%	fre	%	Freq.	%	Freq.	%	Freq.	%
Are you confident of recognizing a person in need of BLS(n=238)	159	66.8	65	27.3	8	3.4	2	0.8	4	1.7
Do you believe that CPR increase the survival rate of patients who faced cardiac arrest (n=238)	143	60.1	74	31.1	14	5.9	5	2.1	2	0.8
Would you want other lay person or trained in BLS to try to resuscitate you if you are in need of BLS(n=237)	135	25.7	69	29.0	12	5.0	9	3.8	12	5.0
Are you willing to provide chest compression to a stranger	165	69.3	57	23.9	6	2.5	5	2.1	5	2.1

CHAPTER FIVE

DISCUSION

It is very important that medical practitioners are competent in the performance of CPR with requisite knowledge and information as cardiopulmonary arrest is common in our daily practice.

The purpose of this study was to assess the knowledge, practice and attitude of surgical, anesthesiology and emergency medicine residents towards cardiopulmonary resuscitation. In this study with 93.8% response rate 238 residents were participated 81.5% of them were male residents better than the study done in Nigeria were only 65% response rate and male respondents were 61.54%. Another study done in Trinidad and Tobago in emergency department showed 82% response rate. The mean age of participants were 28.2 years in this study while the study done in Nigeria shows mean age of32±6 years. From the respondents in this study 66% of the residents were trained at least one time for basic life support and advanced cardiac life support but the study done in Nigeria shows 40% was trained.

Regarding knowledge the score in this study was 56.4% which was poor and this was due to low percentage of training and residents poor update of new guidelines. From the study participants their knowledge towards the depth of chest during chest compression was only 31.9% out of this neurosurgical residents score 68.4% followed by anesthesiology and emergency medicine residents who score 50% both, the study done in Nigeria was 40% which was better than this study. Knowledge regarding the rate of chest compression in one minute in this study it was 49.6% where as in study done in Nigeria it was 40%. On the other hand in this study their knowledge of chest compression to ventilation ratio 30:2 was 71.0% where as in Nigeria it was 53.85%. Regarding the training of either basic life support or advanced cardiac life support, in this study 66% trained where as in the study done in Nigeria 83.33% was trained which was better than this study. This difference may be due to lack of different training program in different department and in this hospital as a whole.

Regarding the knowledge of AED, 45.4% in this study knew as automated external defibrillator whereas study done in Asia on primary health care physician show 42%. In this study knowledge was assessed regarding ventricular fibrillation and ventricular tachycardia were shockable rhythms and 77.3% were correct of which (100%

)neurosurgery, (97%) anesthesiology and (92%) emergency medicicne residents. This sows a significant knowledge difference between departments($P<0.05$).

The newest development in the 2015 AHA guideline for CPR is a change in the BLS sequence steps from ABC (Airway, Breathing, Chest compressions) to CAB (chest compression, airway, and breathing). The reason for this being in the vast majority cardiac arrest is due to VF or pulse less VT and the critical elements for these are chest compressions and early defibrillation. But only 53.4% were right regarding the correct statement of immediate recognition, activation of EMS, early CPR, rapid defibrillation, effective ALS to unresponsive person. Overall the practice in this study was poor with most of the participants score less than the average of the correct practice.

Majority of this study respondents had good attitude(>90%) towards their confidence of recognizing a person in need of BLS, they believe CPR increase survival rate of patients in cardiac arrest and willingness to provide chest compression to stranger, which was encouraging.

In this study 54.7 % want lay person/trained in BLS to try to resuscitate them if they are in need of CPR.

CHAPTER SIX

6.1. CONCLUSION AND RECOMMENDATION

6.1.1 CONCLUSION

The study reveals inadequate knowledge about CPR among residents all most all of them scoring below 84%, according to American heart association reference for CPR certification all health professional should score 84% and above on standardized knowledge question to be certified on CPR. Especially there was knowledge gap between the departments which could impact negatively on patient's survival rates during cardiac arrest; unless effective CPR training is given for them regularly. Majority of the participants had positive attitude and poor practice regarding CPR

6.1.2 Recommendation

According to the result of this study the following recommendations are proposed.

1. Structured CPR training program should be prepared to train and educate residents of different department.
2. Repetitive CPR training courses are needed and updates on new guidelines should be provided.
3. Further studies are needed to determine other factors that influence CPR knowledge.
4. The state government should come out with a policy that will make attendance of CPR training programme mandatory for all health care givers in the state.

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ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE, SCHOOL OF MEDICINE, DEPARTMENT OF ANESTHESIOLOGY

Consent Form

Dear respondent read the following details and make a circle on either one of choices below. The purpose of this study is to gather information that can help improve the quality of health regarding basic life support on cardiopulmonary resuscitation. You are being asked to complete questionnaire to assist us in that regard. We expect it will take you approximately 30 minutes to complete the questionnaire.

Confidentiality: The identities of all people who participate will remain anonymous and will be kept confidential. Identifiable data will be stored securely in a pass word protected computer account.

Remuneration: We are very grateful for your participation. However you will not receive compensation of any kind for participating in this study. Contact information about the study if you have any questions or require further information about the study you may contact to Dr. Mathias, (0910753286)

If you have any concerns about your treatment or rights as research subject you may contact to Addis Ababa University collage of health science, department of Anesthesiology and critical care. Consent we intended for your participation in this study to be pleasant and stress-free. Your participation is entirely voluntarily and you may refuse to participate or withdraw from the study at any time. Your consent to participate in this study is assumed once you have completed the questionnaire. Do you like participate in this study? A. yes B. NO

Sign of respondent……..

Sign of data collectors…….

Thank you!!!

Socio demographic characteristics

Answer each questions by choosing the appropriate letter or write down your response in the space provided.

1 .Age……..

2. Sex A, Male B, Female

3. departement of your residency?

a. general surgery b. neurosurgery c. urosurgery d. anesthesiology

e. emergency medicine

4. year your residency? a) one b) two c) three d) four e) five

5. . Have you been trained regard to CPR?

A, Yes B, No

6. if YES for question no.5, how many training? a) one b) two c) three d) specify-------
7. How often you perform?

A, Annually C, Weekly E, Never

B, monthly D, Daily

Part II Question concerning the knowledge of resident physicians regarding CPR.

1. What is abbreviation of BLS?

A. Best life support C. Basic lung support
B. Basic life support D. Basic life service

2. Sequence of new BLS.

A. Circulation,Airway and breathing

B. Air way, breathing and cirulation

C. Breathing, circulation and airway

3. Location of chest compression in pregnant women is

A. At xiphisternum C. Slightly higher on the sternum

B. At below the intera mammary line D. At intera mammary line

4. What is the location for CRP in adult?

A. Left side of chest C. Mid chest

B. Right side of chest D. Xiphisternum

5. Position of pregnant women during CPR best with

A. Supine position with firm wedge to support left side of the thorax

B. Supine position with firm wedge to support right side of the pelvis and thorax

C. Left lateral position

D. Right lateral position

6. How do you give rescue breathing for infant?

A. Mouth to mouth with nose pinched

B. Mouth to mouth and nose

C. Mouth to nose only

D. Mouth to mouth without nose pinched

7. Depth of compression in adults during CPR

A. 11/2 inches C. 1-1/2 inches

B. 21/2-3 inches D. 11/2-2 inches

8. What is the maneuver used to open air way if not trauma suspected?

A. Insert the finger into the mouth and pull the tongue for ward

B. Jaw trust

C. Head tilt D. Head tilt chin lift

9. Ratio of CPR if single rescue in adult

A. 15:2 C. 30:2

B. 5:1 D. 15:1

10. The LEAST rate of compresion recommended in one minute?

A. 80 B. 100 C. 120 D. i dont know

11. What does abbreviation AED stands for?

A. Automated external defibrillation C. Advanced electrical defibrillator

B. Automated electrical defibrillation D. Advanced external defibrillator

12. which one is shockable rhythms?

A. Ventricular fibrillation and ventricular tachycardia

B. Pulseless electrical activity and asystole

C. i don't know

13. when do you deliver shock for shockable rhythms

A. two minute after CPR starts

B. As soon as the defibrillator arrives

C. After 10 cycles of CPR

D. i don't know

14. When assessing unconscious victim for pulse which of the following is the best artery to check?

A. Radial C. Carotid

B. Femoral D. Brachial

15. When do you assess for rutern of spontanoues circulation in order to avoid interruption?

A. every one minute B. every two minute C. after 20 minute D. i don't know

16. What is the first drug of choice during cardiac arrest?

A. Atropine C. Adrenalin

B. Vasopressin D. Magnesium sulphate

17. When can you stop performing CPR?

A. When relieved by another trained in CPR

B. When you are exhausted

C When the causality is pronounced death

D. All of the above

Part III Question concerning the practice of resident physicians regarding CPR

18. A 25 years old adult found unresponsive, the scene was safe, what statement is correct?

A. Immediate recognization early CPR, activation of EMS, rapid defibrillator, effective ALS
B. Immediate recognization, activation of EMS, early CPR, rapid defibrillator, effective ALS
C. Immediate recognization, activation of EMS, rapid defibrillator, early CPR, effective ALS
D. Activation of EM, immediate recognition, early CPR, rapid defibrillator, effective ALS

19. When you find someone un responsive in the middle of the road , what will be your first response?

A. Open air way C. Look for safety
B. Start chest compression D. Give two breathing

20. If you do not want to mouth to mouth breathing, the following can be done except

A. Mouth mask ventilation C. Bag mask ventilation
B. Chest compression only D. No CPR

21. You are witnessing an adult unresponsive victim who has been submerged in fresh water and just removed from it, he has spontaneous breathing but he is un responsive. What is the first step you act ?

A. CPR for 2 min and inform EMS C. compress the abdomen to remove water

B. CRP for 1min and inform EMS D. Keep him in recovery position

PartIII Question concerning the attitude of resident physician regarding CPR

Question	Definitely	Likely	Unlikely	Definitely not	I don't know
22. are you confident of recognizing a person in need of BLS?					
23. do you beleive that CPR increase the survival rate of patients who faced cardiac arrest?					
24. Would you want other lay person or trained in BLS to try to resuscitate you if you are in need of BLS?					
25. Are you willing to provide Chest compression to a stranger					