

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF EMERGENCY MEDICINE

CAUSES AND CIRCUMSTANCES OF DEATHS OF PATIENTS ADMITTED TO THE ADULT MEDICAL INTENSIVE CARE UNIT OF TIRUNESH BEJING GENERAL HOSPITAL ADDIS ABABA, ETHIOPIA, 2021.

BY

SISAY ALEMAYEHU

JUNE, 2021

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ACRONYMS AND ABBREVIATIONS

AA	Addis Ababa
AARHB	Addis Ababa regional health bureau
AMI	Acute myocardial infraction
CHF	Congestive heart failure
DCs	Data collectors
DKA	Diabetic keto acidosis
ICU	Intensive care unit
IRB	Institutional review board
MICU	Medical intensive care unit
MPM	Mortality probability model
MRN	Medical record number
PIP	Principal Investigator
SPSS	Statistical package for social science
TBGH	Tirunesh Beijing general hospital

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ABSTRACT

***Background**: Intensive care unit (ICU) is a special unit of a hospital that provides intensive treatment for patients with severe life-threatening illnesses which require uninterrupted care and close monitoring with life support equipment. The mortality rate is still very high in most ICUs especially in the developing countries due to late presentation of patients, unavailability of well-trained staff and lack of life support equipment. This study tried to identify the causes and circumstances of the death of critically ill patients.*

***Objectives :** To identify causes and circumstance of deaths of patients admitted to the adult intensive care unit (ICU) at Tirunesh Beijing Hospital public hospital, Addis Ababa, 2021.*

***Methods**: A retrospective cross-sectional study was conducted. All patient charts who were admitted and died in adult ICU from Sept 2018 to August 2020 and met the criteria were included. Data was collected by using structured and pretested checklists. SPSS version 25 software was used for data entry and analysis.*

***Result**: A total of 193 death cards were reviewed, of which 116(60.1%) were males and 77 (39.9%) were females. Common deaths 91(47.2%) occurred in the age group20-40yrs with mean standard deviation of 43.92±17.26 years. Stroke is the leading cause of death accounting for 27 (14%) of total death followed by Retroviral infection (13.5%).The mortality of patients admitted in MICU was 39% and 52.8% of the deaths took place in the first 72 hours of admission to the intensive care unit.*

***Conclusion**: The total mortality was considerably high and it is affecting the young age groups. Majority of the patients are dying in the first 72 hours, indicating that most patients are visiting the intensive care unit in the late stages of their illnesses. Further study is required for better understanding of the existing situation*

Keywords: Intensive care unit, Mortality

CHAPTER ONE

1. INTRODUCTION

1.1. Background

Mortality in ICU is a universal problem. It varies across the world depend on ICU infrastructure, staff availability, and training, pattern, and cause of ICU admission. In developed contents like North America, Oceania, Asia and Europe, ICU mortality is. Relatively low with the mortality rate of 9.3%, 10.3, 13.7%, and 18.7% respectively, while in the rest of the world such as South America, and the Middle East the mortality found to be 21.7% and 26.2% (1).

In the developing world, there is high reported mortality and yet the causes and the circumstances of death are not known. These knowledge is very crucial for better understanding and designing problem solving solutions (2).

The study in a low-income setting revealed a very high mortality rate (40.1%), with causes of admission being sepsis, trauma, head injury and ARDS. The mortality rate showed minimal improvement over time because of limitations in resources, a scarcity of skilled manpower and materials with unsatisfactory use of evidence-based practices(3). Overall the intensive care mortality in subs Saharan Africa is unacceptably high requiring deeper understanding of the problem (4).

It is known that Critical care is often thought to have begun in 1953 when Danish patients with poliomyelitis a century earlier (5). Despite its wide speared expenditure, it is a very important and yet slowly growing in developing countries.

In Ethiopia, ICU mortality from few studies conducted showed an increased mortality on medical Intensive Care Unit (MICU). The causes are mainly infectious from poor hand hygiene and infection prevention strategies (6). Multiple organs failure the most frequent cause of death in the ICU (47%) and followed by central nervous system failure (16%) and cardiovascular failure (1.4%) (7).

Patients with diseases non-communicable will continue to be a significant and increasing proportion of ICU patients and mortality in the study is substantial and early admission of patients and availability of invasive monitors will help in reducing the mortality rate (8).

The commonest diseases like infectious diseases to non-communicable diseases like cardiovascular that non-communicable diseases need to receive attention. Still cause a substantially high number of deaths in ICU.(9).

Developed and developed developing countries are reduced ICU patient mortality through the development of modern technology, improvement of the quality patient care, quality of health care professionals, evidence practice, and established adequate which are used for ICU (intensive care unit) patient care (10).

1.2 Statement Of The Problem

Mortality rates in the ICU strongly depend on the severity of illness and across different ICUs, 6.4% to 40% of critically ill patients were reported to die despite intensive care medicine has somewhat developed (11).

Caring for critically ill patients is challenging in resource-limited settings, where the burden of disease and mortality from potentially treatable illnesses is higher than in resource-rich areas. Barriers to delivering quality critical care in these settings include lack of epidemiologic data and context-specific evidence for medical decision-making, deficiencies in health systems organization and resources, and institutional obstacles to the implementation of life-saving interventions(12).

There is a gap among developing and developed countries about MICU patient mortality. The Source of this discrepancy is multifactorial and is driven by the lack of sufficiently trained healthcare professionals, limitations in infrastructure Provision of intensive care services to critically ill patients is a global enterprise. The care is advancing but in resource-limited settings, it is lagging far behind and ICU mortality is still higher due to various reasons (13).

Non-communicable diseases are the leading cause of death among patients at MICU in Ethiopia, where the health care system is still geared toward addressing communicable diseases. Health

policy attention is needed to remedy this situation. This observed double mortality burden is unlikely to be unique to Addis Ababa and provides new insight into the epidemiological transition in urban Ethiopia(14).

Meeting the challenges to improve the production of medical intensive care unit mortality statistics in lower- and middle-income countries will require new techniques, new technologies, and new thinking about sustainable, representative, reliable systems for determining the magnitude and causes of death (15).

Nationally including Ethiopia, there were no organized information/data on medical intensive care unit mortality. So, mortality of medical ICU patients in Ethiopia as compared to other countries, there is a great need to conduct an extensive study particularly on an ICU basis to obtain reliable information on this area; Hence, the aim of this study identified causes and circumstances of deaths patients admitted to MICU in TBGH during the last two years from (Sept2018 up to Aug 2020) A.A, Ethiopia.

1.3. Significant Of Study

The identification of causes and deaths of critically ill patients admitted to TBGH ICU was in prioritization of the problems and the resources and knowledge for clinicians on understanding the occurrence and causes of mortality in MICU of TBGH. A study will deliver information on medical ICU mortality for scholars. Concerned bodies for planning and evaluating ICU safety actions and prevention of ICU mortality might use the data from this study.

CHAPTER TWO

2. LITERATURE REVIEW

A study conducted University of San Francisco modern intensive care unit (ICU) is the highest mortality unit in the hospital approximately 4 million ICU admissions per year in the United States with an average mortality rate reported ranging from 8-19 %(16).

Prolonged stay in the intensive care unit (ICU) is associated with high mortality and costs. Identifying those patients who are most likely to benefit from an extended ICU stay would help guide clinical decisions in the case of diseases characteristics heterogeneous group of patients who required a prolonged ICU stay(17)

Association of gender with outcomes in critically ill patients study evidenced that there was a statistically significant interaction between gender and age. In patients <50 years of age, women had reduced ICU mortality compared with men (18).

IN US ICUs mortality for patients decreased significantly over the past two decades despite an increase in the severity of illness and reductions in mortality were deliver in the quality of care (19).

A study indicated in America on Mortality-based Critical Care Performance hospitals that caring for high severity ICU patients does not necessarily also perform well in caring for low-severity ICU patients or high-severity patients showing that risk-standardized mortality rates for ICU admissions as a whole offer only a narrow hospital admission patients (20).

In the Netherlands, ICU showed that low-level ICUs had a higher nurse/patient ratio than ICUs. This is probably described by the fact that the high-level ICUs had more ICU nurses in training and quality of care) (21).

A study in Enugu southeastern Nigeria reported a mortality rate of 34.6% in 2015 and Jos Nigeria mortality of 42.8% this showed that ICU mortality increased and Medical ICU mortality 55% and the mean duration of ICU admission for the patients that died was 4.2 days and age between 40-49 years 26(14.9) were males and females 60-69 years 12(6.90)(22).

In Teaching Hospital Togo conducted for a mortality rate of 32.38%, men accounted for 163 (68.8%) of the deaths, and women 74 (31.2%). The average age of patients who died was 41.7 years; the age group 21-30 years comprised 16% of the deaths, that 31-40 years 19.8%, and 41-50 years 17.7%(23).

According to adult mortality data for sub-Saharan Africa conducted because in sub-Saharan

In Africa there has been an emphasis on communicable were exceptionally limited services and a lack of attention (24).

In western Kenya, ICU mortality was 53.6%, and there is significant death within 30-days of admission, and mortality rates range from 9.3% in North America and 15.5% in Western Europe to 32.9% in Nigeria and 50.4% in Ethiopia ICU outcomes (25).

In Nigeria study showed that mortality was highest for infection accounting for 32% of and also medical indications for admission accounted for 21.3%, with respiratory failure and asthma 11.5% mortality rate was (37.3%) died during ICU admissions (22).

A case series study conducted in Addis Ababa Teaching hospital mortality of the MICU was 32%, Severe and complicated malaria was the main cause of death (10.3%) followed by tetanus (6.4%) and acute myocardial infarction (6.3%) the solution for non-communicable diseases related to life style changes is mandatory(14).

In a study done in Tikur Anbesa hospital mortality of medical 29%, 223(51.1%) were males and 213(49.1%) were females. Stroke is the leading cause of MICU death accounting for 15.8% followed by CHF (13.8%), AMI (8%), and deceased patients who had disturbed vital signs and changed mental states at MICU admission, i.e. 97.5%, 95.4%, 86.2%, 84.9%, 70%, 53.4% had deranged pulse rate, respiratory rate, systolic blood pressure, diastolic blood pressure, oxygen saturation and body temperature respectively in addition to comatus44.3% and confused mental states 43.3 % and patients stay <5 days and mean length of stays 16.7 days with 64.9% deaths recorded(15).

Based on a study conducted at St. Paul Hospital the MICU mortality rate was 39% 2007 up to 2012 highest mortality rate (45.8%) was observed in 2010; the lowest mortality rate (27.7%) in 2008 and Strokes were also the leading causes of death, accounting for 12.2% of total deaths In

any hospital ICU has the highest mortality rate registered and mean age of the patients was 38.79 years (± 17.98). The mean length of stay in the MICU was 4.4days (± 5.1) and55% of the deceased stayed 2 or fewer days in the MICU (8).

A retrospective study was done at Jima University Specialized Hospital there were 370 admissions to the ICU during the study period. The median age was 32.0 (22.0-47.0) years and 56.2% were males. The median length of stay was 3.0 (1.0-7.0) days ICU mortality rate was 50.4% (26).

The 8 years retrospective study carried out in private and public hospitals in Addis Ababa mean age of the deceased was 28 years (SD=23 years).In the productive age, groups15-49years both HIV/AIDS and tuberculosis were the leading causes of mortality. Adults with age 45 years and above, cardiovascular and malignant neoplasm leading causes of death (27).

In Tigray, Ayeder Hospital conducted research admissions were patients with cardiovascular diseases (26%), followed by infectious diseases (20%) and neurological diseases (19.8%). In addition to diabetic ketoacidosis and heart failure, founding 16% and by stroke (15.2%) respectively. Another stroke (17%) and septic shock (11%) older age total mortality was 27%and death in the MICU was 27.5%. More females died than males, 30.7% (9).

Negist Eleni Mohammed Memorial Hospital of Southern Ethiopia 46.42% died in the ICU. The majority of the patients, 26.1% were between the age group of 20 and 24 years. The mean age of respondents was 31.27 ± SD (14.019). Regarding the sex composition of the sampled respondents, about 163 (58.2%) were male and female 117 (41.8%). Consciousness 28.2% survived and 25.36% were unconscious died in ICU (28).

Accordingly, Multicenter prospective study Early and Late mortality study conducted early (30 d) and late (31 to 365 d) and frequency of early mortality was 7.9% and the frequency of late mortality was 22.3%. Infections were the principal cause of death in both early (47.2%) and late (36.4%) period's ICU-acquired infections are associated with increased risk of early mortality (29).

Southern Ethiopia a Multi-center Retrospective Cohort Study ICU mortality rate was 46.8% and with cardiac arrest were approximately 12 times more likely to die (30).

A retrospective study conducted in Jima University intensive care units showed that the mortality rate among the ICU admitted patients was 37.7%. Of this 53.8% of them were male. The mean age of patients was 37.8±17.3 percentage. The commonest diagnosis at admission were cardio-vascular diseases (30.4%) followed by surgical reason intervention for various reasons (18.8%)53.3%of them were conscious at admission while 46.7% of them were unconscious 59.4 % in ICU for more than 4 days and 40.6% of fewer than 3 days (31).

A Study Myung sung Christian Medical (MCM) ICU mortality 31% of stay were 6.55±7.89 days and mean age in this study is 50.3±19.18 years. Critical care is a major challenge in developing countries where health needs often outstrip available resources and, unfortunately, most of the critical health care facilities are still in growing stages (32).

CHAPTER THREE

3. OBJECTIVES OF THE STUDY

3.1. General Objective

The general objective of this study to identify the causes and circumstances of deaths among patients admitted to medical intensive care in Tirunesh Beijing Hospital, A.A, and Ethiopia from April to May 2021

3.2. Specific Objectives

1. To describe the demographic characteristics of adult patients admitted to the MICU of TBGH,AA.

2. To assess causes of deaths among patients admitted to MICU of TBGH,AA.

3. To identify circumstances of deaths among patients admitted to MICU of TBGH, A.A.

4.To determine mortality rate of among patients admitted to |MICU of TBGH, AA.

CHAPTER FOUR

4. METHODS AND MATERIALS

4.1. The Study period

The study was conducted from April 3 –May 30/ 2021 in Tirunesh Beijing Hospital is one of the public hospitals which gives integrated health services since march 5,2012 for kality sub-city, woreda 1and other neighboring sub-city inhabitant(Nifas silk lafto and Bole) as well as the surrounding Oromia region. It is estimated to give service for about 605,266 people per year and there are some activities such as outpatient, emergency, and intensive care services (33).

4.2. Study design

A retrospective cross sectional chart review study was carried out to identify causes and mortality among patients admitted to the medical intensive care unit of TBGH, Addis Ababa, Ethiopia.

4.3. Source of Population

The source population was all medical records/charts/ of patients who were admitted to the medical intensive care unit (MICU) of Tirunesh Beijing Hospital, Addis Ababa, Ethiopia from Sep 2018-Aug 2020.

4.4. Study Population

The study population were all medical records/charts/ of patients who died in the medical intensive care unit of Tirunesh Beijing General Hospital (Sep 2018-Aug 2020)

4.5. Eligibility

4.5.1. Inclusion

Mortality in a medical intensive care unit (ICU) within those 2 years of deaths.

4.5.2. Exclusion

- Incomplete charts (more than 50%)
- Unavailable charts

4.6. Sample size

All medical records/charts/ of patients who were admitted and died in the medical intensive care unit having full death information from Sep 2018-Aug 2020 were sample size.

4.7 Sampling technique

Public hospitals under Addis Ababa health bureau designated, study. The area selected purposively and participants were selected with census method.

4.8. Data Collection method

The data were collected consecutively by reviewing ICU death charts for MRN, age, sex of deceased, address, date of ICU admission, the diagnosis at ICU admission, vital signs at admission, mental status at ICU admission, treatment given during admission, date of death, vital signs immediately before death, length of **stay** of patients using a pre-tested and structured instrument (checklist).

4.9. Data Quality Control

To assure the quality of data, four data collector Nurses were trained and a structured data collection checklist was used. The structured checklist was pretested by out of the study period and area MICU death ten charts in Zeweditu Memorial Hospital before the actual data collection is conducted. During the data collection procedures, data collectors were supervised by the principal investigator. All the collected data were reviewed and checked daily for its completeness

4.10. Data Analysis and Interpretation

After the data was obtained from charts were edited, coded, and entered into the Epi data, then transport to SPSS version 25 for descriptive Statistics, and MPM scores were used to describe the study population.

4.11. Variables

4.11.1. Dependent variables (outcomes)

- Mortality

4.11.2. Independent variables

- Age
- Sex
- Address of the deceased
- Diagnosis cause of death
- Length of stay in ICU

4.12. Ethical Considerations

Permission letters were obtained from the Institutional review board (IRB)of Addis Ababa University, College of health sciences, department of emergency medicine, then by showing that permission letter to the stakeholders of the study the data was collected without any obstacles. The confidential issue used only card numbers.

4.13. Opérationnel Définitions

Death: The state of deceased among patients admitted to medical intensive care.

ICU Mortality rate: calculated as the number of deaths from the total number of admissions.

Intensive Care Unit: It is a specialized section of a hospital that provides comprehensive and continuous care for persons who are critically ill and who can benefit from treatment

Adult Medical Intensive Care Unit: It is one specialized unit of intensive care unit in which critically ill medical patients get comprehensive and continuous intensive care and treatment. Common diseases Causing MICU Death: The common diseases/etiologies/ and mainly confirmed diagnosis during MICU admission of patients in the medical intensive care unit that causes death.

Circumstances : a characteristic which is described in terms of different activities done within the last two years admission in TBGH in MICU such as vital sign ,treatment given, causes of deaths ,length of stay, early and late on set of deaths registered .

CHAPTER FIVE

5. RESULTS

5.1. socio-demographic and admission characteristics of the respondent

Mortality Rate (MR) =193/496x100%=39%.

During this study out of 496 patients who were admitted to TBH MICU, there were 193(39%) deaths registered to the registration book. A total of hundred nineteen-three (n=193, 94%) death cards were reviewed, and 8 charts were excluded due to incomplete charts. Of which 116(60.1%) were males and 77 (39.9%) were females. The mean and standard deviation of age of study participants was 43.92±17.26 years. Most of the deaths occurred between 20 - 40 years old (n= 91, 47.2%). Majority were from Addis Ababa (90.2%) (Table 1).

Table 1 Distribution of ICU deaths by socio demo graphic characteristics from (sep 2018-aug 2020, AA, Ethiopia

Age group (years):	**N (%)**	**N**
<20	10(5.2%)	193
20-40	91(47.2%)	193
41-60	64(33.2%)	193
>60	28(14.5%)	193
Gender		
Male	116(60.1%)	193
Female	77(39.9%)	193
Address(region):		
Addis Ababa	174(90.2%)	193
Oromia	17(8.8%)	193
Others	2(1%)	193

Clinical profile: The leading cause of death was stroke 27(14%) and followed by retroviral infection related illness (n= 26(13.4%)) Fig. 1. The mean ± standard déviation MPM score of the study participants was 23.56 ± 21.04.

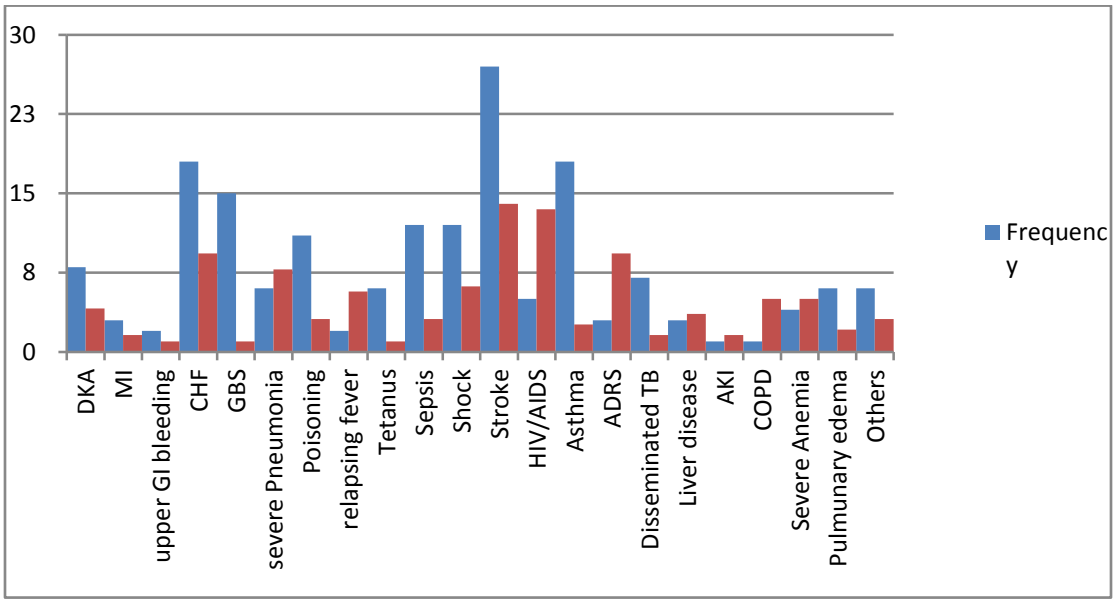


Figure 1 frequency distribution of cause of deaths in medical intensive care unit of TBH from 2018-2020, Addis Ababa, Ethiopia

Most of the study participants had tachycardia (pulse rate greater than 100), (n= 92, 48%) and tachypnea (Respiratory rate > 20) (n= 131, 68%). Not only had that, seventy-three patients (37.8%), come with an oxygen saturation of less than ninety. Systolic blood pressure was low for six nine participants (35.8%) table 2. One hundred eighteen participants (61%) were comatose.

Table 2 distribution of deaths in TBGH ICU admission vital signs and mental status from 2018-2020, AA, Ethiopia

Characteristics	N (%)	%
Pulse Rate		
<60b/min	21	(10.9%)
60-100b/min	73	(37.8%)
>100b/min	***92***	***(47.7%)***
no pulse	7	(3.6%)
Respiratory Rate		
<12r/min	8	(4.1%)
12-20r/min	45	(23.3)
>20r/min	***131***	***(67.9)***
Apnea	9	(4.7)
BP		
<90mmhg	**(4.6%)**	**(35.8%)**
90-139mmhg	79	(40.9%)
>=140mmhg	38	(19.7%)
Un recordable	7	(3.6%)
SP02		
<90 without 02	***73***	***(37.8%)***
90-100% with 02	17	(8.8%)
90-100% without 02	90	(4.6%)
Temperature		
<36.5oC	62	(32.1%)
36.5-37.5 0c	73	(37.8%)
>37.5 .0c	***12***	***(6.2%)***

Unrecorded	46	(23.8%)
Mental Status		
Comates	***118***	***(61.1%)***
Confused	32	(16.6%)
Oriented	43	(22.3%)

Management: All patients received oxygen and majority were put on Antibiotics (N) Fig 2. From supportive therapies (n= %) most received GI prophylaxis. This study shows that the majority of deaths by length of stay was recorded in early deaths or ≤ 5days N= 137(71%) and common deaths were between age 20-40, N=91(66%) Table 3.

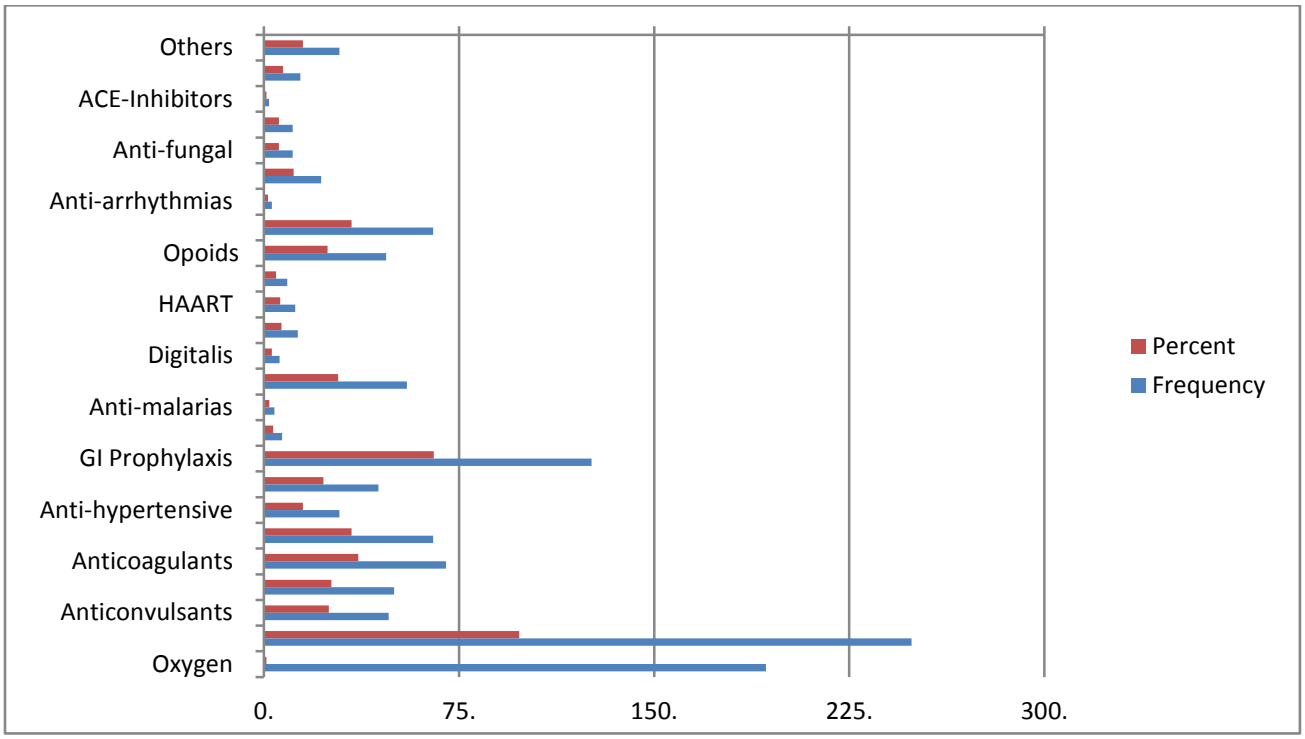


Figure 2 Distribution by type of treatment given during ICU Admission from 2018-2020, A.A, Ethiopia

5.3. Cross Tabulation of distribution ICU deaths by age, sex, mental status and length of stay

Table 3 . Cross Tabulation of distribution ICU deaths by age, sex, mental status with early and late admission of TBGH MICU from 2018-2020, AA, Ethiopia.

Mental status of patients admitted in ICU most of of patients were coma and, in this study, showed that conatus patients deaths registered at early time of admission.

Chi-square analysis majority admission patients of were males , there was significant association between sex of respondents with early time of admission in ICU. (see table 3)

Variables		Early death(<5days)	Late deaths(≥5days)	Frequency	chi squre(x^2	P value
Sex	male	75	41	116	5.6	0.017
	female	62	15	77		
Age	<20	9	2	11	2.6	0.45
	20-40	59	31	90		
	41-60	48	16	64		
	>60	21	7	28		
Mental status	coma	83	35	118	0.67	0.88
	confused	22	10	32		
	oriented	32	11	43		

Note: *Significant at p-value < 0.05

CHAPTER SIX

6. DISCUSSION

Ethiopia is considered as one of the developing countries in Africa. Most of the literature review shows that there is a high mortality rate in the ICU based on all the studies in public hospitals.

Based on this study mortality was high as opposed to the developed world (Northern America) (16). This due to difference in availability of infrastructure, skilled personnel, and resources which makes the study setting difficult to provide optimum care to critically ill patients and contributing to the reduction or frighteningly high mortality rate.

In Africa, the ICU mortality rate is high compared to the other developed continents. The mortality rate in Nigeria and Kenya were 55% (22), 53.6% (25) respectively. In Ethiopia, different studies showed that the mortality rate is comparatively similar to other Africa countries. Studies were done in Jemma (26), Addis Ababa (14), and St. Paul (8) showed that the mortality rate was 50.4%, 32%, and 39% separately. Provision of ICU care is very challenging due to scarcity of drugs and medical equipment lack of well-trained health care workers and poor infrastructures are the main challenges to provide optimal care to critically ill patients and identify commonest causes of admission and using the available limited resources in developing countries like Ethiopia.

According to this study, Stroke is the leading cause of MICU which was a comparable study conducted in Tikur Anbesa hospital (14).

The current study showed that mortality rate 40% with a mean of 43.92±17.26 with standard deviation inconsistent another study conducted in Jima revealed that mortality 50.3%with 50.3±19.18 years (26). Critical care is a major challenge in developing countries where health needs often outstrip available resources and, unfortunately, most of the critical health care facilities are still in growth.

The mortality rate in this study showed that increased from the finding from Addis Ababa Teaching hospital (`14)and Nigeria (17), but is comparable to the report from the study done in Kenya (18), significant variation to United States 8-19 % (15) because of the better critical care service

in developed countries. A study done in TASH showed an overall mortality of 32% which is close to this study even though this study was conducted in a private hospital(3l%)(31). Another study conducted in SPHMMC showed a 39% mortality rate (9). It may be the high mortality was due to late admissions and limited care in the facility.

Regarding sex distribution most of the patient majority of patients were males (60. %) in this study. congruent to the study done in TASH (15), Ayder (9), Nigeria (17) and Kenya (18).

A study conducted in TBGH MICU shown that, patients with very short stay in MICU appear to have high mortality rate with the mean length of stay 5.44 days in the medical intensive care unit. This is congruent with the study conducted in Jima Specialized hospital mean length of stay were 3 days(26) might be due to high severity of diseases at ICU admission, inappropriate management and care of the patient, inadequate availability of medical instruments as well as drugs, shortage of highly qualified personnel and other so many reasons .

Current study Average length of stay (ALOS) means 5.44±7.225 related study showed that Cross Sectional Study Myung sung Christian Medical Center mean ICU length of stay was 6.55±7.89 days Current study based on mean age 43.92±17.26 with standard deviation related study differ varied from this mean age is 50.3±19.18 years (MCM) and Jima 32 years whereas Ayder 43 years look like (24).

According to this study mortality of patient with coma (61.1%) was contributing for majority of deaths. Other study conducted in the USA showed coma patients' mortality increased (9), this could be because patients with low GCS tend to have poor outcome.

6.1. Strength and Limitation of the Study

6.1.1 Strength of the study

There was no study done related to Mortality of Patients Admitted in Adult Medical ICU at Tirunesh Beijing General Hospital. This study can be used as a baseline information to reduce mortality for staff training and policy makers.

1. Limitation of the study

Retrospective design and single center study.

- ➢ The available data only supported categorization of patient by primary diagnosis
- ➢ Some patient death charts were not obtained during data collection
- ➢ Information obtained from patient charts might not be adequate and correct

7. Conclusion

The mortality of patients admitted to Tirunesh Beijing ICU is very high. Most patients had de-ranged vital signs at admission and died within the first few days of ICU admission. Stroke and Retroviral infection were the commonest underlying etiologies.

8. Recommendations

Early admission of patient's quality of nursing care and availability of invasive monitors will help in reducing the mortality rate. Further, research is required to identify the causes and circumstances deaths of patients. Contribution of each department so as to decline deaths that provide standard facilities to improve all aspects of care.

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ANNEX

Annex I: Hospital Consent Form

This is a study that will be conducted in Tirunesh Beijing Hospital, intensive care unit, in Ethiopia. The main objective of this study is to identify of cause and Mortality among patients admitted at AICU department of this hospital. The results of the study will be used as a basis to improve the quality of care. The information will be shared to the hospital. Therefore, the hospital's participation and collaboration are very much helpful in generating the required information and will be very much appreciated. In this study, data will be collected from the patients' medical record cards retrospectively. Information regarding any specific personal identifiers like the name of the clients will not be collected and information generated will be disclosed in totality. In addition, confidentiality of any personal information will be maintained throughout the study process and no unauthorized access to the information is allowed. Finally, the hospitals have all the right to refuse to participate in this study at any time. If you have any questions or need further information regarding the planned study, you are free to get clarification from the principal investigator, from the institution, or through the following address. Sisay Alemayehu, telephone-0913821526 (principal investigator). Therefore, if you would like to participate in this study, would you please confirm it by signing here? Thank you very much.

Participant Hospital----------principal investigator----------

Annex II- Data collection sheet causes and deaths of patient admitted into adult medical intensive care unit (MICU) at Tirunesh Beijing hospital Addis Ababa, Ethiopia data collection sheet:

S.No.	Questions	Choices of Answers
1	MRN	…….
2	Age of the deceased	……years
3	Sex of the deceased	1.Male 2.Female
4	Address of the deceased	1. Addis Aba 2. Tigray 3 .Somalia 10.Gambela 4. Amara 5.SNNRP 6 .Harare 7 .Oromia 8. Afar 10.Benishangul
05	Date of ICU admission	……..dd……..mm…… ……yy

06	The main diagnosis at ICU admission which causes ICU death	1. DKA 2. MI 3. UGIB 4. CHF 5. VHD 6. GBS 7.Severe Pneumonia 8. Poisoning 9. Relapsing Fever 10. G.Tetanus 11. Sepsis 12. Shock 13. Severe malaria 14. Stroke 15. Meningitis 16. Status-epileptics 17. HIV/AIDS 18. Asthma 19. ARDS 20. Disseminated TB 21 .Liver disease 22. Acute kidney injury 23.COPD 24. Severe anemia 25 Hypertension 26. Pulmonary edema 27. Cancer 28.others(specify)..……

07	Vital signs at ICU admission	1. PR: 1. <60b/min 2. 60_100b/min 3. >100b/min 4. No pulse 2. RR: 1. <12b/min 2. 12_20b/min 3. >20b/min 4. Apnea 3. BP: 1. <90/60mmhg 2. 90/60_139/89mmhg 3. >140/90mmhg 4. Unrecordable 4. SPO2: 1. < 89% with 02 2. <89% without 02 3. 90_100% with 02 4. 90_100% without 02 5. T: 1. < 36oC 2. 36_38oC 3. >38oC 4. Unrecorded
08	Mental status at ICU admission	1. Comates 2. Confused 3. Oriented 4. Unrecorded

09	Treatment given during ICU admission	1. Oxygen: 1. With MV 2. Without MV 3. Unrecorded 2. Antibiotics: 1. General antibiotics 2. 3rd Gen. Cephalosporin 3. High level antibiotics 3. Anticonvulsants 4. NSAIDs 5. Anticoagulants 6. Vasoactive drugs 7. Antihypertensive 8. Blood transfusion 9. GI prophylaxis 10. Bronchodilators 11. Antimalarial 12. Insulin 13. Diuretics 14. Digitalis 15. Anti-TB 16. HAART 17. Antihistamines 18. Opioids 19. Steroids 20. Antiarrhythmic 21. KCL 22. Antifungal 23. B-Blockers 24. ACE-Inhibitors 25.Others(specify)…… ……
10	Date of ICU death	…….dd…….mm……..yy
11.	Length of stay at ICU.…… ……..	

Mortality probability model (24 -48-72 Hrs.)

Date ……..

24 hrs.

48 hrs.

72 hrs.

Age……

Admission type medical