ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

DEPARTMENT OF CARDIOVASCULAR NURSING

PREVALENCE OF DEATH AMONG PATIENTS WITH MYOCARDIAL INFARCTION IN TERITIARY PUBLIC HOSPITALS IN ADDIS ABABA ETHIOPIA:

A RETROSPECTIVE STUDY

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A RESEARCH THESIS SUBITTED TO ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCINCE SCHOOL OF NURSING AND MIDWIFERY IN THE PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREES OF MASTERSOF SCINCE IN CARDIO VASCULAR NURSING

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Abbreviation and acronyms

MI	Myocardial infarction
CVD	Cardio vascular disease
CAD	Coronary artery disease
STEMI	ST elevation myocardial infarction
NSTEMI	NON-ST elevation myocardial infarction
ECG	Electro cardiogram
GBD	Global burden disease
ACS	Acute coronary syndrome
IHD	Ischemic heart disease
UGIB	Upper gastro intestinal bleeding
RHD	Rheumatic heart disease
CABG	Coronary bypass graft
LVT	left ventricular thrombus
EF	Ejection fraction
AMI	Acute myocardial infarction
CRP	C-reactive protein
SCA	Sudden cardiac arrest
PPCI	primary percutaneous coronary intervention
CS	Cardiogenic shock

Contents

Abstract

Back ground: Myocardial infarction is the leading cause of death globally and majority of which is occurring in low- and middle-income countries. However, the magnitude of death among patient with Myocardial infarction was not well known across Ethiopia.

Objectives: The aim of the study was to assess the prevalence of death among patients with myocardial infarction in selected tertiary public hospitals in Addis Ababa.

Methods: A facility based descriptive -retrospective study was conducted from January 1 2014 – April 30, 2023. A total of 205 samples were drowning proportionally from the selected hospitals. The data were collected using structured checklists. Data were cleaned manually, coded, and entered into Epi-Data version4.6 and analyzed by SPSS version 25 statistical software. Bivariate and multivariate logistic regression analyses were employed to identify associated factors for myocardial infarction related death value less than 0.05 was included in multivariable logistic regression analysis. Adjusted odds ratio along with 95% CI was calculated to see the strength of association factors, and if less than 0.05 will be taken as a level of statistical significance.

Results. Out of 205 study samples, Arrhythmia 77(37.6%), pulmonary embolism, 48(23.4%), and Heart failure, 47(22.9%) were the top three reported causes of death among the study population with Myocardial Infarction. The multivariate logistic regression analysis revealed that having a history of comorbidity [AOR= 0.202, (95% CI : 0.101 -0.403) P<0.001], Having poor medication adherence [AOR= 2.381, (95%CI:1.197-4.735), P= 0.013], and having late treatment [AOR=7.157, (95% CI: 3.505- 14.613), P <0.001] were found the determinant factors associated with death due to Myocardial Infarction.

Conclusion and recommendation: The study concluded that having a history of comorbidity, having poor medication adherence, and having late treatment were found the determinant factors associated with death due to MI. Therefore, there should be an intervention that reduces the factors determining the magnitudes of mortality among patient with MI.

Key words: prevalence, myocardial infarction, cause of death, Ethiopia

1. Introduction

1.1. Background

Globally, Cardiovascular illnesses are the primary reason for which, Coronary artery disease is a degenerative condition marked by atherosclerotic plaque formation in the epi-cardial coronary arteries, that causes 51% of cardiovascular illnesses(1).

Myocardial infarction is the common kind of coronary heart disease with severe disability with death globally. Usually it is an occurrence of necrosis in myocardial cells and sustained reduction of blood fallow and oxygen to the heart, although no more usually a serious symptom of cardio vascular disease related to plaque builds in your artery. Beside this we confirm that increased post-MI mortality is significantly affected by parameters like age, diabetes history, and a higher heart rate. Individual risk factors for death after MI include failing pumps and left ventricular ejection fraction dysfunction were apparent at admission.(2).

A group of people referred to as having a myocardial infarction with non-obstructive coronary arteries due to an imbalance in supply and demand, MINOCA may be caused by a number of etiologies, such as disruption of the coronary plaque, spasm, thromboembolism, dissection, micro vascular dysfunction, or myocardial damage(3).

Myocardial infarctions (MI) are classified in to STEMI and non-STEMI depend on a change in the ECG graph beside this there is a cardiac biomarker enzymes increase and there is further evidence, such as typical signs, indicative electrocardiographic changes, or investigation results of recent myocardial functional damage or current regional wall movement malformation. Myocardial infarction can be identified and the most typical sign of myocardial ischemia is chest pain, and the best for identifying cardio vascular abnormality is cardiac computed tomography. However, individuals with MI can also benefit from cardiac biomarkers, ECGs, and echocardiograms(4).

One of the problems for myocardial infarction usually results of full AV block and the WHO's European Myocardial Infarction Registry Criteria Record of myocardial infarction or angina pectoris, along with uncertain changes on the Echocardiography and elevated enzymes, history of Myocardial infarction and elevated enzymes with significant changes on the ECG or

otherwise available; or lethal cases, whether sudden or not, with naked-eye presentations of fresh blood(5).

The commonest complications for heart attack are cardiac arrest, heart collapse, Tachyarrhythmia, Brady arrhythmias, conduction abnormality ,inflammation to the wall of the heart ,blood loss and mortality(6).Although immediate restoration of blood flow and the standard is between three to six hours and less than the happening of symptoms, allows the majority of patients to be released from admission within two to three days of arterial blockage and continue living normal or almost routine lives and reperfusion has lowered mortality and other long-term effects of infarction by up to 70%(7).

1.2. Statement of the problem

Coronary heart disorder is the first reason to mortality worldwide in 2016; accounted 17.9 million deaths were attributed to it. nearly 75% of Cardio vascular fatalities occur in low- and middle-income countries, while myocardial infarction and stroke account for 85% of the 17 million early deaths (before the age of 70) attributable to countries with incomes below the global average(1).

Nations with low and moderate incomes accept a heavier burden of myocardial infarction than high-income nations due to their larger populations and more widespread exposure to risk factors like an unhealthy diet, inactivity, obesity, tobacco use, diabetes, elevated blood pressure, and abnormal blood lipids(8).

The national burden of (CVDs) in Ethiopia is not well documented however the Global Burden of Disease (GBD) 2017 research data were used in this systematic analysis to estimate the burden of CVDs in Ethiopia, ischemic heart disease (IHD),rheumatic heart disease(RHD) and stroke were the top three most common CVDs across all age groups in 2017, IHD, followed by RHD and stroke, was the most prevalent CVD when using the age-standardized metric(9).

WHO estimated that CVD caused about 9% of all deaths in Ethiopia in 2012, with an estimated 7.4 million fatalities per year (11).although acute myocardial Infarction and stroke accounted for 85% of these fatalities. Data on the global burden of illness in 2017 showed that coronary heart disease is the primary reason for mortality among MI patients despite the lack of national CVD studies in Ethiopia although the reality of coronary heart disease studies in Ethiopia was limited but the rational from worldwide prevalence of coronary heart disease in 2017 showed that is the first reason of mortality(7)

Clinical and laboratory data were examined for clinical characteristics and potential threat of ward mortality, these factors included higher peak levels of the brain natriuretic peptide (BNP), serum creatinine, peak blood urine nitrogen, and white blood cell (WBC) count, lower minimum hemoglobin and minimum platelet counts at the time, and age as independent predictors of in-hospital death(12).Besides the gold standard for treating MI is reperfusion followed by pharmacological therapy (such as aspirin, clopidogrel, and statins), The efficacy of heart bypass operation(CABG) surgery as the leading intervention for blockage the arterial wall of the

heart(10).Although while this approach may reduce the risk of cardiovascular events, it also increases the risk of bleeding, according to AMI guidelines(12).

Generally speaking, MI was only recognized as a deadly occurrence at autopsy at the turn of the 20th century it was generally controlled until the 1970s by long time staying at bed and, later, a sleepy way of life with the proper understanding of its typical clinical presentation and diagnosis. Although the flow of material that has been changed, knowledge of its pathophysiology and significantly changed intervention alternatives. producing noticeably better results, the purpose of this study is identifying this gap and major risk factor with cause of myocardial infarction in our set up(6).Heart attack is the first reason of death worldwide because if a patient is not treated in the right away, it can result in permanent heart damage. This study provides an answer to the question of how to prevent or identify and treat myocardial infarction early in order to avoid complications by providing better knowledge.

1.3 Significant of the study

Our study result will address the general knowledge about cardio vascular Nursing, promote common understanding, and advance understanding of the variables influencing the mortality risk of myocardial infarction patients. The results will be useful to hospital administrators, decision-makers, and the development of the nursing profession. It emphasizes how it will deepen our understanding of the variables that influence myocardial infarction patient mortality and helps convince reviewers and funding organizations that your research is important.the study will be useful to researchers and students who can use the idea in different circumstances in the future. The study's conclusions will also act as a reminder for subsequent research.

2. LITERATURE REVIEW

The presence of myocardial cell necrosis as a result of substantial and prolonged ischemia characterizes myocardial infarction (MI).mainly, but not usually, acute sign of arterial heart abnormality reason behind arterial sclerosis. A major public health concern, myocardial infarction is also known as cardiac necrosis from chronic ischemia and is often caused by the sudden complete blockage of a coronary artery by a thrombus or plaque. 17.6 million Of the 58 million deaths that occurred globally in 2005 were attributable to acute coronary syndromes (myocardial infarction) and chronic coronary syndromes, which account for 30% of all global fatalities and 10% of all diseases (8).

The occurrence accompanied by an increase or decreased investigations ,liable to cardiac muscle injury, as well as clinical proof the electrocardiogram could develop pathological waves, segment abnormalities, a new left bundle branch block, abnormal wall motion during cardiac testing, or other combination of these(6)**.**

2.1 **Factors associated with myocardial infarction**

2.1.1 **Socio demographic factors**

All patients who were admitted for a myocardial infarction at the Principal Hospital of Dakar were the subject of prospective multicenter investigation. The new and old cases of heart attack in adolescent people's hospitals were 0.45% (21/4627), or 6.8% of all myocardial infarction cases admitted during the same time period. The sex ratio was 6:1, which shows a clear male predominance. The average patient age was 34 +/- 1.9 years (24 - 40 years)(13).

Based on 2018 investigation documented in the European Heart Journal, patients with obstructive Coronary artery disease tended to be younger and more often female. Patients with Coronary artery disease , regardless of whether it was obstructive or not, had a lower risk of short-term death, than those with obstructive Coronary artery disease , because the risk factors for females were more significant. And in 70% of patients with obstructive Coronary artery disease, 38% of patients with non-obstructive Coronary artery disease , and 32% of patients with non-obstructive Coronary artery disease , was the cause of death(14).

According to a meta-analysis study done in Tongji University School of Medicine, China of 11 independent and randomized acute coronary syndrome medical evaluation ,females with ST-segment elevation MI had a higher 30-day death rate than male , whereas females with non-STEMI or unstable angina had a lower 30-day mortality rate than males , in fact, gender, which is related to age, may have an effect on both short- and long-term outcomes in Myocardial infarction patients (15).

2.1.2 Comorbidities

To correctly predict survivals following cardiac surgery, a number of organ systems and comorbidities that may interact with heart illness and impact overall mortality must be considered MI Long-term survival after myocardial infarction (MI) has increased in developed countries. However, post-MI mortality rates are influenced by a number of factors, including history of diabetes, renal failure, hypertension, peripheral artery disease, stroke, chronic obstructive pulmonary disease, chronic liver disease, and cancer. Nevertheless, twentieth percent of individuals with an acute MI die within a year of the occurrence(14)(2).

Inaya medical college department of biomedical technology 2019 Saied that patients with myocardial infarction who suffer cardiogenic shock unrelated to mechanical complications continues to be an issue. The result indicates that the disease contributes to 5–7% of frequency of diagnosis causing about 40% of mortality rate besides heart failure is a common and serious complication of acute myocardial infarction (6).

2.1.3 Clinical factors

Based on a 2017 study published in the European Heart Journal of Acute Cardiovascular Care, having undergone a revascularization procedure, a lower visual ejection fraction (EF), a higher creatinine level, a global wall motion deviation, a higher prothrombin time, a higher body mass index, a higher activated partial thromboplastin time, an older age, a lower lymphocyte count, a left ventricular thrombus (LVT)(17).

Availability more effective medical care for acute myocardial infarction (AMI) patients can reduce major risk factors, illnesses, and deaths from myocardial infarction(18).

Essentially patients with ST segment elevation myocardial infarction had greater early death risks, following six months; these patients' risks were comparable to those of patients with non-

ST segment elevation myocardial infarction. The ST segment elevation myocardial infarction was present in 36.2 percent of patients who survived for six months after discharge as compared to 50.0% of those who died during admission or follow-up. Increased cardiac markers were found in 35 percent of those who recovered compared to 53.2 percent of those who died(19).

According to a prospective international observational study conducted out in 94 institutions throughout 14 countries in 2018. Although people with a lower ejection fraction have a higher risk of experiencing sudden cardiac arrest (SCA) following myocardial infarction (MI), the causes of Sudden Cardiac Arrest in patients with a post-myocardial infarction Ejection Fraction greater than 35% are yet unexplained(20).

According to a research done in Switzerland, there were 77 inpatient deaths out of 287 patients diagnosed with CS, or 26.83 percent, with 210 patients getting out of the hospital healthy and 210 patients dying soon. In along with the development of CS, other factors that contributed to death included asystole, cardiac tamponed arrhythmias, stent thrombosis, and infection. The majority of deaths (47) occurred in the first week of hospitalization, which is when they happened most often. After day 48, there were no medical facility deaths in this patient group. (21).

According to a Chinese observational retrospective cohort study, there were no noticeable variations between patients who lived or died at the one month examination for hypertension, coronary heart disease, ST-segment elevation, Non ST-segment elevation, the study's results came from 1655 consecutive patients who were diagnosed with acute myocardial infarction patients and admitted to the cardiac department. However, the majority of the deceased patients were elderly women with diabetes who had previously had a stroke, had a 40% reduced left ventricular ejection fraction, and had higher fasting blood sugar levels.(22).

A nationwide population-based cohort study in Taiwan indicated that recurrent myocardial infarction (5.8%), stroke (5.0%), and are predictors of death among patient with myocardial infarction (19).

A retrospective investigation conducted in Beijing Friendship Hospital, China showed Upper gastrointestinal bleeding and acute myocardial infarction are both common and serious medical

emergencies that can have synergistic aftereffects. Researchers discovered that Upper gastro intestinal bleedings occurs 36 times per 100,000 people, has an overall death of 7–10%, and increases with age in both males and females. the one month mortality rates of gastrointestinal bleeding and acute myocardial infarction in hospitalized patients were 2.5% and 4.4%, respectively(12).

In a population-based cohort research of European heart journal of acute cardiovascular care 2019 conducted across the country, it was discovered that more than one in seven individuals treated for AMI went on to experience a subsequent composite CV event, such as a MI, stroke, or death, within a year of the index MI. One in seven individuals still experience a cardio vascular event over the next three years, even if they were stable post-MI patients and had gone a year without experiencing a recurrent MI or stroke after the first MI(18).

Acute myocardial infarction and left ventricular dysfunction are thought to be mostly a result of inflammation and exacerbated by ischemic injury, and pro-inflammatory cytokines boost C-reactive protein, which causes ventricular remodeling with Left ventricular dysfunction as its clinical manifestation. Even Nevertheless, little is known about the processes behind Left ventricular dysfunction following an Acute Myocardial Infarction. In fact, high-sensitivity boost C-reactive protein is a measure of inflammation that is activated quickly after an AMI, is linked to Left ventricular dysfunction, and is a good indicator of negative clinical outcomes (13).

A study conducted in Turkey Istanbul health science university indicate that left ventricular ejection fraction, glomerular filtration rate, blood glucose levels, had significant and long-term mortality of patient with myocardial infraction(10).

A study conducted at Saga University, Japan showed that Complete right bundle branch block, history of hypertension was discovered to have significant associations with patient death in myocardial infarction (23).

The presence of prior coronary disease, the magnitude of the infarction, multi-vessel coronary disease, reperfusion effectiveness, and other concurrent medical problems are risk factors for the development of post-AMI heart failure. But neither HF p E F (heart failure with preserved ejection fraction) nor H F (heart failure) with reduced ejection fraction were distinguished in

these investigations, nor were they grouped according to their entrance Killip scores from the hospital (24)

A cross-sectional institutional study conducted at the cardiac center in Addis Ababa, Ethiopia showed that MI had so many life-threatening nature, ongoing symptoms, invasive medical procedures, poor prognosis, and the requirement for long-term lifestyle changes, patients with MI frequently report a reduced health-related quality of life that will delay their recovery from the condition (7).

A lower LVEF, age, acute reperfusion therapy, the number of premature ventricular beats, non-sustained ventricular tachycardia (NSVT), induction of VT/VF during electrophysiological testing, QT prolongation, signal average, T-wave alter nans (TWA), Baro-reflex sensitivity, heart rate variability (HRV), and nor epinephrine level are just a few of the factors that have been identified as predictors of cardiac (20).

A retrospective study conducted in Turkey evaluated the in-hospital death predictors in patients with Myocardial infarction who underwent Coronary artery bypass surgery and identified that females, preoperative cardiac troponin I level and cardiogenic shock, and time to surgery were pillar variables of illness and death. Although it was reported that increased age, elevated preoperative cardiac troponin levels, and preoperative intra-aortic balloon pump use were independent predictors of in-hospital deaths(28)

2.1.4 Personal factors

A prospective multicenter study done in Senegal showed that Smoking, alcoholism uncontrolled blood pressure, are the main risk factor of death among patient with myocardial infraction beside this smoking was the greatest risk factor, present in 52.4% of cases, while chest pain was the most prevalent presenting symptom, present in 95.2% of patients(13).

A prospective multicenter study done at the different departments of cardiology in Dakar showed the main risk factor for MI was also age, family history, smoking habit and alcoholism and The patients' admission status may give valuable information about long-term mortality(25).

2.1.5 Treatment related factors

Based on the study released by a journal of the American Heart Association in 2021, out of 31 286 patients who had myocardial infarction, 499 had a heart attack within twelve months after the event. Lack of revascularization at the time of the event, post-myocardial infarction ejection fraction below 50%, kidney damage, chronic lung disease, inadequate antiarrhythmic therapy, and lack of beta-blocker therapy were also associated factors.(2).

In a prospective observational cohort study of 477 patients admitted to the Makassar Cardiac Centre in Indonesia, hyperglycemia on admission estimated glomerular filtration rate 60 mL/min, no revascularization (percutaneous coronary intervention/coronary artery bypass grafting), and poor adherence to post-discharge medications were found to be independent predictors of all-cause mortality.(26).

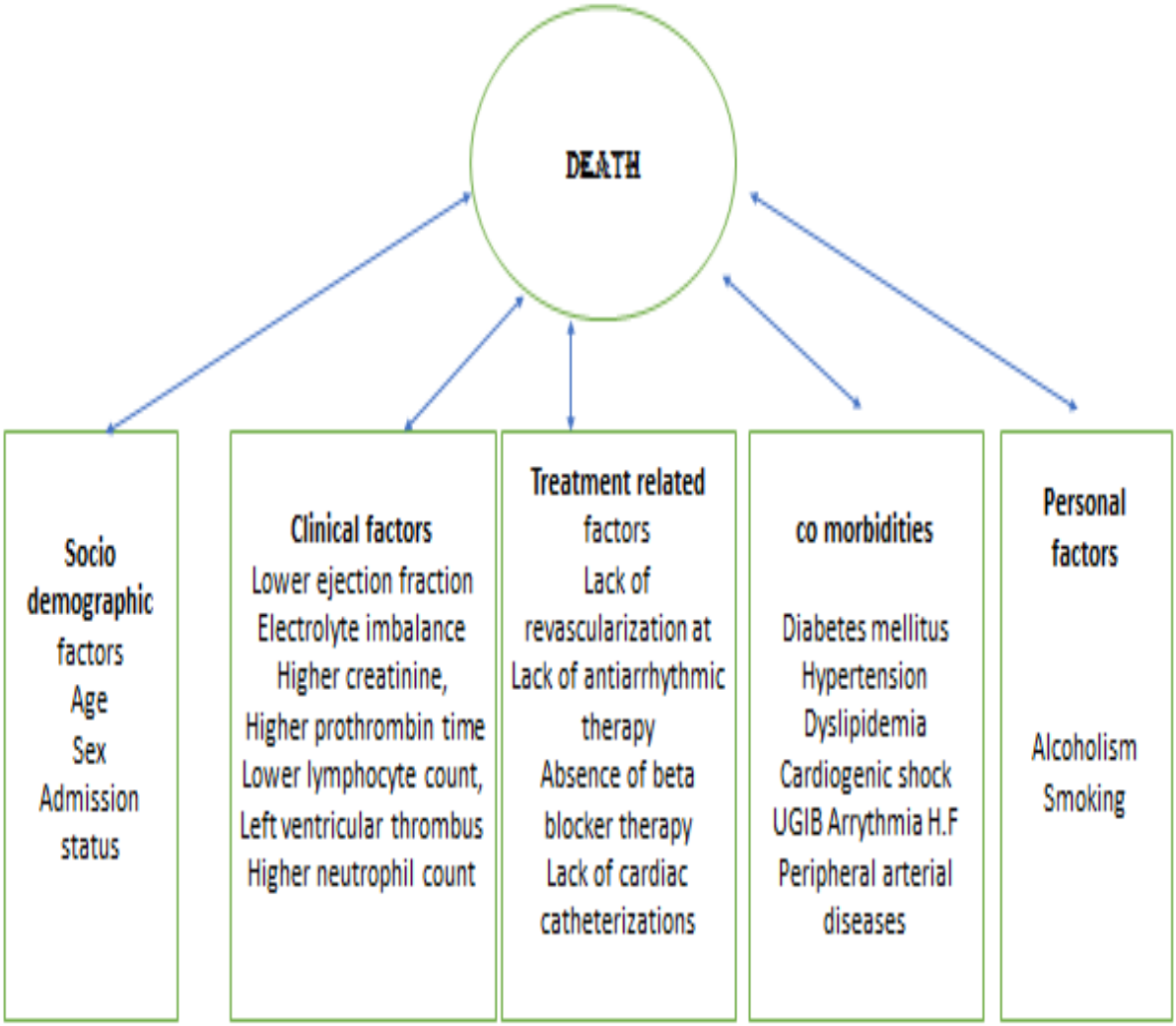
As reported by European Heart Journal: Acute heart Care 2017, the time it takes for patients with ST-elevation myocardial infarction to receive reperfusion therapy is a key determinant affecting their prognosis, It's basic to start primary percutaneous coronary intervention as soon as possible after making an urgent contact to the emergency medical service , receiving a quick diagnosis, and being admitted to the hospitals(6).

Acute myocardial infarction (AMI) patients who receive early reperfusion had greater to minimize short-term case mortality, despite secondary preventive pharmacotherapy with beta-blockers, antiplatelet therapy, statins, angiotensin-converting enzyme inhibitors/angiotensin receptor blockers, and mineralocorticoid receptor antagonists, the survivors continue to be at risk of sudden cardiac death, in the coming weeks, months, and years(27) Although according to randomized New York patients, primary percutaneous coronary intervention for patients with anterior ST segment elevation leads to higher reperfusion success with decreased rates of death, again infarction, and stroke when compared to fibrinolysis (24).

For the purposes of this study, a number of risk factors for the emergence of post-acute myocardial infarction-heart failure, cardiogenic shock, thrombosis, etc. will be identified, including advancing age, coexistence of prior coronary heart disease, infarction size, multi vessel coronary disease, reperfusion efficiency, and other concurrent medical conditions (16).

When compared to people without myocardial infarction, patients with a history of acute myocardial infarction (AMI) have an increased risk of developing recurrent ischemic Cardio vascular events and a 1.5–15-fold higher rate of morbidity and mortality. Major risk factor reductions and advancements in medical therapy have increased Acute myocardial infarction patient survival, which has leads to an increase in the number of stable post-myocardial infarction patients(17) .

2.2 Conceptual frame work



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3. Objectives

3.1 General Objective

To assess the prevalence of death among patients with myocardial infarction in black lion and s.t Paul hospitals from Jaunary1 2014- April 2023G.C

3.2 Specific objectives

To identify the prevalence of death in MI patients admitted to cardiac care units from Jaunary1 2014- April 2023G.C.

To determine associated factors of death among patients with myocardial infarction from Jaunary1 2014- April 2023G.C.

4. METHOD

4.1. Study area and study period

The descriptive- retrospective investigation were examined in Tikur Anbesa Specialized Health institution and St. Paul hospital. These two hospitals have well established cardiac specialty services in Addis Ababa ,in Tikur Anbesa Hospital, which has a total of over 2000 staffs and 800 beds, and more than 200 cardiac patients see in cardiac out patients daily The hospital currently has a Cat-lab, Echo, intensive care unit ,impatient ward for Cardiac Patients (16).

S.t Paul's Millennium Medical College, this study also was carried out in St. Peter's Specialized Hospital, also employed 500 staffs, 250 of whom work in the medical field. Its primary focus is on the treatment of tuberculosis and human immune virus patients. Furthermore, The hospital currently also has a Cat-lab , Echo, a Critical Care Unit for Cardiac Patients and a Cardiac Ward Every day, the hospital sees more than 100 cardiac patients (16)

The data were extracted from myocardial infarction patients who admitted who admitted between Jaunary1 2014- April 2023G.C. in Tikur Anbesa and S.T Paul hospitals.

4.2. Study design

Institutional based retrospective studies were examined from Jaunary1 2014- April 2023G.C.

4.3. Source population

All myocardial infarction patients in tertiary government health institution died from jaunuary1 2014-2023G.C

4.4. Study Population

All myocardial infarction patients in tertiary public government Hospitals died fromJaunary1 2014- April 2023G.C.

4.5 Sampling technique

By writing all source or study population medical registration number find from death summery of each study area then by cross-checking from computer registration the data were collected.

4.6. Eligibility Criteria

4.6.1. Inclusion Criteria

Myocardial infarction patients died from Jaunary1 2014- April 2023G.C.

4.6.2. Exclusion Criteria

Other than patient's diagnosis with myocardial infarction and died, unregistered patients enter to hospitals leave from hospital and UN registered final disease result of patients diagnosis with myocardial infarction.

4.7 Sample size determination

Sample size was computed by a single population proportion formula.

$$n = \frac{(Z_{\alpha/2})^2 \times p\,(1-p)}{d^2}$$

n=sample size

p=percentage……..0.5

d=desired degrees of precision……..0.05

z=level of confidence 95%

$$n = \frac{(1.96)^2 * (0.05) * (0.05)}{} = 384$$

Since the source population less than 10000 we used correction formula for n<10,000.

$$n = \frac{384}{1 + 384/310} = 174$$

Ten percent (20%) non-respondent rate added, and final sample size was 209.the study subject were selected all patients died from January 2014-2023 cardiac intensive care unit, cardiac in patient and cardiac emergency of Tikur Anbesa specialized and S.T Paul hospitals.

4.8 Variables

4.8.1 Independent variables

- Age
- Sex
- Occupation
- Residence

Clinical characteristics such as

- Duration of diagnosis
- History of comorbidity
- Patients body weight
- Duration of therapy/treatment
- History of smoking
- History of clinical finding
- Physical activity level

4.8.2. Dependent variables

- Prevalence of death among patient with myocardial infarction.

4.9. Data collection processes

Well prepared and designed check list were created by considering previous literatures and modified in the direction to objectives of the research. The check list contains of all the variables that succeed the objective of the research and used as a tool for data extraction process.

After obtaining patient records from the card room and registry, they were examined utilizing the cardiac cases registry and medical registration number. From admission through release, patients with STEMI, NSTEMI, and Unstable Angina were monitored. At discharge, treatment outcomes were evaluated.

4.10. Data collection procedure

Evidences were gathered from patient who died due myocardial infarction that meet the inclusion criteria and gathered and reviewed from their registration and medical record. Three Nurses with a BSC in nursing who work in cardiac units were recruited for data collection. The data collector and evaluator were oriented for one day on the relevance of the research, eligibility criteria and the way to collect the data.

4.11. Data quality control

The checklist was written in English, and the advisors were evaluated it for consistency. The data collectors were received orientation on information gathering methods of clarity of resources assure the quality of data the supervisor will examine the consistency and completeness of the checklist filled out by the data collector during the data collection. The supervisors were also paying a visit to the data collector during the data collection period. To establish the reliability test, the pretest (5%) was conducted 14 days before the real information gathered to evaluate their clarity of question.

4.12. Data processing and analysis

The responses were coded and entered into the computer using Epi Data version 4.6Statistical software, and the collected data will be visually inspect for entirety.

Statistical Package for Social Science (SPSS) version 25 was used to analyze the data when it has been exported to its windows-based interface.

To determine the basic significance of each independent variable's relationship to the dependent variables, binary logistic regression was used. In order to determine the relative impact of confounding variables and the interaction of variables, having a 95% confidence level and a P value of less than 0.25 during the bivariate analysis were entered into the multivariate logistic regression analysis. To assess the degree to which variables were associated, odds ratios with 95% confidence intervals was computed for each variable. P-values of 0.05 or less were considered to be the cutoff for significance.

4.13. Ethical consideration

Before evidences gathered ethical review was received from Addis Ababa University College of Health Science, School of Nursing and Midwifery intuitional review board. After receiving a letter of clearance, a letter of support was sent to the hospitals from which the data were collected, requesting assistance from the school of Nursing and Midwifery while the data is being collected. Personal information, such as the patient's name, was not being included in the cheek list, and the data will be treated confidentially. A supporting letter asking assistance from the Department of Nursing during the data collection period was issued to the hospitals from which the data were gathered after getting a clearance letter.

4.14. Dissemination of the result

The leading aim of this research was for partial fulfillment to the degree of MSC in cardio vascular nursing and addressed to Addis Ababa University, College of Health Sciences, School Nursing and Midwifery. And also, the result of the study will be send to Nursing Directorates. Further effort was made on discussion and seminar and to declaration it on different journals.

5. Results

5.1 Socio-demographic Characteristics of the study sample

In total, 205 deaths due to MI were observed from January 1, 2014, up to April 30, 2023.with a response rate of 98.1 %.

Table 1 shows the socio-demographic characteristics of the study sample. The mean age of the study population was 56.62 ± 14.83 years. The female population outweighed by 136(66.3%). A significant number of the study sample 142 (69.2%) were urban residents. The majority 85(41.5%) of them were merchants.

Table1. Demographic characteristics of the study population (n=205)

Variables	**Categories**	**Frequency(N)**	**Percentage (%)**
Age	18-36 years	19	9.3
	37- 55 years	73	35.6
	56- 74 years	89	43.4
	Above 74 years	24	11.7
Sex	Male	69	33.7
	Female	136	66.3
Place of residence	Rural	63	30.7
	Urban	142	69.2
Occupation	Merchant	85	41.5
	Housewife	36	17.6
	No Job	39	19.0
	Gov't employee	14	6.8
	Others	30	14.6

5.2 Clinical Characteristics of the study population

Table 2, presents the MI-related clinical characteristics of the study sample. About 115 (56.1%) of the study population had a late history of diagnosis. The mean of the patient's body weight was 65.28 ± 12.61 Kg. The majority 181(88.3%) of patients had no history of regular physical activities and about 130(63.4%) of them had no history of cigarette smoking. Nearly, half of 107(52.2%) of them had a history of comorbidity. More than half 117(57.1%) of the study population had normal clinical findings at the admission and 104(50.7) of them had medication adherence. Nearly three fifth 121(59%) of the respondents have early started their treatment after admission

Table2. The mean of clinical characteristics among patients with MI (n=205)

Variables	**Categories**	**Frequency(N)**	**Percentage (%)**
Duration of diagnosis	Early	90	43.9
	Late	115	56.1
Weight of patient		M(SD) =65.28(12.61)	
Regular physical	Yes	24	11.7
activities	No	181	88.3
History of smoking	Yes	75	36.6
	No	130	63.4
History of	Yes	98	47.8
comorbidities	No	107	52.2
Clinical findings	Normal	117	57.1
	Abnormal	88	42.9
Medication adherence	Good	104	50.7
	Poor	101	49.3
Time of treatments	Early	121	59.0
after admission	Late	81	41.0

5.3. Reported cause of death among the patients with Myocardial Infarction (n= 205)

As shown in Table 3, arrhythmia 77(37.6%), Pulmonary embolism, 48(23.4%), and Heart failure,

47(22.9%) were the top three reported causes of death among the study population with Myocardial Infarction (MI**)**

Table3. Causes of death among the study patient with myocardial infarction (n=205)

Variables	Categories	Frequency(N)	Percentage (%)
Cardiogenic shock	Yes	35	17.1
	No	170	82.9
Upper GI bleeding	Yes	18	8.8
	No	187	91.2
Arrhythmia	Yes	77	37.6
	No	128	62.4
Electrolyte imbalance	Yes	43	21.0
	No	162	79.0
Pulmonary embolism	Yes	48	23.4
	No	157	76.6
Heart failure	Yes	47	22.9
	No	158	77.1
Others	Yes	42	20.5
	No	163	79.5

5.2 Factors Associated with the Death of patient with myocardial infarction

As presented in **Table 4**, seven variables (History of smoking, comorbidities, clinical finding, Medication adherence, and Time of starting treatment after admission) were used as candidate variables (at P-value <0.25) and entered together into a multivariate logistic regression. A P-value < 0.05 in multivariate analysis was taken as a cut-point value to be statistically significant. Accordingly, bivariate logistic regression analysis revealed, having a history of comorbidity [COR=6.400, (95% CI: 3.484 -11.756), P<0.001], having poor medication adherence [COR= 3.003, (95%CI: 1.700-5.304), P<0.001], and starting early

treatment after admission [COR=9.123, (95% CI: 4.767- 17.460), P <0.001] were found the determinant factors associated with death due to MI. Further, the multivariate logistic regression analysis revealed that having a history of comorbidity [AOR= 4.959, (95% CI: 2.479 -9.918), P<0.001], having poor medication adherence [AOR= 2.381, (95%CI: 1.197-4.735), P= 0.013], and having late treatment [AOR=7.157, (95% CI: 3.505- 14.613), P <0.001] were found the determinant factors associated with death due to MI.

Table 4: Bivariate and Multivariate Analysis to Identify Factors Associated with Death of myocardial infarction (n=205)

Variables	Categories	Frequency (%)				
			COR (95%CI)	p-value	AOR (95 %CI)	P-Value
History of smoking	Yes	75(36.6%)	Ref.	Ref.	Ref.	Ref.
	No	130(63.4%)	0.662(0.373– 1.176)	0.160	0.836(0.405- 1.724)	0.628
History of comorbidity	Yes	98(47.8%)	Ref.	Ref.	Ref.	Ref.
	No	107(52.2%)	**0.156(0.085– 0.287)****	**<0.001**	**0.202(0.101 -0.403)****	**<0.001**
Clinical findings	Normal	117 (57.1%)	Ref	Ref	**Ref**	**Ref**
	Abnormal	88(42.9)	1.484(0.851-2.586)	0.164	1.269(0.635 – 2.537)	0.500
Medication Adherence	Good	104(50.7%)	Ref	Ref	**Ref**	**Ref**
	Poor	101(49.3%)	**3.003 (1.700- 5.304)****	**<0.001**	**2.381(1.197 – 4.735)**	**0.013**
Time of treatment after admission	Early	121 (59.0%)	**Ref**	**Ref**	**Ref**	**Ref**
	Late	84(41.0%)	**9.123(4.767 – 17.460)****	**<0.001**	**7.157 (3.505 – 14.613)****	**<0.001**

Note: AOR= Adjusted Odd Ratio, COR= Crude Odd Ration, CI= Confidence Intervals, *Statistically significant at (p<0.05), **Statistically significant at (p<0.01)

6. Discussion

Currently, the prevalence of morbidity and mortality due to MI is extremely rising in Ethiopia (27). The fundamental purpose of this research was to identify the factors related with death due to myocardial Infarction in Public hospitals in Addis Ababa, Ethiopia. In both the national and worldwide contexts, studies that specifically aim to address the problems are limited. In the current study, Arrhythmia (37.6%), was the leading cause of death among the study population with Myocardial Infarction (MI**).** This finding is extremely high when compared with the recent study conducted in California,(28) Which reported that only (1.9%) of arrhythmic death was reported in patients with myocardial infarction (MI). The possible reason for this variation could be different in the study population (self-care awareness among study patients), socioeconomic status, and availability of emergency healthcare systems. Further, the findings of our study revealed that pulmonary embolism, (23.4%) was the main cause of death among patients with MI. The direct association between pulmonary embolism and Myocardial infarction was demonstrated in a case study reported from China(29).On the other, our findings revealed that heart failure, (22.9%) was a determinant cause of death among the study population**.** This finding is supported by the study conducted in Portugal (30). This indicates that there are several diseases causing death among patients with MI. Therefore, early diagnoses and treatment are of utmost important for the prevention and control of complications associated with MI.

This study also identified the factors determining death among patients with MI. Patients having no history of comorbidities were 0.202 less likely to die compared to those who have a history of comorbidities. This finding is consistent with the study done in Canada (31). This might be due to the fact that patients with cardiovascular disease can develop several risk factors (diseases) causing death among patients with MI. Further, the current study revealed that the odds of a

patient having poor medication adherence were 2.381 times higher chance of MI-related death compared to those who have good medication adherence. This finding is in line with the previous study (32)suggesting the greatest mortality among low medication adherent patient. This indicates that implementing the health care provider recommendations regarding taking prescribed medication has significant impact on the survival status of cardiac patient Including MI.

Another significant finding in this study is that patients who have late treatment were 7.157 times more likely to die compared to those who have early treatment. This finding is supported by study done in Israel (33), which indicates that a significant improvement was observed among MI patients who received early treatment than late treatment. This could be due to the fact that early intervention can reduce the severity of developing chronic complication and help to improve the quality of life among patient with acute and chronic disease.

Unlike the study conducted in Sudan(34) and China(35), this study found no statistically significant association between having history of smoking and observed prevalence of mortality among patients with MI. A possible justification for this variation might be due to the small sample size, study population, and study design.

7. Strength and limitation of the study

The data were collected from patient's card of past health care utilization so that could not address recent application of modernized intervention manner, which may impose the advantage to increase staying alive rate,

Since the data were collected from patient card so it takes minimum time for data collection.

The input gathered by health care providers who were experienced on cardiac patient and treatment that may escalate the standard of the evidences.

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8. Conclusion and recommendation

The study concluded a significant number of the factors associated with illness and death among patient with MI. This finding is bothersome, in the presence of a high prevalence of cardiac patient mortality in the country. Having a history of comorbidity, having poor medication adherence, and having late treatment were found the determinant factors associated with death due to MI. Therefore, there should be an intervention that reduce the factors determining the magnitudes of mortality among patient with MI. Researchers should carry out further study by using observational study designs to identify actual practices

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10. Budget

S. no	Materials	Unit	Quantity	Price (in birr)	
				Unit price	Total price
1	Paper	Packs	6 packs	700	4200
2	Pen	Number	12	15	180
3	Calculator	Number	4	700	2800
4	Data-collector	Number	4	3500	14000
5	Binder	Number	4	400	1600
6	Print and copy	Pages	286	5	1430
7	Contingency price 10%	26	26	1	26
8	binding final paper	03	03	500	1500
9	CD	Number	02	100	200
10	**Total prices**	25936 birrs			

DATA COLLECTION INSTRUMENTS

Checklist for data collection

"Prevalence of death among patients with myocardial infarction"

Part 1: Socio Demographic information:

100.1 Age

100.2 Sex

A/Male B/Female

100.3 Occupation___

100.4 Place of residence

A. Urban B. Rural

Part 2: Clinical Characteristics of Respondents

102.1. Previous history of cigarette smoking

A/Yes B/No

102.2 Duration of receiving treatments

A/Early B/Late

102. 3. History of comorbidities

A. yes B.no

102. 4. History of clinical finding

A. Normal B. Abnormal

102.5. History of patient's body Weight

A. Normal B. Abnormal

102.6. Others

Part-II Factors associated with death among patient with MI

Table3. Causes of death among the study patient with myocardial infarction (n=205)

History of:	Categories
Cardiogenic shock	A. Yes B. No
Upper GI bleeding	A. Yes B. No
Arrhythmia	A. Yes B. No
Electrolyte imbalance	A. Yes B. No
Pulmonary embolism	A. Yes B. No
Heart failure	A. Yes B. No
Others	A. Yes B. No