ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

DEPARTMENT OF EMERGENCY AND SURGICAL NURSING

CLINICAL CHARACTERSTICS AND OUTCOME OF PATIENTS UNDERWENT PERCUTANOUS CORONARY INTERVENTION AT GESUND CARDIAC AND MEDICAL CENTER, ADDIS ABABA, ETHIOPIA, 2024

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A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCE DEPARTMENT OF EMERGENCY AND SURGICAL NURSING IN PARTIAL FULFILLMENT OF REQUIREEMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN EMERGENCY AND CRITICAL CARE NURSING

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Full title of the research project	**Clinical characteristics and outcome of patients underwent percutaneous coronary intervention at Gesund cardiac and medical center, Addis Ababa, Ethiopia, 2024**
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APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Kesete Eskias Ghebre is accepted in its present form by the board of examiners as satisfying thesis equipment for the degree of masters in emergency and critical care nursing.

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Letter of Declaration:

By my signature below, I declare and affirm that this entirely is my original work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis, and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referred to all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis. This thesis was submitted to Addis Ababa University College of health sciences department of emergency and critical care nursing, for partial fulfillment of the requirements for the Master of Science emergency and critical care nursing.

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List of Abbreviation and Acronyms

ACS- Acute coronary syndrome

AKI-Acute kidney Injury

BMS-Bare metal stent

CABG-Coronary artery bypass graft

CAD-Coronary artery disease

CIN- Contrast Induced Nephropathy

CTO- chronic complete/total occlusion

CVD- Cardivascular disease

DES- Drug eluting stent

GCMS- Gesund cardiac and medical center

MACE-Major adverse cardiac event

MI-Myocardial infarction

NSTEMI-Non ST elevation myocardial infarction

PCI- Percutanous coronary intervention

STEMI-ST Segment Elevation Myocardial infarction

TIMI-Thrombolysis in myocardial infarction (TIMI)

CAS-Coronary Artery Stenosis

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Abstract

Introduction: Percutaneous coronary intervention (PCI) improves blood flow by relieving artery blockages, but is not widely available in Ethiopia due to lack of resources, staff, and well equipped infrastructure. Factors limiting the delivery of percutaneous coronary intervention (PCI) for immediate patient intervention include access to healthcare facilities, time constraints , clinical stability, logistical challenges, and the presence of comorbidity.

Objective: This study aims to asses the clinical characteristics and outcome of patients who underwent percutaneous coronary intervention (PCI) at Gesund cardiac and medical center in Addis Ababa, Ethiopia in 2024.

Methods: Retrospective observational chart review that examined 224 patients who underwent PCI. A standardized checklist was used to gather the data, which was then imported into EPI Info v7 and exported to SPSS v26 for analysis. For continuous variables, descriptive statistics such as percentages and frequencies were computed. To identify the variables linked to the patient's outcomes following PCI, bivariate and multivariable analyses were performed. In the multivariable analysis, variables with a p-value < 0.05 were deemed statistically significant.

Result: Most of study participants (n=186, 83%) were male, with a mean age of 57.82 ± 11.5. Among the risk factors, Diabetes mellitus was found in most participants (n=135, 60.3%) and was followed by hypertension (n=127, 56.7%). Approximately (n=31, 13.8%) of the participants had previously undergone percutaneous coronary intervention. The majority of patients admitted with clinical presentation of typical chest pain , and ST Elevation myocardial infarction (STEMI) was the first leading indication for the intervention. The outcomes after the procedure were: significant bleeding (n=6, 2.6%), myocardial infarction (n=20, 8.9%), death (n=2, 0.9%), transfer to another hospital (n=12, 5.4%), discharge destination and acute kidney injury (n=16, 7.14%). The use of bare metal stents [AOR=54:95%CI =17.69-108.29] was significantly associated with patients transferred to other hospital, male gender [AOR=0.09:95%CI=0.027-0.337] and prior myocardial infarction [AOR=10:95%CI=2.31-43.31] were significantly associated with myocardial infarction.

Conclusion and recommendation: It is likely that coronary artery stenosis (CAS) is more common in older individuals and men. Chronic illnesses frequently occurred alongside with CAS and complicated its course and prognosis. Men risk of an unfavorable outcome is lower than that of their counterparts. Adhering to procedural intervention and using effective management techniques based on the suggested guidelines lead to favorable outcome.

Keywords: Clinical characteristics, outcomes, percutaneous coronary intervention

Chapter-One: Introduction

1.1 Background of Study

Percutaneous coronary intervention (PCI) is a minimally invasive, non-surgical technique that relieves coronary artery blokage or constriction to enhance blood flow to ishemic tissue.

It is typically accomplished through inflating the narrow segment and then implanting a stent to maintain the artery open (1). A variety of methods, including rotational atherectomy followed by balloon angioplasty are employed to optimize results before a stent is deployed and the radial or femoral arteries are the most commonly used two access sites for PCI in terms of procedure (2).

In 1977, Andreas Grüntzig carried out a balloon angioplasty, which marked the first notable breakthrough in the treatment of coronary artery disease (CAD). Nevertheless, there were negative effects such as thrombosis and neointimal growth. Food and Drug Administration (FDA) permission was initially given to a stent in the United States (USA) when Sigwart et al. developed the first self-expanding bare-metal stent (BMS) in 1987 (3).

PCI is used to treat heart diseases such coronary artery disease, stable symptoms, new onset of symptoms or during a heart attack where one or more coronary arteries are constricted or obstructed. Generally speaking, PCI is a low-risk, safe technique that allows patients to return to their regular activities one week following the procedure and indicated for patients with unstable angina, acute ST-elevation myocardial infarction (STEMI), stable coronary artery disease, and non-ST-elevation acute coronary syndrome (NSTE-ACS) (4).

When there is significant coronary artery stenosis, PCI is recommended instead of coronary artery bypass graft (CABG) depending on its extent and complexity of the disease as well as coexisting clinical conditions (5).Cardiovascular disease encompasses various conditions affecting the heart and blood vessels, including heart failure, rheumatic heart disease, and more. With 32% of global fatalities in 2019, cardiovascular illnesses are the leading cause of mortality.

Over the past many years, PCI has been used widely, with stents accounting for 80% of PCI procedures (6). Among those suffering from coronary artery disease (CAD), PCI has demonstrated a considerable reduction on myocardial infarction (MI), target vessel revascularization, and short-term mortality (7).

Congruent to the epidemiology of CAD, the demographics of PCI patients are more prevalent in men, with a mean age of 65.7 years.The rates of urgent PCI have increased, while those of elective PCI have decreased and Complex PCIs are being performed more frequently on older adults, particularly those 75 years old or beyond (8).

Worldwide, there are significant regional variations in the practice and results of percutanous coronary intervention, a treatment used to treat acute coronary syndromes. The application of PCI, a popular treatment for coronary artery disease (CAD), and its outcomes may vary substantially throughout geographic locations (9).

In North America, regional variations in risk factors, operator volume, population aging and CVD, and geographic diversity in PCI utilization can all have an impact on results. Because baseline factors vary by region, clinical trial outcomes could not apply to patient populations from those areas (10,11).

Notable regional disparities have been noted in Ethiopia regarding the application and results of PCI.These differences include things like how common it is for people with proven coronary artery disease (CAD) to be at risk for conditions like diabetes, high blood pressure, dyslipidemia and overweight/obesity. Furthermore, multi-vessel CAD in Ethiopia has been closely linked to dyslipidemia and left ventricular hypertrophy (LVH) (12) .

1.2 Statement of problem

Coronary artery disease (CAD) is a serious worldwide health issue that causes both death and disability.The incidence of CAD is declining in high-income countries as a result of improved knowledge, prevention, and therapeutic approaches (13). The American Heart Association estimates that 19.1 million deaths globally in 2020 was related with cardiovascular disease (CVD) and for every 100,000 persons, there were 239.8 age-adjusted fatalities.

In 2020, the highest rates of CVD death were found in Eastern Europe and Central Asia (7354.1 per 100,000), with higher rates also seen in Oceania, the Middle East, Central Europe, sub-Saharan Africa, South and South-East Asia, and North Africa. The prevalence rate adjusted for age was 7354.1 per 100,000. The lowest rates were seen in wealthier regions of North America, Latin America, Western Europe, and Australasia (14).

According to a study done in European and Central Asian (ECA) region about 30% of deaths are attributable to CAD, making it a major worldwide health concern. As per the 2019 Global Burden of Disease (GBD) Study, the number of fatalities from cardiovascular disease (CVD) climbed significantly from 12.1 million in 1990 to 18.6 million.

Ischemic heart disease (IHD) caused 182 million disability adjusted life years (DALYS), accounting for 9.14 million fatalities and 197 million prevalent cases (15).

Patients with coronary artery disease may experience higher rates of death, morbidity, and expense following non-percutaneous coronary intervention or as a result of consequence of PCI. It decreases the likelihood of cardiovascular incidents like heart attacks and failure and if PCI is not conducted it might potentially raise future cardiovascular event risk and raise medical care costs (16).

For individuals with coronary artery disease (CAD), percutaneous coronary intervention is an essential and often used intervention. It is a non-surgical, minimally invasive treatment which is crucial in treating coronary artery blockages, increasing heart function, and improves blood flow to heart . PCI is crucial for treating symptoms like breathlessness and chest pain, and it can help CAD patients live better lives (17,18).

In Africa CVD has a great burden accounting for 38.3% of deaths related to non-communicable disease (19). While PCI has surpassed CABG as the most widely used technique for coronary

revascularization across the globe (20), its under utilization in Africa, coupled with a notable rise in the burden of CVD-related mortality and morbidity, has important ramifications for the management and wider health care system (21).

Currently, low- and middle-income nations, to which Africa is not an exception, account for 80% of the global mortality and burden from cardiovascular disease. As ACS becomes more common in sub-Saharan Africa, primary PCI implementation remains challenging. There is limited access in this area to heart facilities where PCI can be performed and Catheterization laboratories with standard operating procedures and highly qualified interventional cardiologists are scarce in Sub-Saharan Africa (22).

African people with coronary artery disease require percutanous coronary intervention as critical intervention. It promotes access to high-quality care, enhances blood flow, lowers morbidity and death, and can be safely done 48 hours after symptoms appear. PCI is an essential component of the treatment of CAD in Africa since it is less expensive than more invasive methods (23).

PCI is essential to the management of CAD in Africa overall, and the region's CAD patients can benefit greatly from improved care and results if the issues of scarce infrastructure, resources, and healthcare personnel are addressed.

A cross-sectional research conducted in Ethiopia examined 422 charts and reported a 96% response rate with 18.4% procedure-related problems. There was a strong correlation found between the following factors with percutaneous coronary intervention results: maleness, diabetes, persistent kidney disease, smoking history, radial access, and ejection fraction < 30% (24).

A thorough review and meta-analysis conducted in Ethiopia found that the two primary risk factors for ACS were hypertension (54%) and diabetes mellitus (38.5%), with the majority of patients (59%) suffering from ST-segment elevation myocardial infarction (STEMI).

The most common medications utilized in patients with STEMI ACS were aspirin (57%) and clopidogrel (55%), in that order. The combined percentage of ACS hospital deaths was 14%; patients with STEMI had a higher percentage (16%) (25). PCI is essential to the management of CAD in Africa overall, and the region's CAD patients can benefit greatly from improved care

and results if the issues of scarce infrastructure, resources, and healthcare personnel are addressed.

1.3 Significant of study

Investigating the clinical features of PCI can help to understand the factors that affect the outcomes, complications, and benefits of this procedure for different types of patients.

Studying the outcome can provide insights into the effectiveness of different types of stents used in PCI, leading to advancement in technology and technique.

Analyzing the outcome will help us to identify risk factors for complications and adverse events, and enabling improved patient care and risk assessment for PCI patients.

Once PCI outcome has been identified, a target approach to address it can be devised.

The findings could be used by Ethiopian policymakers and planners to develop plans to offer administrative suggestions and enhance the standard of PCI care.

Furthermore, for academics and researchers who are interested in doing more research on this subject, this paper will act as a baseline and point of reference.

Chapter Two: Literature Review

2.1 Overview of clinical characteristics of PCI

Many coronary artery presentations, including acute ST-elevation myocardial infarction, non-STEMI, stable angina, and unstable angina, are common in patients receiving percutaneous coronary intervention (PCI). Additionally, a large no number of individuals with coronary artery disease have comorbidities such as smoking, hypertension, diabetes, and hyperlipidemia (26). Due to its efficacy in symptom relief, adverse event prevention, and quality of life enhancement for those clients with Unstable Angina, stable Angina, and non-ST elevation myocardial infarction (NSTEMI) percutaneous coronary intervention is advised. According to a study done in California in 2019 shows that, PCI helps to lower the need for emergency revascularizations, improve quality of life, and minimize symptoms associated with stable angina. PCI is essential for avoiding myocardial infarction, cardiac events, and death in cases of unstable angina. PCI is advised for non-ST elevation myocardial infarction in order to enhance outcomes and lower the risk of future complications by restoring blood supply to the damaged heart muscle (27).

According to a study done in Thiland Acute coronary syndrome accounted for 57% of presentations, including a significant percentage of ST-elevation myocardial infarction (28%).

Of the patients, almost two thirds had multi-vascular disease, and 11% had significant left main stenosis(28). A study carried out in Italy indicates, average age of individuals undergoing PCI was 61 years, with 83% of the patients being male and with prevalent risk factors of systemic arterial hypertension (51%) and Cigarette smokers (46%) (29).

In Italy, a considerable proportion of individuals receiving percutaneous coronary intervention presented clinically with acute coronary syndrome (ACS) and 56.5% of the patients in the analysis had ACS at the time of presentation, and the remaining patients had chronic coronary syndrome (CCS). In contrast to patients with CCS, the study indicated that patients with ACS were greater likelihood of experiencing bleeding episodes during percutaneous coronary intervention. The primary cause of this elevated bleeding risk in ACS patients was non-access-site problems that emerged within the first 30 days following PCI, particularly when a myocardial infarction with ST-segment elevation is present (STEMI) (30).

In a study carried out in Vietnam between September 2017 and May 2018, the mean age of two thirds of the PCI patients was 68.3 years and Compared to 54.4% of patients who had an acute coronary syndrome, 14.5% of patients had an ST-elevation myocardial infarction.

The radial artery accounted for 79.2% of all PCI access sites.The use of drug-eluting stents were in every case, as well 99.4% of angiography procedures were successful. Except for significant bleeding (2.0%), cardiac problems after PCI were uncommon. Compared to male patients, female patients were older, had a higher rate of serious bleeding, and had comparatively more comorbidities (31).

In Pakistan, the majority of patients receiving percutaneous coronary intervention (70% were male), had an average age of 64.2 years, and presented with acute coronary syndrome (57%) were the most prevalent clinical features (32)

2.2 Factors associated with outcome of PCI

An analysis of a retrospective cohort study carried out in Japan found that the the mean age of individuals receiving PCI was 71.1 years, and a higher proportion of patients (74.3%) were male and possessed prevalent coexisting illnesses, including diabetes, high blood pressure, and chronic renal disease were factors that impede the outcome of PCI (33).

A study done in Germany shows that Percutaneous coronary intervention (PCI) using radial access has demonstrated positive outcomes in Germany with regard to significant adverse cardiac events (MACE) and issues with the entry point of arterial access.

Recent years have seen a rise in utilization of radial access site , suggesting a move into direction of improved patient outcomes (34).

About 50–60% of bleeding episodes in PCI patients occur in the femoral artery, which is the most frequently used access location in developed countries. A meta-analysis of randomized studies found that, in comparison to femoral access, radial access significantly reduced serious bleeding by 73% (0.05 vs. 2.3%, OR: 0.27 [95% CI: 0.16–0.45]; $p < 0.001$) (35).

According to a study done in a large academic hospital in Johannesburg, South Africa, patients undergoing PCI came from a variety of ethnic backgrounds: 47.1% of Caucasians, 24.7% of Black people, 21.1% of Indian or Asian people, and 5.6% of mixed ancestry people. The study also found that a major contributing factor to the high incidence of cardiovascular risk factors in

patients with acute coronary syndromes was high blood cholesterol levels, diabetes, and hypertension (36).

According to a cross-sectional study design conducted in Egypt, the results of percutaneous coronary intervention (PCI) are related to the frequency of atherosclerosis risk factors, gender disparities, and the influence of gender on PCI outcomes. Additionally, the results of PCI are significantly influenced by variables such as smoking, dyslipidemia, abdominal obesity, and hypertension in Egyptian patients with acute coronary syndromes (37).

According to a study carried out in Uganda, Inadequate financing, inadequate infrastructure, and inadequate healthcare facilities are some of the issues or factors that impede the success of PCI (38).

2.3 Outcome of PCI

According to a study done in developed countries (USA), the science of interventional cardiology has advanced over the past three decades as a result of our growing awareness of the patient and elements connected to the procedure that influence percutaneous coronary intervention results. Advancement in technological, equipment, pharmaceutical, as well as patient care have reduced the risk of myocardial infarction (MI), vascular issues, and bleeding aswell as by decreasing restenosis, PCI has become more durable (39).

A study done in USA , Arizona shows that One of the main significant compilcation of percutanous coronary intervention is coronary perforation. It was conducted in 10,059,269 patients at the time of the procedure and 11,725 (0.12%) of all PCI procedures resulted in a coronary perforation. Compared to individuals without holes, people with perforations had a relatively high mortality rate(40).

A study conducted at the Nationwide Thai PCI registry found that Significant left main stenosis was present in 11% of the patients and that Multivessel disease affected almost two thirds of the patients. Bleeding occur as most frequent complications (4.8%), resulting in 237 patients needing blood transfusions. The procedure success rate was quite high (95.2%) despite the lesions' high complexity (56.9% type C lesion) and there were 2.8% procedural complications and 5.3% in-hospital mortality (41).

According to a study done in Singapore following percutaneous coronary intervention (PCI), in-hospital death rates are markedly elevated among elderly in comparing to the younger demographic had showed a greater triple vessel disease incidence**,** in-hospital complications, and cardiogenic shock. Additionally, they encountered longer door-to-balloon (D2B) durations and utilized fewer specific interventions throughout PCI. Additionally, the overall in-hospital mortality for the study group was 5.2%, with the older group's in-hospital mortality being significantly higher than the younger group's (11.9% vs. 3.6%)(42).

In developing nations, percutanous coronary artery has demonstrated encouraging results , including a minimal death rates for ST elevation myocardial infarction and high procedural success rates. Nevertheless, obstacles including restricted availability of cutting-edge technologies, a lack of skilled workers, budgetary limitations, and poor infrastructure make it difficult to provide high-quality services. It is advised to increase funding for PCI institutions and make investments in preventive and treatment measures in order to enhance patient outcomes. Developing nations have the ability to perform PCI procedures with outstanding results, despite these obstacles (43).

An in-hospital mortality rate for patients with acute kidney injury (AKI) following percutaneous coronary intervention (PCI) is 4.5 times higher than that of patients without AKI, according to a retrospective cross-sectional analytical study conducted at the Aga Khan Hospital, Dar es Salaam (AKH,D), Tanzania. Of the 227 participants, 22 or 9.7% experienced AKI.Patients on AKI needed prolonged hospital stays, intensive care in the intensive care unit, and organ support such as hemodialysis, however the factors linked to AKI were not found to be statistically significant (44). As per a study conducted in patients with chronic complete occlusion, percutaneous coronary intervention (PCI) is frequently carried out, even if its long-term effects are unknown and in contrast to those who do not have chronic total occlusion (CTO, individuals undergoing PCI with CTO may be more at risk for death and post-procedural complications (45).

A retrospective cohort study carried out in Addis Ababa discovered that 16.5% of periprocedural PCI problems occurred, with bleeding being the most frequent consequence (46).

Chapter Three: Objectives of the study

3.1 General Objective

To asses the clinical charactersticis and outcome of patients undergoing percutaneous coronary intervention at Gesund Cardiac and medical centre, Addis Ababa , Ethiopia 2024 G.C.

3.2 Specific Objectives

To assess the clinical characterstics of patients undergoing PCI at Gesund Cardiac and medical centre, Addis Ababa, Ethiopia 2024 G.C.

To describe the short term outcomes of post PCI at Gesund Cardiac and Medical centre, Addis Ababa , Ethiopia 2024 G.C.

To Identify the factors associated with the outcome of PCI at Gesund Cardiac and medical centre, Addis Ababa Ethiopia, 2024 G.C.

Chapter Four: Methods and Materials

4.1 Study area and Period

This study was conducted at Gesund cardiac and medical center (GCMC) a private cardiac facility in Addis Ababa , Ethiopia, equipped with state of the art of catheterization laboratory (Cath-Lab). It was established as a cardiac and medical center and has a total of 80 staff of whom 50 are health-care professionals. It mainly involved in the management of cardiac patients. The centre provides with various cardiac services to the people of Ethiopia, Eritrea, Somalia and Djibouti.This study was conducted through reviewing medical records of all patients with CAD who underwent PCI between January 2021 and January, 2024 at GCMC (47).

4.2 Study Design

Retrospective observational chart review study was used

4.3 Source of data

The source of the data for this study were comprised of secondary sources of data from patient's medical record.

4.4 Source of population

The source of population of this study was all patients who presented with coronary artery disease at Gesund Cardiac and medical center, Addis Ababa , Ethiopia.

4.4.1 Study Population

The study population was all patients underwent PCI from January 2021 to January 2024.

4.5. Eligibility criteria

4.5.1 Inclusion criteria

Patients who had PCI in the past 03 years , from January 1/2021 to January 1/2024.

4.5.2 Exclusion criteria

Patient chart records with incomplete information

Patients discharged against medical advice

4.6 Sample Size Determination

The sample size was determined by using single population proportion formula and Proportion (P) is taken 50% as we didn't have similar previous studies in the area.

Single population proportion formula:

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

Where: n= the required sample size,

Zα/2= 95% confidence interval (level of significance) (1.96).

P = 50%

d = the marginal of sampling error tolerated 5%

$$n = \frac{(1.96)^2(0.5)(1-0.5}{0.05^2}) = 384$$

Based on the above assumption, the sample size was 384.

Since the patient charts are derived from a population of less than 10,000, an adjusted correction population formula was utilized.

$$n_f = \frac{n_0}{\left(1+\frac{n_0}{N}\right)},$$

Where:

n_f = The final sample size or estimated study population

n_0 = Initial sample size 384

N = Total CAD underwent PCI at Gesund and Cardiac medical center from January 2021-Jan-2024

$$n_f = \frac{384}{\left(1+\frac{384}{x}\right)}, \qquad n_f = 480$$

$$n_f = \frac{384}{\left(1+\frac{384}{480}\right)}, \text{ which becomes } 213$$

After adding 5% contingency for incomplete charts, 224 patients' charts were used in total.

4.7 Sampling technique and sampling procedure

First, all patients presented with coronary artery disease who underwent percutaneous coronary intervention at Gesund Cardiac and medical centre were identified. Then, sample was selected from each patient medical record by simple random sampling technique. Sampling interval k^{th} was determined by dividing the total no of coronary artery disease attending at Gesund cardiac and medical center to those underwent PCI and samples of the first clinical record was selected by simple random sampling and every k^{th} study unit was selected for gathering information until the required sample obtained.

Sampling interval k^{th} : $ni = \frac{n(Ni)}{N}$

From all of the admission charts, 224 patient charts were chosen for the study using the systematic random sampling procedure. The formula interval size (k)=N/n: 480/224 means that almost every second patient chart was chosen after the first chart was chosen by lottery. where N is the total number of admission charts and n is the sample size that I need or wish to take after taking each kth unit.

4.8 Variables of the study

4.8.1 Dependent Variables

Outcomes after PCI

4.8.2. Independent Variables

Sociodemographic characteristics

Clinical presentation

BMI during Admission

Previous history of MI

Severity of Coronary Artery disease (no of vessels affected , extent of stenosis)

Types of stent used

Medication used

Lesion characteristics

4.9 Operational Definition

Percutaneous coronary intervention (PCI) is a non surgical procedure that uses coronary stents to treat narrowed coronary arteries.

Balloon angioplasty- is the surgical enlargement of a constricted or obstructed blood vessel, particularly a coronary artery, using a balloon catheter.

Rotational Atherectomy- A commonly used method for coronary vessel atherectomy, removing atheromatous plaque through differential cutting using microscopic diamond chips embedded in a rotating burr.

Thrombolysis in Myocardial Infarction (TIMI flow) - is an angiographic grading system used to assess blood flow in coronary arteries following percutaneous coronary intervention. It consists of three levels: Zero flow represents no perfusion ,One flow represents penetration without perfusion, two flow represents partial perfusion, and three flow represents complete perfusion.The system evaluates the flow of contrast material and opacification of the coronary bed.

Measures of outcome

In our study we measure the outcome of the PCI by the following events:

1- The presence of myocardial infarction: this outcome measures extract from patients chart record directly.
2- Major bleeding: this outcome obtained from patients chart and labeled as major bleeding if the presence of at least one of the following situation related to PCI (48,60) .
    - Transfusion of at least 2 units of packed red blood cells is necessary due to bleeding
    - Intracranial bleeding
    - Bleeding leading to a drop in hemoglobin of ≥3 g/dL
    - Bleeding causing a critical drop in blood pressure requiring intervention
    - Bleeding requiring surgical intervention or causing significant morbidity

3. Procedural success achieving in restoration of normal blood flow: it labeled(classified) that patients who score TIMI 3 and patients who score TIMI flow grade less than 3 (TIMI 0, 1 and 2)

4. Presence of Nephropathy caused by contrast: it obtained from chart directly

5.Discharge destination: it is classified as participants who were discharged to home or participants who were transferred to other hospital for further treatment

6. Survival status: It is classified as participants who were dead or alive during discharge

4.10. Data collection procedure

Ethical clearance was obtained from Department of Emergency and Surgical Nursing. An official letter of cooperation was obtained and written to Gesund cardiac and medical center. A structured checklist that was obtained from different sources such as cardiology Audit and Registration Data standards (PCI data standards) and from previous other studies after adopting and make some amendments according to our study variables and objectives by consulting an Interventional cardiologist was used. The checklist comprised of questions related to demographic, clinical characteristics, procedural detail and short term outcomes after PCI. Then the checklist was pretested in 5%(11) of charts one week before actual data collection from other health institution other than the selected one to check it s consistency. Based on the pretest result some questionnaires were modified.

4.11 Data quality assurance

A data collector, facilitator and supervisors were given training before data collection day.At the beginning of data collection a detailed description of the goal and aim of the study was given for the data collectors. A strict follow up was honestly conducted by primary investigator during data collection period. The data from each patients medical record was checked for its completeness , clarity, consistency and accuracy by data collectors.

4.12 Data analysis and management

Epi-info version 7.2 was used to validate, code, and input the data from the complete structured checklist.Then the data was exported to the Statistical Package for Social Sciences (SPSS) version 26 for analysis.Basic descriptive statistics (like frequencies tables, means, standard deviations, ranges and cross tabulations) and logistic regressions were computed. Data for categorical variables was presented in terms of their frequency. Using bi-variate and multivariate logistic regression analysis, an association between the dependent and independent variables was

examined and expressed as odds ratios (OR) with 95% confidence intervals(CI). P-values of less than 0.05 were used as the statistically significant level of significance.

4.13. Ethical consideration

The research protocol was approved and ethical clearance was obtained from Addis Ababa University College of Health Science Department of Emergency and Surgical Nursing, Department Ethical Review Committee and Institutional Review Board. Formal letter of cooperation was written to Gesund cardiac and medical center. Data collectors were given full information for the study subjects about the purpose of the study. Patients data was kept confidentiality strictly adhered to and identification numbers (using codes) rather than names was used during the data collection and analysis.The progressive report was reported to Department of Emergency and Surgical nursing.

4.14. Dissemination and Utilization of results

The result of this thesis was presented and submitted to Addis Ababa University College of Health Science Department of Emergency and Surgical Nursing. It will also be disseminated to Gesund cardiac and medical center research ethical clearance committee. Additionally, the finding will be presented to different scientific communities and the manuscript will be submitted on national or international peer reviewed scientific Journals for possible publication.

Chapter Five: Result and Discussion

5.1 Result

Socio-demographic characteristics of study participants

A total of 224 patients chart who underwent percutaneous coronary intervention was reviewed. The mean ± (SD) age of the participants 58 ± 11 and ranged in age from 29 to 90 years, The majority of the participants was (n=86, 38.4%) 56-65 years, (n=2, 6.7%) older than 80 year and only (n=5, 2.2%) were younger than 35 and most of the participants (n=187, 83%) are male , from urban area (n=151, 67%).

Table 1 Socio demographic and other health related factors of respondents

Ser no	Variables	Frequency	Percentage (%)
1	**Sex**		
	Male	186	83.0
	Female	38	17.0
2	**Age**		
	< 35	5	2.2
	36-45	25	11
	46-55	64	28.8
	56-65	86	38.4
	66-75	27	12
	76-85	15	6.7
	86-95	2	0.9
3	**BMI**		
	< 18.5	6	2.7
	18.5-24.9	100	44.6
	25-29.9	87	38.8
	>30	31	13.8
4	**Residency**		
	Urban	151	67.4
	Rural	68	30.3
	Outside Ethiopia	5	2.2
5	Hospital transfer (from other)		
	Yes	137	61.2
	No	87	38.8

BMI-body mass index

Regarding previous medical history, previous ischemic disease was the most common among those who participated (n=94, 42.0%). About (n=31, 13.8%) patients had prior PCI. Patients' medical chart showed a number of chronic illnesses, including HTN 127 (56.7%), and DM 135 (60.3%).

Table 2 previous medical history of participant's prior PCI procedure

Ser no	Variables	Frequency	Percentage(%)
1	History of myocardial infarction (MI)		
	Yes	30	13.4
	No	194	86.6
2	History of ischemic heart disease		
	Yes	94	42.0
	No	130	58.0
3	History of stroke		
	Yes	10	95.5
	No	214	4.5
4	History of peripheral vascular disease		
	Yes	4	1.8
	No	220	98.2
5	History of chronic renal failure		
	Yes	17	7.6
	No	207	92.4
6	History of valvular heart disease		
	Yes	8	3.6
	No	216	96.4
7	History of PCI		
	Yes	31	13.8
	No	193	86.2
8	Smoking		
	Never	197	87.9
	Former	22	9.8
	Current	5	2.2

9	Diabetes Mellitus (DM)		
	Non diabetic	89	39.7
	DM diet control	1	0.4
	DM oral medication	80	35.7
	DM insulin	36	16.1
	Newly DM	18	8.0
10	Hypertension		
	Yes	129	57.6
	No	95	42.4
11	Dyslipidemia		
	Yes	63	28.2
	No	161	71.8

PCI: Percutaneous coronary intervention , HTN: Hypertension, DM:Diabetic Mellitus

Clinical characteristics, laboratory finding and intervention done for study participants

Troponin was the most common biochemical marker detected in (n=180, 84.9%) patients. The intervention was performed for more than half of the patients (55.8%) due to STEMI. Of all the patients who visited the medical center, the majority (n=204, 91.1%) and (n=181, 80.0%) complained of typical chest pain and fatigue, respectively.

Table 3 Clinical characteristics of the respondents during admission

Ser no	Variables	Frequency	Percentage
1	Presence of elevated biochemical marker		
	Troponin	180	84.9
	CK-MB	30	14.2
	Lipid profile	113	53.3
	Myoglobin	1	0.5
	CRP	11	5.2
	D-Dimmer	1	0.5
	Others*	55	25.9
2	Indication for PCI		
	STEMI	125	55.8
	NSTEMI	36	16.1
	Stable angina	53	23.7
	Unstable angina	10	4.5
3	PCI status		
	PPCI	70	31.3
	Urgent	41	18.3
	Elective	113	50.4
4	Homodynamic support		
	No	181	80.8
	Yes	43	19.2
5	Presenting complaints		
	Typical chest pain	181	80.8
	Atypical chest pain	40	17.9
	Dyspnea/orthopnea	107	47.8
	Palpitation	38	17
	Fatigue	204	91.1
	Syncope	4	1.8
	Sweating	13	5.8
	Epigastritis	15	6.7
	Cough	9	4
	Vomiting	11	4.9
	Others**	15	6.7

*others- HgA1c, Creatine kinase (CK), low Hgb level **others- nausea, dyspepsia, dizziness, CK-MB- Creatine Kinase-MB, CRP- C-reactive protein, PPCI- Primary percutanous coronary intervention, STEMI-ST Elevatin Myocardial infarction,

Coronary artery blocked, Severity of Stenosis and Types of lesion

Left main coronary artery accounted for the majority of the blocked arteries, with 174 cases, or 44.9%. Table 4 illustrates that among all arterial level of stenosis, severe stenosis had the highest portion severity of stenosis. In terms of the lesion types observed in the participants, type A lesions were the most common, accounting for (n=144, 64.3%).

Table 4 The type coronary artery blocked and severity of stenosis

Ser no	Variables	Frequency	Percentage (%)
1	Right coronary artery (RCA)		
	Proximal right	45	20.1
	Mid right	45	20.1
	Distal right	21	9.4
	Right posterior descending	3	1.3
	Severity of stenosis in RCA		
	Mild (20-49)	7	6.2
	Moderate (50-69)	8	7.0
	Severe (70-99)	99	86.8
2	Left main coronary artery		
	Proximal left	75	33.5
	Mid left	93	41.5
	Distal left	8	3.6
	Severity of stenosis in LMCA		
	Mild	4	2.2
	Moderate	8	4.5
	Severe	162	82.1
	Total occlusion	1	0.6
3	Circumflex coronary artery		
	Left circumflex	21	9.4
	Proximal circumflex	23	10.3
	Mid circumflex	28	12.5
	Severity of Stenosis in circumflex artery		
	Mild	5	17.8
	Moderate	6	2.6
	Severe	52	27.8

4	Right pesterolaterla segment and branches		
	No	211	94.2
	Yes	13	5.8
	Severity of stenosis		
	Moderate	1	7.7
	Severe	9	69.3
5	Left main stem protected		
	No	207	92.4
	Yes	17	7.6
6	Types of lesions		
	Type A	144	64.3
	Type B	68	30.4
	Type C	12	5.4

Types of procedure for study participants

Stents were implanted through the femoral artery during PCI procedure in all 224 patients. Of the stents the facility had on hand, the drug-eluting stent was the most frequently used (n=219, 97.8%). In most patients (140, or 62.5%) the revascularization of the vessel was accomplished with a single stent technique. Of them, aspirin was taken by all patients, and (n=222, 99.1%) patients received antiplatelet clopidogrel. An anticoagulant administered vitamin K to eight individuals (3.6%).

Table 5 Types of procedure for study participants

Ser no	Variables	Frequency	Percent (%)
1	Arterial access site		
	Femoral	224	100
2	Stent use		
	Yes	216	96.4
	No	8	3.6
3	Direct stenting		
	Yes	28	12.6
	No	195	87.4
4	Stent type		
	Bare metal	2	0.9
	Balloon coated	3	1.3
	Drug eluting	219	97.8

5	Stent number		
	One stent	140	62.5
	Two stents	69	30.8
	Three stents	15	6.7
6	Medication used		
	Aspirin	224	100
	Clopidogrel	222	99.1
	Vitamin K	8	3.6
	Oral anticoagulant	1	0.4
	Other anticoagulant	3	1.3

Peri procedural complications among study participants

During the procedure, multiple complications happened with the most common being left ventricular apical thrombosis (n = 15, 6.7%), and no/slow flow phenomena (n = 13, 5.8%).

Table 6 Peri procedural complications among study participants

Ser. no	Variables	Frequency	Percent (%)
1	Left ventricular apical thrombosis	15	6.7
2	No/slow flow phenomenon	13	5.8
3	DC cardio version	8	3.6
4	Cardiac arrest	3	1.3
5	Ventilated (intubated)	2	0.9
6	Tamponade	1	0.4

Outcome of the study participants after the intervention

Approximately one-tenth (n=20, 8.9%) of patients developed MI following PCI, and about six (2.6%) had bleeding. After a successful intervention, TIMI 3 flow grade was present in a vast majority of patients (n=219, 97.8%). Nearly all of patients (n=222, 99.1) remained alive upon discharge; however, 12 of them had to be transferred to another hospital to receive further assessment and care.

Table 7 Outcome of the PCI

Ser no	Variables	Frequency	Percent (%)
1	MI		
	yes	20	8.9
	No	204	91.9
2	Bleeding		
	No	218	97.3
	Retroperitoneal	3	1.3
	Other bleeding	3	1.3
3	TIMI flow grade after PCI		
	TIMI 0	1	0.4
	TIMI 2	4	1.8
	TIMI 3	219	97.8
4	Participants Survival Outcome		
	Alive	222	99.1
	Dead	2	0.9
5	Discharge destination		
	Home	212	94.6
	Transfer to other hospital	12	5.4
6	Acute kidney injury		
	Yes	16	7.14
	No	208	92.8

MI: Myocardial infarction

Medication during discharge

Following discharge, the patient received a prescribed medication; aspirin, beta blockers, and among prescribed drugs, statins were the most often used for 220 patients (98.2%), 207 patients (92.4%), and 212 patients (94.5%), respectively.

Table 8 Medication received by participants during discharge

Ser no	Variables	Frequency	Percent (%)
1	Aspirin		
	No	4	1.8
	Yes	220	98.2
2	Other antiplatelet		
	No	2	0.9
	Clopidogrel	222	99.1
3	Anticoagulant		
	No	167	74.6
	Vitamin K	53	23.7
	Oral	1	0.4
	Other	3	1.3
4	Beta blocker		
	No	17	7.6
	Yes	207	92.4
5	ACE inhibitors		
	No	81	36.2
	Yes	143	63.8
6	Angiotensin		
	No	142	63.6
	Yes	82	36.6
7	Diabetic medication		
	Oral only	55	24.6
	Insulin only	26	11.6
	Insulin and oral	54	24.1
8	Statin		
	No	12	5.4
	Yes	212	94.5

Factors Associated with outcomes of PCI

Bivariate logistic regression analysis of factors associated with outcome of PCI

Following PCI, the results that were examined in our study were precence of myocardial infarction , bleeding ,TIMI flow grade , discharge destination ,AKI and patients survival status at discharge.Variables from sociodemographic and clinical features were associated, at a p-value less than 0.25 like history of MI, sex, lesion type, HTN,prior stroke,smoking,type of stent and PCI status.

Table bivariate logistic regression analysis of factors associated with outcome of PCI

Variables	Category	COR(95% Cl)	Sig.
Variables associated with MI			
Sex	Male	0.15(0.061, 0.417)	<0.001
	Female	1	1
BMI	< 18.5	1	1
		6.0(0.321, 112.25)	0.231
		1.9(0.22, 16.54)	0.555
		4.8(0.59, 38.55)	0.140
Previous MI	No	1	1
	Yes	5.51(2.03, 14.96)	0.001
Smoking	Never	1	1
	Current	0.11(0.02, 0.42)	<0.001
	former	2.18(1.02, 8.43)	0.001
Hemodynamic support	No	1	1
	Yes	5.18(1.99, 13.43)	0.001
Lesion type	Type A	1	1
	Type B	0.22(0.05, 1.01)	0.051
	Type C	0.67(0.08, 5.59)	0.719
Direct stent	No	1	1
	Yes	2.60(0.86, 7.84)	0.088
Variables with bleeding			
Chronic kidney disease	No	1	1
	Yes	6.76(1.14, 39.98)	0.035
Ischemic heart failure	No	1	1
	Yes	0.26(0.03, 2.34)	0.234
Homodynamic support	No	1	1
	Yes	0.99(0.82, 0.99)	0.049

Lesion type	Type A	1	1
	Type B	4.43(0.79, 24.85)	0.090
	Type C	0.01(0.008, 0.21)	0.013
Variables with TIMI flow grade			
DM	No	1	1
	Yes	16.15(0.38, 21.20)	0.156
Hypertension	No	1	1
	Yes	0.02(0.002, 9.97(	0.130
Smoking	Never	1	1
	Current	9.37(0.02, 83.70)	0.998
	Former	0.109(0.007, 1.804)	0.122
Lesion type	Type A	1	1
	Type B	11.29(0.84, 45.23)	0.997
	Type C	0.063(0.004, 1.091)	0.057
Variables with discharge destination			
Hypertension	No	1	1
	Yes	2.39(0.62, 9.07)	0.201
Ischemic heart disease	no	1	1
	Yes	2.93(0.85, 10.03)	0.087
Peripheral valvular disease	No	1	1
	Yes	6.33(0.60, 65.94)	0.123
Chronic kidney disease	No	1	1

Multivariable Logistic regression analysis of factors associated with outcomes of PCI

Multivariable logistic regression analysis's findings revealed that patients outcome significantly correlated with following variable at $p<0.05$. Being male is 90% less likely to develop MI after PCI procedure (AOR=0.095 95% Cl (0.03, 0.34)). The odds of patient who had previous history of MI had developing of MI was 10 times higher compared to the patients who had no previous history of MI (AOR=10.0 95% CI (2.31, 43.31)). Regarding the types of stents used in the PCI procedure, patients who were treated with bare metal stent had 54 times more likely transferred to other hospital at discharge (AOR=54 95% Cl (17.69, 108.3)).

Table 9 Factrors associated with outcomes of PCI

Ser no	Variables	Category	COR (95% Cl)	Sign	AOR (95% Cl)	Sign
1	Sex	Male	0.159 (0.061, 0.417)	<0.001	0.095 (0.03, 0.34)	<0.001
		Female	1	1	1	1
2	History of MI	No	1	1	1	1
		Yes	5.15(2.033, 14.96)	<0.001	10 (2.31, 43.31)	0.002
3	Types of stent	Bare metal	18.909(1.108, 322.790	0.018	54 (17.69, 108.3)	0.009
		Balloon	0.391(0.021, 1.297	0.735	0.831(0.79, 3.48)	0.983
		Drug eluting	1	1	1	1

5.2 Discussion

We observed or investigated six outcomes in our study: MI, bleeding, mortality, discharge destination, AKI, and TIMI flow grade.

Approximately 20 (8.9%) individuals had MI after PCI. A comparable result was published from the study conducted in New York(53). Most patients had a history of dyslipidemia (65%), diabetes (60%) and chronic renal failure (95%) as well as cardiovascular diseases like ischemic heart disease (65%), stroke (99%), and previous MI (65%). Seventy percent of the patients who getting MI had STEMI as their indication for PCI. Of them, 85% had type A lesions and 95% underwent treatment in their left main stem.

Major bleeding occurred in only 6 (2.6%) of the participants in our study after PCI. This finding, however, is lower than that of Sri Lanka and higher than that of the Ethiopian study(48). The majority of patients (66.7%) who have dyslipidemia and diabetes do not have a history of vascular diseases. Fifty percent of the patients had treatment of the right coronary artery's proximal RCA. In majority of the participants, (83.3%) ,STEMI was the main reason for PCI, and before beginning the procedures, all the patients received hemodynamic support. Type B lesions were present in 66.7% of the participants. About 75% of one stent was used, and a drug-eluting stent is the preferred option for the stent used in all patients.

The current study revealed that, following intervention, 219 patients (96.4%) had a TIMI 3 flow score, of which 182 (83.1%) were male. The finding of the study done Ethiopia(57) was very close to the current one, but the study in Ethiopia(49) was slightly lower. Stroke accounted for the least amount of prior illnesses (1.8%), while ischemic heart disease was the most common (42.5%) among individuals with a TIMI 3 score. The PCI indication for 121 (55.3%) of the patients was STEMI. Merely 1.4% patients had treatment from their right coronary artery, compared to 93.2% of patients treated with their left main stem vessel and 97.7% of cases used a single stent.

At the time of discharge, 222 participants (99.1%) were alive, resulting in a mortality rate of 0.9%.These results were in good agreement with the findings published in Ethiopia (55). Nonetheless, our observed death rate is significantly lower than that of research carried out in the USA (53), South Africa (58), Yemen, Abidjan (59), and Ethiopia (25). On the other hand, it surpasses rates stated in Sri Lanka.It might be due to one of the potential reasons for difference

could be the postponement of seeking diagnosis and treatment.This discrepancy in comparing to Sri Lanka is due to difference in healthcare system, Variations in healthcare access and infrastructure may differ significantly from the setting of our study and can have a great impact on mortality rate decrement.

The current finding revealed that around 16 (7.14%) patients were developed AKI. It is slightly lower than the study done in Tanzania(54). Out of the patients who developed AKI, three-fourth were male, 37.5% had chronic renal failure, 68.8% had HTN and only 6.3% had previous PCI. Half of them had STEMI diagnosis and majority (68.8%) of them received hemodynamic support before intervention.

According to the finding of our study, 212 patients (94.6%) were discharged to their residences, with the remaining 5.4% being moved to other medical facility.Among the individuals who were transferred to different hospitals, 58.3% had hypertension, 75% had chronic renal failure, and 91.7% had peripheral vascular disease.

The outcomes of the PCI treatment were significantly associated with two characteristics: male gender and a prior MI history. While previous MI was positively associated with MI, male gender was inversely associated with MI. Where patients went upon discharge (to other hospitals) was significantly affected by the type of bare metal stent that was used to treat patients. According to the current study's findings, 83% of the participants were male, which is consistent with research carried out in Ethiopia(25,48,49), Yemen(50), and Sri Lanka(51). It is, nevertheless, higher than the studies done in Romania (72%)(52) and New York (62.1%)(53). This could be because of the varied backgrounds of the participants and the different study area settings. The participants' average age was 58 years old which was comparable to previous studies done in Ethiopia(25,48,49), Yemen(50), Tanzania(54), and Sri Lanka(51). Although lower than that of the Romanian study(52). In the current study, procedures were performed on more than three-fourths of the patients, most of whom were over 50 years old. It was proposed that patients with CAS are more likely to be male and that the illness emerges at older ages.

According to the study findings 56.7% of patients had HTN and 60.3% had DM. These finding coincide with those reported in Yemen(50) and Italy(29). It indicated how diabetes mellitus coexists with risk profiles and how structural as well as functional changes in the cardiovascular system are linked to severe clinical complications. However, studies conducted in

Ethiopia(25,48,49), Sri Lanka(51), and New York(53) revealed that their findings differed from the present one.This can result from the variations between the previously stated studies sample size, type, study participants, and study area were different. The discrepancies may also result from lifestyle factors and genetic composition.

The most prevalent cardiovascular disease among the participants in our study was ischemic heart disease (42.6%), with MI coming in second (13.4%). Similar findings were also reported in USA(53) and South Korean investigations(30). On the other hand, the findings of research carried out in public hospitals in Addis Ababa (69.1%)(55) and Sri Lanka (47.9%)(51) were higher than the findings of our current study.This discrepancy could be as a result of difference in study design, variation in population and evaluation of secondary data in contrast to the study done in Sri Lanka.Of the patients, thirty-one (13.8%) had received PCI prior to the current one. It is lower than what the Sri Lankan study's results showed.

Similarly, in the studies conducted in Ethiopia(49,56), the most (80.8%) reported complaint by study participants was chest pain, but their percentage was lower than the current one. The most common indication for intervention was STEMI, which was diagnosed in over half (54.8%) of the individuals. This finding is higher than studies carried out in Ethiopia, (59.3%) and (77.9%)(25,48), and it is inline with study conducted in Tanzania. However, studies conducted in Yemen(50) and at a public hospital in Addis Ababa revealed a lowered diagnostic rate for STEMI. It could be due to of the higher prevalence of NSTEMI and STEMI in older age groups and males. These groups also had more complex lesions, which may have been brought on by coexisting risk factors, such as diabetes mellitus and advanced age. Comparing to previous studies, the percentage of men and DM in the study was significantly higher.

Type A lesions accounted for 64.3% of all lesions in our study participants, while type B lesions constituted 68 (30.4%) of the total. The left main coronary artery has the most stenosis (44.9%), followed by the right coronary artery (29.1%), despite studies conducted in Yemen (LMCA, 1.25% and RCA, 41%) and Sri Lanka (LMCA, 2.8%).

Before performing PCI, all patients took aspirin; 99.1% of them received the anti platelet medication clopidogrel. The study conducted in Ethiopia(56), is comparable to us. Vitamin K was the most often utilized medication in the anticoagulant group; nevertheless, the current result differs from the findings reported by Ethiopia. This may be because ACS in Ethiopia is

managed differently in hospitals using guidelines-directed management. Anti-platelet medication was recommended by a number of guidelines, including the European Society of Cardiology Clinical Practice Guidelines 2020, for all patients with ACS who did not have any contraindications, irrespective of the nature of the ACS or the approach taken for care.

Strength and limitation of the study

Strengths:Presence of adequate sample size which enhances statistical power and analysis of rare outcome and enhance representative of data.

Less expensive and quicker in comparing to prospective study beacause of the data already available from medical chart.

Limitations:Prone to selection bias as the patients included in the study are taken from previously recorded medical chart or secondary source of data. Retrospective observational studies does not establish cause and effect relationship.

Chapter Six

Conclusion and Recommendation

Conclusion

Since most of the participants in our study were male and had mean ages close to 60, it is likely that CAS is more common in older individuals and men. Additionally, the majority of participants had chronic illnesses like diabetes and hypertension, which frequently occurred alongside with CAS and complicated its course and prognosis.

PPCI should be considered in severe arterial stenosis and STEMI.

Through PCI, a large percentage of treated arteries are restored to normal blood flow with a low death rate. Despite having observed that men constitute a significant proportion of PCI patients, their risk of an unfavorable outcome is lower than that of their counterparts.

Being male is 90% less likely to develop MI after PCI procedure and the odds of patient who had previous history of MI had developing of MI was 10 times higher compared to the patients who had no previous history of MI.

Recommendations

For health professionals

- The study showed that a large percentage of patients had chronic illnesses, and healthcare professionals should educate their patients about chronic illnesses by providing clear information and understanding about them.
- Since the results were mostly attributable to professionals adhering to procedural intervention and using effective management techniques based on the suggested guidelines, patients with underlying chronic illnesses and those with a history of cardiovascular disorders should receive special care.

For Health Institutions

- Health organizations may utilize the study's conclusions to impose rules and guidelines on the routine care of patients with bleeding, MI, and AK after PCI.

- Try their hardest to create a better treatment setting so that they can provide high-quality care.

For Future Researchers

- Given the cross-sectional nature of this investigation and the challenges associated with retrieving medical data and outcomes, a prospective cohort study would be preferable in order to further determine the relationship between cause and effect to further monitor for adverse events.
- The results also indicated that women were more likely to get MI and other complication following PCI. These findings warrant additional research to determine the cause-and-effect link between these conditions.

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ANNEXES

ANNEX 1: Information sheet

Addis Ababa University College of Health Science Department of Emergency and Surgical nursing.

Research title:Clinical characteristics and outcome of patients underwent percutaneous coronary intervention at Gesund cardiac and medical center, Addis Ababa , Ethiopia.

Name of principal Investigator: Kesete Eskias

Name of organization: Addis Ababa University College of Health science

Introduction: This information sheet and consent form is prepared to explain the study you are being asked to join. Please listen carefully and ask any question at any time after joining the study.

Purpose of the Research : To assess the clinical characteristics and outcomes of patients underwent percutaneous coronary intervention at Gesund cardiac and medical center, Addis Ababa , Ethiopia.

Procedure: We invite you to take part in this study. If you are willing to participate in this study, you need to understand and sign the agreement. Then after the data collector will record based on

Your response you give. You do not need to write your name. All your response and the result

Obtained will be kept confidentially by using coding system where by one will have access to your response.

Discomfort: By participating in this study, you may feel that it has some discomfort especially on wasting time about 10 to 20 minutes. We hope you will participate in the study for the sake of the benefit of the research result. There is no risk in participating in this research project.

Benefits: If you participate in this research , there may not be direct benefit to you but your participation is likely to help us in assessing clinical characteristics and outcomes of PCI.

Incentives: You will not be provided any incentives or payments to take part in this study.

Confidentiality: The information collected from this research will be kept confidential and information about you that will be collected by this study will be stored in a file , without your name, but a code number assigned to it. In addition, it will not be revealed to any one except the principal investigator.

Right to refuse or withdraw: You have full right to refuse from participating in this research or you can choose not to respond to some or all questions if you do not want to give your response. You have also the full right to withdraw from this study at any time you wish , without losing any of your right.

Persons to contact: If you have any questions, please contact the following person.

1. Mr. Kesete Eskias: Phone number +251-953-16-06-97

ANNEX -2 -PCI Checklist

Part:1 Socio demographic and other health related factors of respondents			
PCI 1.01	Age of Respondent	1	------
PCI 1.02	Sex	**1**	Male
		2	Female
PCI 1.03	Height		
PCI 1.04	Weight		
PCI 1.05	BMI		
PCI 1.06	Residency of study participants	1	Urban
		2	Rural
		3	Outside Ethiopia
PCI 1.07	Transferred from another hospital	1	No
		2	Yes
Part:2 previous medical history of participants prior PCI procedure			
PCI 2.01	History of previous myocardial infarction	1	No
		2	Yes
PCI 2.02	History of Ischemic heart disease	1	No
		2	Yes
PCI 2.03	History of stroke	1	No
		2	Yes
PCI 2.04	History of peripheral vascular disease	1	No
		2	Yes
PCI 2.05	History of chronic renal failure	1	No
		2	Yes
PCI 2.06	Previous percutaneous coronary intervention	1	No
		2	Yes
ACS 2.07	History of valvular heart disease	1	Yes
		2	No
PCI 2.08	Smoking status	1	Never
		2	Current
		3	Former

PCI 2.09	Diabetes mellitus	1	Non-diabetics
		2	Diabetic (dietary control)
		3	Diabetic (oral medication)
		4	Diabetic (insulin)
		5	Newly diagnosed diabetic
PCI 2.10	History of hypertension	1	No
		2	Yes
PCI 2.11	History of hypercholesterolemia	1	No
		2	Yes
Part:3 Clinical characteristics and laboratory finding of the respondents during admission			
PCI 3.01	Description of presenting complaints among CAD patients treated with PCI	1	Typical chest pain
		2	Atypical chest pain
		3	Dyspnea and/or orthopnea
		4	Palpitation
		5	Fatigue
		6	Syncope
		7	Others
PCI 3.02	Indication for percutaneous coronary intervention [PCI]	1	STEMI
		2	NSTEMI
		3	Stable angina
		4	Unstable angina
PCI 3.03	Elevated biochemical marker pre procedure	1	No
		2	Yes
PCI 3.04	PCI status	1	PPCI
		2	Urgent PCI
		3	Elective PCI
PCI 3.05	Hemodynamic support	1	No
		2	Yes

Part: 4 vessel involvement upon Angiogram result and percentage of stenosis (0-100%)				
vessel involvement upon Angiogram Result				Percentage of stenosis (0-100%)
PCI 4.1	Right coronary artery(RCA)	1	Proximal right coronary artery conduit (pRCA)	
		2	Mid-right coronary artery conduit (dRCA)	
		3	Distal right coronary artery conduit (dRCA)	
		4	Right posterior descending artery (rPDA)	
	Percentage of stenosis in (RCA)	1	Mild (20-49)	
		2	Moderate (5-69)	
		3	Sever (70-99)	
PCI 4.2	Left main coronary artery (LM)	1	Proximal LAD artery (pLAD)_	
		2	Mid-LAD artery (mLAD)	
		3	Distal LAD artery (dLAD)	
	Percentage of stenosis in (LMCA)	1	Mild	
		2	moderate	
		3	sever	
		4	Total Occlusion	
PCI 4.3	Circumflex coronary Artery	1	Left circumflex coronary artery	
		2	Proximal circumflex coronary (pCIRC)	
		3	Mid Circumflex artery (CIRC)	

	Percent of stenosis in circumflex coronary artery	1	Mild	
		2	Moderate	
		3	Sever	
PCI 4.4	Right posterolateral segment and branches	1	No	
		2	Yes	
	Percent of stenosis	1	Mild	
		2	Moderate	
		3	Sever	
PCI 4.5	Left main stem protected	1	No	
		2	Yes	

Part:5 **Percutaneous Coronary Intervention Lesion type, perfusion character and stent usage**

PCI 5.01	Type of lesion	1	Type A
		2	Type B
		3	Type C
PCI 5.02	In-stent re-stenosis	1	No
		2	Yes
PCI 5.03	Bifurcation	1	No
		2	Yes
PCI 5.04	TIMI flow before PCI	1	TIMI 0
		2	TIMI 1
		3	TIMI 2
		4	TIMI 3
PCI 5.05	TIMI flow after PCI	1	TIMI 0
		2	TIMI 1
		3	TIMI 2
		4	TIMI 3

PCI 5.06	Stent usage	1	No
		2	Yes
PCI 5.07	Direct stenting	1	No
		2	Yes
PCI 5.08	Stent type	1	Bare Metal
		2	Ballon Coated
		3	Drug-eluting
		4	Other
PCI 5.9	Number of stent	1	1 stent
		2	2 stent
		3	3 stent

Part:6 Percutaneous Coronary Intervention (other details) procedure guidance and types			
PCI 6.01	Percutaneous arterial access site	1	Femoral
		2	Brachial
		3	Radial
		4	Other
PCI 6.02	Peri-procedural complications	1	No peri-procedural Complication
		2	Coronary perforation
		3	Left ventricular apical thrombosis
		4	No flow/slow flow Phenomenon
		5	DC cardioversion
		6	Ventilated
		7	Tamponade
		8	Cardiac arrest
		9	Others
PCI 6.03	Coronary artery bypass graft (CABG)	1	No
		2	Emergency
		3	Planned
PCI 6.04	Percutaneous arterial complications	1	None
		2	False aneurysm
		3	Haemorrhage requiring surgery or

			transfusion
		4	Arterial occlusion/dissection requiring intervention
		5	AV fistula
		6	Infection
		7	others
Part:7 Medication at time of PCI			
PCI 7.01	Asprin	1	No
		2	Yes
PCI 7.02	Other anti platelet	1	No
		2	Clopidogrel
		3	Ticlopidine
PCI 7.03	Anticoagulants	1	No
		2	Vit.K antagonists
		3	Oral thrombin inhibitors
		4	Other anticoagulant agents
PCI 7.04	Heparin/low molecular weight heparin	1	No
		2	Unfractionated Heparin
		3	LMWH
		4	LMWH + Unfractionated heparin

Part:8 Outcome of PCI procedure			
PCI 8.01	Myocardial (re) infarction post procedure	1	No
		2	Yes
PCI 8.02	Bleeding during hospital stay	1	No
		2	Intracranial bleed
		3	Retro-peritoneal bleed (major)
		4	Any other spontaneous bleed (major)
PCI 8.03	Acute kidney injury related to contrast induced nephropathy	1	No
		2	Yes
PCI 8.04	Survival status at	1	Alive

	discharge	2	Dead
PCI 8.05	Discharge destination	1	Home
		2	Transferred to other hospital
		3	Convalescent /Rehabilitation center

Part:9 Medication at discharge			
PCI 9.01	Asprin	1	No
		2	Yes
PCI 9.02	Other anti platelet	1	No
		2	Clopidogrel
		3	Other antiplatelet agent
PCI 9.03	Anticoagulants	1	No
		2	Vit. K antagonists
		3	Oral thrombin inhibitors
		4	Other
PCI 9.04	Beta blockers	1	No
		2	Yes
PCI 9.05	ACE inhibitors	1	No
		2	Yes
PCI 9.06	Angiotensin II receptor blockers	1	No
		2	Yes
PCI 9.07	Diabetic control	1	None
		2	Insulin and oral agent
		3	Insulin
		4	Oral agent
		5	Diet only
PCI 9.08	Statins	1	No
		2	Yes