



An-Najah National University

Faculty of Graduate Studies

**PREVALENCE, PREDICTORS, AND
OUTCOMES FOR ST- SEGMENT
ELEVATION MYOCARDIAL INFARCTION
PATIENT UNDERGOING PERCUTANEOUS
CORONARY INTERVENTION**

By

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**This Thesis is Submitted in Partial Fulfillment of the Requirements for the Degree of
Master of Critical Care Nursing, Faculty of Graduate Studies, An-Najah National
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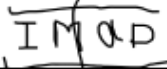
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Dedication

To everyone who has always encouraged me to succeed in my field of work, even in times of challenges, and to everyone who improves my spirits when I'm feeling down to my father, who has always been supportive of me, to remind me of our mutual hopes and unwavering support, and to discuss the future., and to my loving mother. I feel privileged to have you as my mother and love the chance you have given me to be successful in all that I have done

To my most loved family members,,,,,,my treasured brothers and sisters

To everyone who was close to me, my best friends

Everyone who has supported and encouraged me

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First, I give all the glory to God, the source of our strength, for granting us both the mental and physical endurance to complete this monumental task.

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I would like to thank our entire family, especially our loving parents, for their love, understanding, and support.

Our thanks and appreciation also go to everyone who gave me the moral support for completing this task.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

PREVALENCE, PREDICTORS, AND OUTCOMES FOR ST- SEGMENT ELEVATION MYOCARDIAL INFARCTION PATIENT UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name:

Haneen Fathe Alqassabi

Signature:

Haneen

Date:

12/9/2024

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PREVALENCE, PREDICTORS, AND OUTCOMES FOR ST- SEGMENT ELEVATION MYOCARDIAL INFARCTION PATIENT UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

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Abstract

Background: Various factors such as age, gender, smoking, and underlying conditions including diabetes mellitus (DM), chronic kidney disease (CKD), ischemic heart disease (IHD), and hypertension (HTN) are widely recognized as significant risk factors for patients experiencing ST-segment elevation myocardial infarction (STEMI) and underwent percutaneous coronary intervention (PCI).

Methods: This quantitative retrospective cohort study was conducted at IbnSina Specialized Hospital. It involved 278 adult patients diagnosed with ST-segment elevation myocardial infarction (STEMI), aged between 18 and 70 years, who underwent percutaneous coronary intervention (PCI). Data were obtained from patient files post-PCI, extracted from the hospital's computed information system, with approval from the institutional review board (IRB) of An-Najah National University.

Results: Out of 278 patients, 71.2% were males and 28.8% were females. The majority (96.4%) were over 40 years old. Significant differences were found in history of CKD, smoking, and average levels of pre- and post-catheterization hemoglobin and creatinine ($p < 0.05$). Gender, smoking, history of DM, HTN, and CKD significantly different with average levels of hemoglobin, creatinine, and troponin ($p < 0.05$). CKD, IHD, previous CABG, arterial access, and pre- and post-catheterization creatinine, pre-catheterization troponin, and post-catheterization hemoglobin levels showed significant differences with cardiac arrest ($p < 0.05$). Femoral artery catheterization resulted in higher hematoma rates than radial artery (12.5% vs. 0%, $p > 0.001$). Diseased right coronary artery and femoral artery catheterization were associated with higher arrhythmia rates.

Conclusion: STEMI patients underwent PCI are at risk of complications like hematoma, arrhythmias, and cardiac arrest. Monitoring and early management are crucial, especially for patients over 40 years old, males, smokers, and those with comorbidities like DM, HTN, CKD, and IHD.

According to the finding of the present study, the prevalence of STEMI in people over 40 years and less than 70 years old were (69.4% vs 3.6%) respectively. Therefore, based on the result of the studies that have been reviewed and included in the meta-analysis, the high prevalence of STEMI was reported to be higher in male individual more than 70 years, which is considered a warning for health policymakers regarding the importance of this age for diagnosis and screening procedures of STEMI.

Keywords: STEMI; PCI; IHD; complications; CKD.

Chapter One

Introduction and Theoretical Background

1.1 Introduction

Globally, coronary heart disease (CHD) is the primary cause of illness and death. Myocardial infarction is the most prevalent type of CHD. It causes more than 15% of deaths annually, with non-ST-segment elevation myocardial infarction (NSTEMI) accounting for more deaths than ST-segment elevation myocardial infarction (STEMI). In every age group, men are more likely than women to experience myocardial infarction (MI). MI rates are rising in developing nations including South Asia, portions of Latin America, and Eastern Europe, despite the fact that the incidence has dropped in industrialized nations due in part to better health systems and the application of successful public health initiatives (Jayaraj et al., 2019 ; Kim, 2021).

In acute myocardial infarction (MI) patients with ST-elevation, as soon as possible myocardial perfusion should be restored. The ideal approach of reperfusion is primary percutaneous coronary intervention , which dramatically reduces the risk of subsequent myocardial necrosis and enhances the quality of life for MI patients (Mo et al., 2022)

Percutaneous coronary intervention (PCI) is a procedure used to unblock an artery. The blood vessels that transport oxygen-rich blood throughout your body are called arteries. If there is a buildup of plaque—a fatty, waxy substance—in your arteries, you might require a PCI. Or, following a cardiac attack, a PCI can be necessary to remove blockages. A PCI is also known as a coronary angioplasty.

Ischemic Heart Disease is a situation where there is insufficient blood flow, depriving the heart of oxygen, the most common cause of this is an accumulation of plaque, which is made up of both fatty material and cells, in the wall of one of the coronary arteries, which feed blood to the heart. The plaque gradually blocks blood flow as it gets bigger, depriving the heart of oxygen and nourishment.

Coronary artery bypass graft commonly known as heart bypass surgery, is a procedure used in medicine to increase the heart's blood flow. It might be required if the coronary arteries, which feed blood to the heart, are clogged or constricted.

High blood pressure (HTN) is a prevalent ailment affecting the arteries in the body, another name for it is hypertension. The blood's constant excessive force against the arterial walls is a sign of high blood pressure, to pump blood, the heart has to work harder.

Millimeters of mercury, or mm Hg, are used to measure blood pressure. A blood pressure measurement of 130/80 millimeters of mercury (mm Hg) or greater is generally considered hypertension.

Diabetes Mellitus (DM) is a disorder brought on too high blood sugar (glucose). It arises when your body isn't reacting to the effects of insulin appropriately or when your pancreas produces too little or no insulin at all, people of all ages are affected by diabetes, all types of diabetes are treatable with medicine and/or lifestyle modifications, and the majority are chronic (lifelong).

Dyslipidemia is used to describe elevated blood lipid levels, a major risk factor for cardiovascular (CV) illnesses. Atherosclerosis and other cardiovascular problems can result from dysregulation in these lipid levels, which can be brought on by lifestyle choices or inherited predispositions. Lipid profile tests are frequently used in diagnosis, and goal levels are advised for best CV health

Chronic kidney disease also known as chronic renal failure, is characterized by a slow decline in kidney function, urine is the result of your kidneys filtering wastes and extra fluid from your blood, your body may accumulate hazardous amounts of fluid, electrolytes, and waste products if you have advanced chronic renal disease.

Left anterior descending artery (LAD) is a left coronary artery branch, it supplies the left ventricle's anterior region, it is regarded as the most significant vessel supplying the left ventricle since it supplies around half of the artery supply to the ventricle, because of the increased risk of death.

Right coronary artery (RCA) is an artery that enters the heart at the right aortic sinus, above the right cusp of the aortic valve.

Circumflex branch of left coronary artery (LCX) is a left coronary artery branch, it follows the coronary sulcus, or atrioventricular groove, around the left side of the heart, it supplies the left ventricle's posterolateral region.

Following an ST-segment elevation myocardial infarction (STEMI), regional heart attack services have improved clinical outcomes by encouraging early reperfusion by primary percutaneous coronary intervention. Early release after initial PCI is valued by patients as it enhances the efficacy of medical treatment (Rathod et al., 2021).

Troponin clinical predictive value and the patient's clinical profile (signs and symptoms) for cardiac catheterization and other forecasters, such as the outcomes of ECG at the time of presentation. Physicians should pay close attention to the patient's history clinically and current clinical manifestations instead of relying sole on the results of laboratory tests and interpretation of ECG, especially when those results are unclear (Alkaiyat et al., 2019)

It does not appear that patients with STEMI receiving PCI have a low overall incidence of Contrast-Induced Nephropathy. High blood pressure, uncontrolled blood sugar, history of previous MI, and age, are the central risk influences that are likely correlated with STEMI patients who underwent PCI (He et al., 2019).

Cardio metabolic risk factors are also prevalent, but in young patients with STEMI, smoking and a family history of IHD are more common. Although it is still significant, the mortality rate for young people with STEMI is lower. Public health actions are necessary to reduce the prevalence of these risk factors among the population that is sensitive by nature (Tung et al., 2021).

Compared to young adults without diabetes mellitus, those with the disease had worse health at baseline. However, following AMI, they showed notable improvements, and after controlling for baseline covariates, diabetes mellitus was not linked to worsening angina, physical limits, mental functioning, or quality of life(Ding et al., 2019).

Of 20 initially stable patients with STEMI underwent primary PCI, only 1 patient experienced an undesirable consequences while in the hospital. The risk of future undesirable consequences was independently predicted by moderate to severe CKD (Amon et al., 2022).

A poorer prognosis following primary PCI in STEMI patients was linked to recent smoking, but it had no relation to infarct size. The fact that smokers tend to be younger and have fewer cardiovascular risk factors than nonsmokers may help to explain the smoker's paradox (Redfors et al., 2020).

1.2 Problem statement

Many fatalities and disabilities are caused by cardiovascular diseases (CVDs), which are the world's leading cause of mortality especially acute myocardial infarction (AMI). About one-third of all deaths worldwide occurred as a result of CVDs in 2021 alone, accounting for 20.5 million deaths. Cardiovascular problems were often thought to be associated with wealth, but this is no longer the case. Low- and middle-income countries (LMICs) account for more than three-quarters of deaths from CVD (Lindstrom et al., 2022).

According to Alkaiyat et al. (2019), coronary heart disease (CHD) accounted for 30.6% of all fatalities in Palestine in 2016, making it the country's biggest cause of death. Also, according to a report issued by the Palestinian Ministry of health, cardiovascular disease remain to be the main cause of mortality in Palestine, where the death rate from these disease reached 29.9% of all death. The report stated that the cardiovascular disease is the first and main cause of death around the world. It also demonstrate that cardiovascular disease in Palestine often appear as a result of the accumulative of several causes, including: unhealthy lifestyle, physical inactivity, obesity, improper diet, and smoking (MOH, 2020).

This is the first study to be conducted in Palestine, so Studies on it were very limited.

1.3 Significance of the study

This is the only study prevalence, predictors and outcomes in ST- elevation myocardial infarction patients who underwent percutaneous coronary intervention in Palestine which increase awareness in health care team in hospital about arrhythmia, complication post PCI.

STEMI is among the leading causes of morbidity and mortality in patients with CVDs globally and in Palestine according to Alkaiyat et al.(2019) study. It is important to identify the incidence of ST-segment elevation myocardial infarction with specific risk

factors for development of this condition, as well as to enhance the speed of diagnosis and appropriate treatment, and the findings of this study will provide this.

Thus, the findings of the present study on the factors associated with STEMI patients treated with PCI and their outcomes in Palestine has implications for enhancing the quality of delivered cardiovascular services. It discussed a relevant area of public health concern because of the information which it gathers and compile relating to the incidence of STEMI and its predisposing factors that can be useful for public health interventions. Furthermore, through the assessment of HC performance, this study will constructively contribute to the understanding of the sufficiency of the developed Palestinian HC regarding the management of recognized STEMI cases, including the ratios of PCI intervention availability and access to aggregate times, for example, door-to-balloon and ischemia. These will bring out the deficiencies in the quality of care with special reference to compliance with these guidelines and draw out disparities in the geographical distribution of centres offering PCI services. Finally, the study seeks to compare the structural models, directions, and opportunities of STEMI care pathways in order to inform management and resource allocation decisions and assist administrators and policymakers in enhancing the quality of care to achieve better outcomes for patients in the short and long term. The findings will also benefit the local body of knowledge by providing evidence for future research and policy amendments to promote cardiovascular health in Palestine.

The results of this study will be a reference for future researchers, and will be an incentive to conduct similar studies.

1.4 Study hypothesis

H1: There is a significant difference at the level 0.05 between previous medical history and troponin changes for ST elevation myocardial infarction patients who underwent percutaneous coronary intervention

Null hypothesis: There is no significant difference at the level 0.05 between previous medical history and troponin changes for ST elevation myocardial infarction patients who underwent percutaneous coronary intervention.

1.5 Aim of the study

The current study aims to investigate the effect of the catheterization procedure on the level of chest pain and changes in the ECG among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure in Adult patient between 18-70 years old.

1.6 Outcome measures

The primary outcome is pain intensity measured with the Universal Pain Assessment Tool (UPAT), which uses items from 1 to 10 and classifies pain into 5 types: 0 = no pain; 1-3 = mild pain; 4-6 = moderate pain; 7-9 = severe pain; 10 = worst pain possible

Operational Defentions: ST-Elevation Myocardial Infarction (STEMI): refers to a heart attack characterized by the full blockage of the coronary artery, which causes a substantial decrease in blood supply to particular parts of the heart. The conditions is distinguished by distinct alternations in the ECG, notably the presence of ST- segment elevations. It is widely recognized as an urgent medical condition , necessitating prompt restoration of blood supply to the impacted arteries in order to mitigate the damage to the heart muscle (Elendu et al., 2023) .

Non- ST-Elevation Myocardial Infarction (NSTEMI): refers to a form of heart attack there is a partial blockage or temporary development of a blood clot in one or more coronary arteries .in contrast to STEMI, NSTEMI may not exhibit notable ST- elevation on the ECG. Nevertheless, there exist other warning signs, for example heightened levels of cardiac biomarkers, which imply the presence of damage to the myocardium. he expeditious evaluation and treatment of NSTEMI is imperative in order to mitigate the risk of additional issues from occurring(Chang et al., 2012) .

Cardiac Catheterization is a medical procedural conducted to both diagnose and treat certain heart condition. The process involves the insertion of a catheter, a thin and flexible tube, into a blood vessels, typically situated in the arm or groin area, with the objective of pushing it towards the heart. This approach enables the examination and measurement of blood flow, pressure, and oxygen levels within the cardiovascular systems blood vessels and cardiac chambers. The method of the capacity to enhances

the detection of obstructions, assess cardiac precision, and offer direction for medical interventions such as angioplasty or stent implementation (Kern et al., 2015).

Theoretical Framework: The theoretical framework for this study is grounded in the Donabedian Model of Quality of Care and the Cardiovascular Continuum Concept.

Used as the theoretical frameworks of this research, both the Donabedian Model of Quality of Care and the Cardiovascular Continuum Concept provide a comprehensive framework for analysis of adverse patients with STEMI according to Donabedian, 1988 Libby.(2013).This integrated approach offers a comprehensive conception of patient manipulation, chronic cure, and health care organization.

The Donabedian Model, created by Avedis Donabedian, offers a framework for understanding healthcare quality by focusing on three key dimensions: structure, process, and outcome (Donabedian, 1988).

When we look at STEMI patients who are undergoing Percutaneous Coronary Intervention (PCI), the structural dimension highlights the importance of having a solid healthcare foundation. This includes not just the physical infrastructure, like hospitals and specialized cardiac care units, but also the technology and equipment needed for effective treatment. It's about ensuring that healthcare professionals are well-trained and that the institutions are prepared to handle complex cardiovascular emergencies according to Jha et al.(2014). Ultimately, this model emphasizes that quality care begins with a strong structural setup that supports both patients and providers.

The process dimension of healthcare quality centers on how clinical management is carried out, including the protocols for diagnosis and intervention strategies. For patients experiencing STEMI, this means quickly assessing their condition, using evidence-based guidelines to make decisions, and employing precise techniques during Percutaneous Coronary Intervention (PCI) according to Thygesen et al.(2018).This model underscores the vital role of standardized, high-quality procedures that not only reduce risks for patients but also enhance the effectiveness of the treatments they receive (Anderson & Morrow, 2017).

Using quantifiable metrics such as survival rates, cardiac function recovery, return to daily activities, and quality of life enhancements, the outcome dimension examines the effects of healthcare treatments on patients according to Krumholz.(2013). These results are crucial for determining the efficacy of medical interventions and are crucial in determining the direction of future healthcare plans.

The Cardiovascular Continuum Concept offers a dynamic perspective on the progression of cardiovascular disorders in addition to the Donabedian Model according to Libby.(2013). This method tracks the patient's progression from the onset of the illness to acute care and long-term recuperation. Beginning with the early stages of atherosclerosis, it entails determining risk factors, comprehending inflammatory processes, and identifying endothelial function issues (Hansson, 2005).

According to Ibanez et al.(2018), the acute event stage is a critical time when immediate medical attention is necessary, especially in cases of STEMI. Understanding how the body reacts physiologically, determining when to intervene, and using prompt and precise therapeutic techniques are crucial throughout this phase. The recovery and rehabilitation phase that follows places an emphasis on heart tissue regeneration, heart function restoration, and the implementation of secondary preventive efforts to lower the likelihood of reoccurring incidents (Levine et al., 2016).

This study aims to provide a comprehensive viewpoint on treating STEMI patients by integrating various theoretical frameworks according to Newby et al.(2001). It will look into how different healthcare structural components, efficient intervention techniques, and meticulous patient care all combine to produce the best results. To have a better understanding of patient experiences and travels, the study will also examine significant variables such as patient demographics, current medical problems, risk profiles, and socioeconomic position (Roe et al., 2014).

With an emphasis on comprehensive data collection and long-term participant tracking, the study will employ a prospective cohort design according to Westra et al.(2018). We will use sophisticated methods like multivariate regression and survival analysis to examine the data. According to Rothman.(2008)these techniques will assist us in testing significant hypotheses about the efficacy of healthcare interventions and their influence on patient outcomes.

With an emphasis on preserving patient privacy, gaining informed consent, and guaranteeing openness in the research's reporting, ethical issues are essential to this study according to Association.(2013). Gaining knowledge that can improve care for STEMI patients, develop individualized intervention plans, and eventually better the provision of cardiovascular healthcare is the main goal (Mensah et al., 2019).

Defention: An ST- elevation myocardial infarction (STEMI) is a kind of heart attack that primarily damages the bottom chambers of your heart. They get their name from the way they alter the way your heart's electrical activity appears on a certain kind of diagnostic examination. When compared to other forms of heart attacks, STEMIs are typically more severe and dangerous.

1.7 Literature Review

The research literature on the main concepts of this study is examined in this chapter.

The literature review serves as a solid foundation for writing a research paper. It contributes to the studies basis and may elicit fresh research ideas. The reports early literature analysis gives readers a foundation for understanding current knowledge about the issues and emphasizes the significance of the new study.

Before starting to talk about problems and diseases that affect the heart, such as myocardial infarction, it is necessary to know the composition and dynamics of this vital organ in the human body.

Movements that follow the traditional topographical division of cardiac muscle into the left ventricle, right ventricle, and septum are essential to the present knowledge of cardiac dynamics. They have been the subject of separate functional evaluations, which has led to a number of assumptions that this study will define and challenge. In contrast to the heart's five-century-old anatomic description of having a helix and circumferential wrap architectural structure, cardiac dynamics are typically associated with a left ventricle, right ventricle, and septum morphology. This anatomy and structure are described by Torrent Guasp's helical ventricular myocardial band (HVMB), which also explains the six dynamic motions of the heart—narrowing, shortening, lengthening, broadening, twisting, and uncoiling (Buckberg et al., 2018).

The most common cause of death globally, ischemic heart disease, can produce fatal perioperative ischemia and infarction. Patients who present for noncardiac surgery and develop acute coronary syndrome as opposed to stable angina have different underlying pathophysiologies, triggering causes, and preventative strategies(Mahmood et al., 2014).

Unstable angina, non-ST segment elevated myocardial infarction, and ST segment elevated myocardial infarction are all included in acute coronary syndrome, also referred to as Type 1 myocardial infarction. Vulnerable plaque rupture causes acute coronary syndrome, which is followed by varied degrees of thrombus development, arterial spasm, and consequently coronary occlusion. In contrast, a mismatch between the myocardial oxygen delivery and demand in the context of fixed coronary stenosis causes stable angina(Thygesen et al., 2018).

Acute atherothrombotic coronary events are the cause of type-1 AMI; in type-2 AMI, an acute imbalance between oxygen supply (such as hypoxemia, anemia, or hypotension) and demand (such as tachycardia or hypertension) is caused by a condition other than coronary artery disease (CAD). The direct harmful consequences of endogenous or exogenous high circulating catecholamine levels might cause higher cardiac biomarker values in critically ill patients or in individuals having major (non-cardiac) surgery. Type-2 AMI can also be brought on by endothelial dysfunction and/or coronary vasospasm (Lopez-Cuenca et al., 2016).

An unstable plaque with variable degrees of occluding thrombus development and coronary vasoconstriction might cause cardiac ischemia. ACS is a platelet-associated disease process that can cause myocardial ischemia-infarction regardless of a normal MDO₂-MVO₂relationship. It is characterized by abrupt thrombus development or the dislodgement of an embolus linked to plaque rupture(Sakamoto et al., 2022).

They found critical variables linked to sudden cardiac arrest 48 hours after percutaneous coronary intervention for ST- elevation myocardial infarction. In order to develop methods that effectively reduce the risk of sudden cardiac arrest in the early post-PCI period, further research is required (Abe et al., 2022) .

Cardiac arrest affects more than 10% of patients in a current cohort of ST-elevation myocardial infarction patients receiving primary Percutaneous coronary intervention, and it is a significant cause of death for patients with in-hospital STEMI. Although cardiac arrest is linked to worse outcomes, it does not increase the risk of long-term mortality in survivors, which emphasizes the need for methods to enhance the care that STEMI patients receiving cardiac arrest get in hospitals(Kumar et al., 2021).

Out of 20 initially stable patients with STEMI undergoing primary percutaneous coronary intervention, only 1 experienced an adverse event while in the hospital. Future adverse event risk was independently predicted by moderate to severe chronic renal disease. These findings suggest that after reperfusion, most STEMI patients who get primarypercutaneous coronary intervention might not need to be routinely admitted to a cardiac intensive care unit(Amon et al., 2022)

They may conclude that was a considerable increase in the frequency of acute stent thrombosis following primary percutaneous coronary intervention. Whether they were hemodynamically unstable or had acute coronary syndrome stenting for multivessel coronary disorders, patients presenting with STEMI were at significant risk of developing acute stent thrombus (Shaikh et al.,2022)

Thirty-day mortality was six times higher in individuals with acute myocardial infarction who received emergency percutaneous coronary intervention who had first presented with out of hospital cardiac arrest than in patients without out of hospital cardiac arrest. Independent predictors of out hospital cardiac arrest included younger age, lack of dyslipidemia or diabetes mellitus, or LAD as the culprit lesion, and renal impairment. Clinical outcomes were worse for out hospital cardiac arrest patients who had higher blood glucose levels upon admission, renal impairment, or lesions other than LAD as the causative lesion (Sonoda et al., 2022)

While the rates of percutaneous coronary intervention failure and no-reflow were greater in ST- elevation myocardial infarction patients with coronary ectasia than in no-ectasia patients, follow-up mortality was similar(Mir et al., 2021)

There are no long-term advantages to ischemic postconditioning following percutaneous coronary intervention over traditional percutaneous coronary intervention for individuals with ST-elevation myocardial infarction (Mir et al., 2021).

A poorer prognosis following primary percutaneous coronary intervention in ST-elevation myocardial infarction was linked to recent smoking, but it had no relation to infarct size in the current large-scale individual patient-data pooled analysis. The fact that smokers tend to be younger and have fewer cardiovascular risk factors than nonsmokers may help to explain the smoker's paradox (Redfors et al., 2020).

According to previous retrospective study that conducted by Gao & Qi. (2021) in China to identify the mortality rate among patients with STEMI who underwent PCI, this study conducted in three hospitals from 2016-2018, General information, past medical history, clinical information, and prescription information were gathered from the patients and compared between the mortality and survival groups. In-hospital mortality was the main result. All-cause death at admission was referred to as in-hospital mortality. The findings revealed that from 1169 patients 8.13% (95) patients died post PCI during hospitalization, the finding added that some factor led to decrease mortality rate post PCI as ideal body mass index, ejection fraction, LDL C level, and use of β -blocker and ACEI/ARB drugs post PCI procedure.

de Almeida Torres et al. (2016) conducted retrospective study in Brazil to assess the incidence of major adverse cardiovascular and cerebrovascular MACCE (stroke, death, revascularization, and non-fatal MI) post PCI, this study conducted in one Center in Brazil among diabetic patients between 2012-2014. The results of this study found that, The mean age of the 158 patients who were included was 65.1 ± 9.1 years. Nine percent of the cases had a lesion in the LMCA, while 44.2% of the cases had a proximal lesion in the left anterior descending artery. Second-generation DES was used for the majority of surgeries (91.1%). The mean duration of follow-up was $1,054 \pm 725$ days, and 17.4% of patients experienced MACCE. 10.2% of people with a low SYNTAX score (less than 23) had MACCE, but 33.3% of people with a moderate/high SYNTAX score (more than 23) had MACCE ($p = 0.003$). 7.5% of patients with complete revascularization (zero residual SYNTAX score) advanced with MACCE, whereas 22.0% of patients with incomplete revascularization did so ($p = 0.01$).

Rohla et al.(2023) conducted a study to evaluate clinical outcomes in STEMI (ST-segment elevation myocardial infarction) patients undergoing percutaneous coronary intervention (PCI) based on the time elapsed from symptom onset to balloon inflation. The study focused on "early" (<12 hours), "late" (12–48 hours), and "very late" (>48 hours) presenters, addressing the question of whether PCI timing impacts mortality and target lesion failure (TLF) rates. The analysis included data from the Bern-PCI registry and SPUM-ACS program, covering cases between 2009 and 2019. Among 6,589 STEMI patients who received PCI, 73.9% were early, 17.2% were late, and 8.9% were very late presenters. The average patient age was 63.4 years, and 22% of the cohort were women. One year after the procedure, all-cause mortality was higher among late presenters (5.8%) compared to early presenters (4.4%), with a hazard ratio (HR) of 1.34 (95% CI: 1.01–1.78, P = 0.04). Similarly, very late presenters had a significantly higher mortality rate (6.8%) compared to early presenters (HR 1.59, 95% CI: 1.12–2.25, P < 0.01). However, there was no significant difference in mortality between late and very late presenters (HR 1.18, 95% CI: 0.79–1.77, P = 0.42).

The incidence of TLF, encompassing cardiac death, myocardial infarction in the target vessel, and target lesion revascularization, was also greater in late presenters (8.3%) compared to early presenters (6.5%), with an HR of 1.29 (95% CI: 1.02–1.63, P = 0.04). Very late presenters had even higher rates of TLF (9.4%) compared to early presenters (HR 1.47, 95% CI: 1.09–1.97, P = 0.01). However, TLF rates between very late and late presenters were not significantly different (HR 1.14, 95% CI: 0.81–1.60, P = 0.46). Upon adjustment for clinical factors, heart failure, renal impairment, and prior gastrointestinal bleeding emerged as key predictors of adverse outcomes, while the timing of PCI showed less influence on these outcomes. This highlights that patient comorbidities, rather than treatment delays alone, played a more significant role in determining prognosis.

Cho et al.(2021)in their study that aimed to explore the characteristics and outcomes of STEMI patients who presented late within the modern era of (PCI). The study analyzed data from the Korea Acute Myocardial Infarction Registry-National Institutes of Health database, encompassing 5,826 STEMI patients treated within 48 hours of symptom onset between 2011 and 2015. Patients were categorized as early presenters (<12 hours, n = 5,202) or late presenters (12–48 hours, n = 624). The primary outcomes assessed

were all-cause mortality at 180 days and 3 years post-STEMI. The finding revealed that late presenters experienced significantly poorer clinical outcomes than early presenters. Mortality rates at 180 days (10.7% vs. 6.8%) and 3 years (16.2% vs. 10.6%) were notably higher among late presenters (both log-rank $p < 0.001$). However, late presentation (≥ 12 hours) was not independently linked to higher mortality after adjusting for other factors. The frequency of invasive procedures dropped sharply between the first (< 12 hours) and second (12–24 hours) 12-hour intervals from symptom onset. The "no primary PCI strategy" increased from 4.9% to 12.4%, and "no PCI" rose from 2.3% to 6.6% during this timeframe (both $p < 0.001$). Concurrently, mortality escalated, with 180-day mortality climbing from 6.8% to 11.2% and 3-year mortality from 10.6% to 17.3% (both $p < 0.05$).

Mudawi et al.(2024) evaluated outcomes of percutaneous coronary intervention (PCI) at Hadi Clinic, a low-volume center in the Middle East, comparing results with high-volume PCI centers in the UK and Western countries. Data from 567 patients undergoing PCI between January 2018 and December 2020 were analyzed, covering preprocedural characteristics, intra-procedural factors, and postprocedural outcomes. Patients had a mean age of 60.9 years, with 81% male, and common comorbidities included dyslipidemia (90.9%), hypertension (81.2%), and diabetes (61%). Presentations were distributed as stable angina (22.9%), non-ST-elevation acute coronary syndrome (55%), STEMI (22%), and STEMI with cardiogenic shock (10.4% of STEMI cases). Radial access was used in 95.94% of cases, with a mean SYNTAX score of 34.8 and an average of 2.6 stents deployed per patient. PCI success was achieved in 95.1% of cases, with low complication (0.82%) and in-hospital mortality rates (0.27%). The mean door-to-balloon time for primary PCI was 31.8 minutes. Long-term outcomes included a 0.54% rate of readmission with ACS and 0.27% mortality within 12–36 months post-discharge. Overall, the results demonstrated that Hadi Clinic's PCI outcomes were comparable to those of high-volume centers in Western countries.

In their retrospective study, Kim et al.(2020) examined the association between hospital PCI volume and in-hospital AMI outcomes in Korea based on the 2014 Korean PCI registry's. The study involved 17,121 patients with AMI including 8,839 patients with non-ST-segment elevation myocardial infarction and 8,282 patients with ST-segment

elevation myocardial infarction. Among the hospitals, high-volume hospitals admitted at least 400 patients annually for PCI procedures, while low-volume hospitals admitted fewer than 400 annually. The key prespecified end point was a composite of MACCE, consisting of all-cause death, cardiac death, nonfatal MI, definite or probable stent thrombosis, stroke, and urgent PCI during the index hospital stay. The study shows that the low-volume hospital patients experienced more significant MACCE (10.9% vs. 8.6%, $p=0.001$) and non-cardiac mortality (4.8% vs. 2.6%, $p=0.001$) compared to the high volume center. Nonetheless, multivariate analysis showed that hospital PCI volume was not predictive of MACCE, potentially due to other variables confounding the relationship.

Chacón-Díaz et al.(2022) carried out a retrospective study to investigate the outcomes of primary percutaneous coronary intervention (PPCI) versus a pharmacoinvasive strategy (PIs) for treating ST-segment elevation myocardial infarction (STEMI) in Peru, particularly in regions with limited resources. This retrospective cohort study utilized data from the second Peruvian STEMI registry (PERSTEMI II), comparing patient characteristics, in-hospital outcomes, and 30-day mortality between those receiving PPCI within the first 12 hours and those treated with PIs. PIs patients were younger and experienced shorter delays from initial medical contact to reperfusion and total ischemic time. Successful PCI was more frequent in the PIs group (84.4% vs. 71.1%, $p = 0.035$). However, no significant differences were observed between the two strategies in overall in-hospital mortality (5.2% vs. 6.6%), cardiovascular mortality (4.2% vs. 5.3%), cardiogenic shock, heart failure, or major bleeding. Propensity score-matched analysis further showed comparable rates of cardiovascular mortality, post-infarction heart failure, and successful reperfusion between the groups.

Okşen et al.(2022)conducted a study to analyze the short- and long-term outcomes of 1550 patients treated with primary percutaneous coronary intervention (PCI) for acute ST-segment elevation myocardial infarction (AMI) at a tertiary care center. The cohort, predominantly male (83.1%) with a mean age of 58.5 years, had an average ischemia duration of 2.85 ± 2.49 hours and a median door-to-device time of 43 minutes. During hospitalization, 4.7% of patients died, and predictors of poor outcomes included advanced age, high Killip class, low left ventricular ejection fraction, low hemoglobin levels, ventricular arrhythmias, and atrioventricular block. Over a median follow-up of

49.5 months, 12.4% of discharged patients died, 12.5% experienced recurrent myocardial infarction, and 2.3% had cerebrovascular events. Independent predictors of major adverse cardiac events (MACE) included impaired left ventricular function, reduced glomerular filtration rate, low albumin levels, and prior cerebrovascular disease. Secondary complications included acute kidney injury (16.7%), ventricular arrhythmias (6.1%), atrial fibrillation (7.6%), advanced atrioventricular block (3.7%), and major bleeding (1.6%). The findings highlight the critical role of timely revascularization and the need for diligent long-term follow-up to mitigate AMI's persistent risks.

To investigate factors influencing adverse outcomes in patients with ST-elevation myocardial infarction (STEMI) treated with primary percutaneous coronary intervention (PCI). Taniwaki et al.(2015) conducting a study via study pooled data from two trials, EXAMINATION (1,504 patients) and COMFORTABLE AMI (1,161 patients), using consistent endpoint definitions and event adjudication. Multivariable Cox regression analysis identified predictors of adverse events, including all-cause mortality, reinfarction, stent thrombosis (ST), and target lesion revascularization (TLR) at one year. High Killip class (III or IV) emerged as the most significant predictor for all-cause death or reinfarction (OR 5.11), definite ST (OR 7.74), and TLR (OR 2.88). Additional predictors of death or reinfarctions included reduced left ventricular ejection fraction (OR 4.77), suboptimal final TIMI flow (OR 1.93), arterial hypertension (OR 1.69), advanced age (OR 1.68), and elevated peak CK levels (OR 1.25). Use of drug-eluting stents (DES) significantly reduced the risk of definite ST (OR 0.35) and TLR (OR 0.34). These findings emphasize the impact of clinical and procedural factors on outcomes and the protective role of DES in contemporary PCI practices.

Liosis et al.(2019) explored the heightened risk of in-hospital adverse events in patients with acute coronary syndromes (ACS) and diabetes mellitus (DM), hypothesizing that this increased risk stems from those with concurrent renal failure (RF), a frequent complication of DM. The study analyzed data from the ALKK-PCI registry, encompassing 69,651 ACS patients undergoing percutaneous coronary intervention (PCI) across 48 hospitals from 2008 to 2013. Patients were categorized into four groups: noDM/noRF, DM/noRF, DM/RF, and RF/noDM. In-hospital mortality rates for STEMI were 3.5%, 6.6%, 21.9%, and 14.1%, respectively, and for NSTEMI-ACS were

1.5%, 2.1%, 7.2%, and 5.4%. Multivariate analysis identified the following odds ratios for mortality predictors: DM without RF (OR 1.62 for STEMI, 1.20 for NSTEMI-ACS), DM with RF (OR 3.02 for STEMI, 2.72 for NSTEMI-ACS), and RF without DM (OR 2.13 for STEMI, 2.08 for NSTEMI-ACS). When stratified by estimated glomerular filtration rate (eGFR), mortality increased as renal function declined, with STEMI rates at 5.0%, 12.8%, 17.7%, and 31.5% across eGFR categories (60–90, 45–60, 30–45, and <30 ml/min) and NSTEMI-ACS rates at 2.1%, 3.8%, 7.1%, and 12.0% (p for trend <0.0001). The study concluded that co-existing RF is the primary driver of elevated mortality in ACS patients with DM. While DM without RF was a significant predictor in STEMI, it was not in NSTEMI-ACS. RF, regardless of DM status, posed a stronger risk factor, and mortality escalated with worsening eGFR.

Chapter Two

Method

2.1 Design

In the Critical care unit (CCU) of IbnSinaSpecialized Hospital in Jenin, Palestine, a quantitative, retrospective, cohort study was carried out dataobtained from the patient file post percutaneous coronary intervention and obtained from the hospital computed information system. Approval was achieved from the institutional review board (IRB) of An-Najah National University.

The hospital's scientific research organizations approved the study. In adult STEMI patients between 18-70 years old who underwent PCI, show changes in pain, and changes on ECG post PCI.

2.2 Participants

- Patients who is ST elevation myocardial infarction.
- Those patients with age 18-70 years old.
- Patients who admitted to the Critical care unit (CCU).

2.3 Site and setting

Critical care unit (CCU) in IbnSina Specialized Hospital Jenin, Palestine.

2.4 Study period

From August 2022 to October 2023.

2.5 Inclusion criteria

- patients aged from 18-70 years old
- ST- elevation myocardial infarction patients

2.6 Exclusion criteria

- Non ST- elevation myocardial infarction patients
- Patients with history of bleeding
- Patients aged less than 18 and more than 70 years old

2.7 Procedure

After obtaining approval from An-Najah National University, the Ministry of Health and IbnSina Specialized Hospital, I was back to the computer system every day and search for ST-elevation myocardial infarction patients who underwent percutaneous coronary intervention during this period August 2022 to October 2023.

After that, I was take all the recorded information about these patients. Everything is recorded about the patient through the system from the time of admission to the time of discharge.

For patients in IbnSina Specialized Hospital, the patient admitted to ER department complain of chest pain, put patient on bed, connect to cardiac monitor, taken vital signs, take history from patient or family by nurse and doctor, applied intravenous access take blood sample pre PCI (CBC, BUN, creatnin, cardiac enzyme troponin and CK-MB), as doctor order, we had an ECG done for the patient, to monitor any changes, give aspirin 300mg and plavix 600mg loading dose take pain score pre PCI as numerical scale if patient sever chest pain give analgesic as doctor order ,do echo by cardiologist, then transferee patient to CCU department , prepare patient to cardiac cath obtained consent form, checklist, shaving on radial and femoral area then transferee to catheterization..

2.8 Post operation

Patient receive from cardiac cath post PCI, placed on bed connect to cardiac monitor vital signs taken and recorded, observe operation site form any oozing, hematoma, bleeding, deflated TR band as protocol (2 ml q 15 minute), We perform a repeat ECG after the catheterization to observe any changes in ECG especially ST elevation, ST depression, QT interval and T inversion , and take pain score post PCI if improve.

2.9 Sample size

The Raosoft software is used to calculate the required sample size

The study sample consisted of (278) male and female, STEMI patients who underwent PCI

The margin of error: 5%

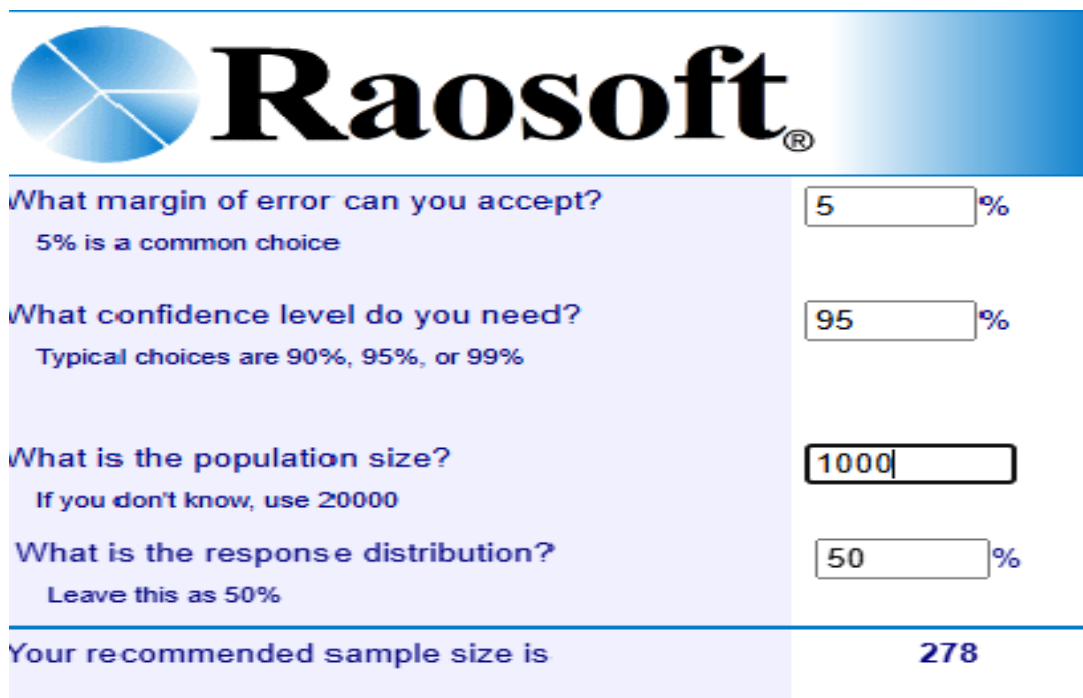
Confidence level: 95%

Population size estimated:1000

Your recommended sample size: 278

Figure 1

Sample size calculation on Raosoft



Raosoft[®]

What margin of error can you accept? 5% is a common choice	5 %
What confidence level do you need? Typical choices are 90%, 95%, or 99%	95 %
What is the population size? If you don't know, use 20000	1000
What is the response distribution? Leave this as 50%	50 %
Your recommended sample size is	278

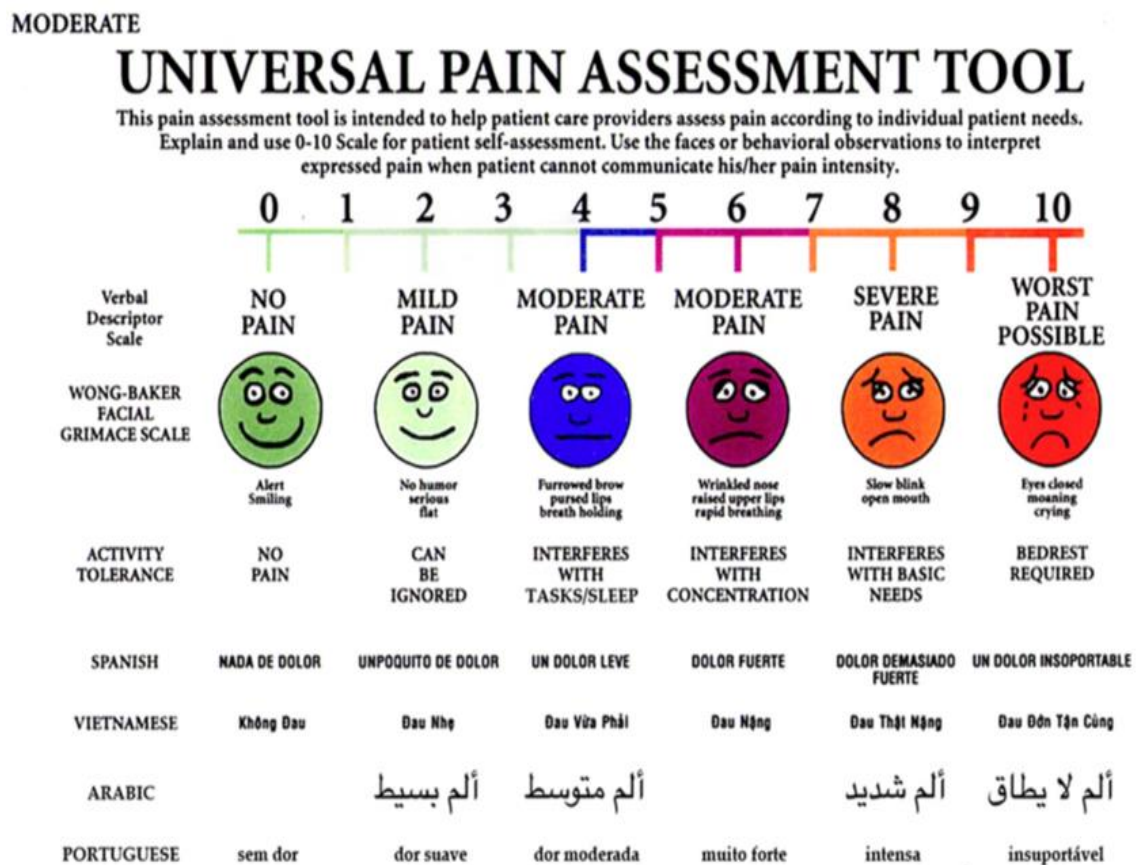
2.10 Study instrument

The Universal Pain Assessment Tool (UPAT)

- The present investigation employed The Universal Pain Assessment Tool (UPAT) to evaluate the degree of pain experienced by individuals with restricted communication abilities.
- It divides pain into five categories on a scale of 1 to 10: The pain scale goes from 0 (no pain) to 10 (worst possible pain).

Figure 2

Universal Pain Assessment Tool



2.11 Data Collection

After IRB Approval and hospital approval, the structured data sheet was prepared based on study objectives, and previous related studies, patients files after percutaneous coronary intervention and was obtained from hospital computed information system.

The data collected by using check list, the check list divided into 9 sections: the first section of the sheet contain basic demographic information such as gender (Male, Female), age (18-40 years)(41-70 years), this information taken from patients file.

The section two was about previous medical history (IHD, previous MI, previous PCI, previous CABG, HTN, DM, smoker, Dyslipidemia, CKD, free).

The section three in concerned with procedural characteristic –Arterial access(Radial Artery, Femoral Artery).

The section four is concerned with vessels disease (LAD, RCA, LCX, chronic total occlusions, multi vessels disease).

The section five concerned with lab profiles which contain : pre and post (Hb, creatinine, troponin).

The section six concerned with ECG which contain: pre and post PCI (sinus rhythm, ST elevation, ST depression, T wave inversion).

The section seven concerned with pain scale pre and post PCI (no pain, mild, moderate, sever pain, worst pain possible).

The section eight concerned with procedure characteristic contain of: (balloon angioplasty, stent angioplasty, stent and balloon, second stage, medical treatment).

The section nine concerned with outcome of PCI which contain: (hemorrhagic complication, hematoma pseudoaneurysm or other vascular complication, acute stent thrombosis, cardiac death, myocardial infarction, Revascularization)

Data was retrieved from patient records was obtained from patients computerized records, with the researcher retrieving data from patients records in institution using an authorized account after received approval. Based on the researchers clinical expertise

and previous training, whereas the researchers did it all by herself. missing data from the patients records is left blank on the data sheet and is treated as a missing value by statistical analysis software, that statistical measures were done according to all sample value.

2.12 Statistical Methods

The data acquired from the medical records analyzed using the statistical package for social science (SPSS) software on windows operating system, using the descriptive and analytical factions. The descriptive results include generating frequencies, percentage, mean, and stander deviation for the variables related to patients demographic data, previous medical history, procedural characteristic, vessels disease, lab profiles, ECG, pain scale, and outcomes of PCI). The following statistical tests were employed to examine the data and assess the study hypotheses, presuming that a P-Value of less than 0.05 indicates significance.

2.13 Validity and Reliability

The check list was developed by the researcher and then reviewed by critical care unit doctor and academic doctor who specialized in critical care nursing. their comments were considered when developing the data collection tool to its final form in order to collect data in the most appropriate way for obtaining the best possible data and for the data analysis process

Reliability is the consistency of the measurement, or the degree to which an instrument measures the same way each time it is used under the same condition with the same subjects(Drost, 2011)

2.14 Ethical Consideration

The approval to begin data collecting was acquired from the Institutional Review Board (IRB) of the faculty of medicine and health sciences at An Najah National University .after that, a facilitating paper was obtained from the IbnSinaSpechalized Hospital in order to collect data, consent was obtained from all

Furthermore, the data was kept anonymous, participant information and the results obtained were retained in a secure location where no one could access them, and the data was collected only for research purposes.

Chapter Three

Results

This chapter presents the primary findings from the data analysis conducted to address the objectives of the study on the prevalence, predictors, and outcomes of ST-segment elevation myocardial infarction (STEMI) patients undergoing percutaneous coronary intervention (PCI). The results are organized to provide a comprehensive understanding of the research questions, starting with demographic and clinical characteristics of the study population. Subsequently, the chapter highlights the prevalence rates, identifies significant predictors of adverse outcomes, and evaluates the short- and long-term patient outcomes following PCI. Through descriptive and inferential statistical analyses, the chapter offers insights into the quality of care, procedural timeliness, and adherence to evidence-based guidelines in managing STEMI cases within the Palestinian healthcare context. These findings serve as the foundation for discussion and interpretation in subsequent chapters.

3.1 Sociodemographic Characteristics

Out of 278, males were 198 (71.2%) the largest compared to females 80 (28.8%). Likewise, the age group over 40 years was the highest (96.4%) compared to those under 40 years (3.6%) of among ST- segment elevation MI patient who had a catheterization procedure study participants. See figure 3.

Figure 3

Age & gender distribution among ST segment elevation MI patients who underwent catheterization procedure

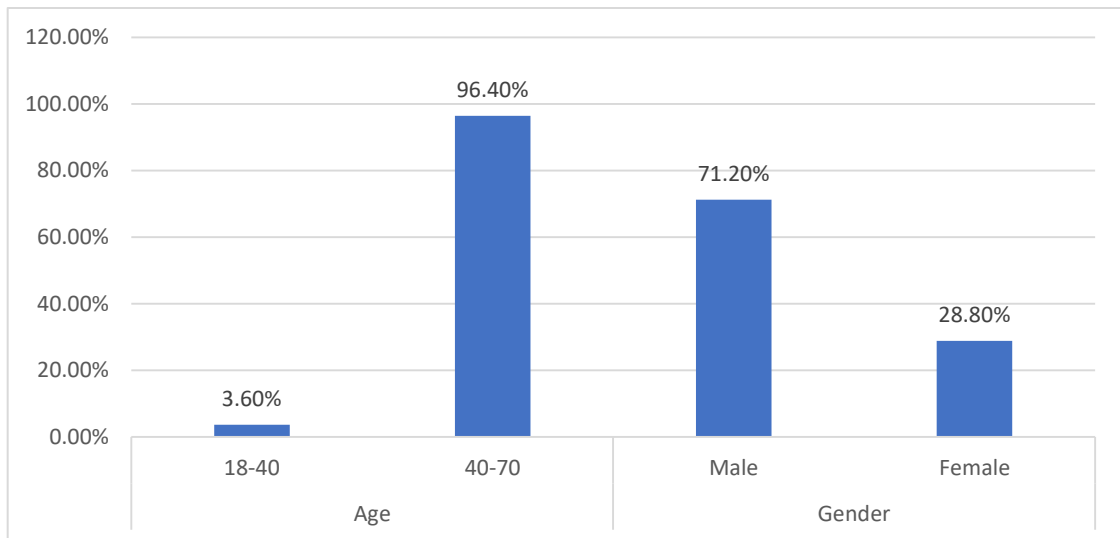
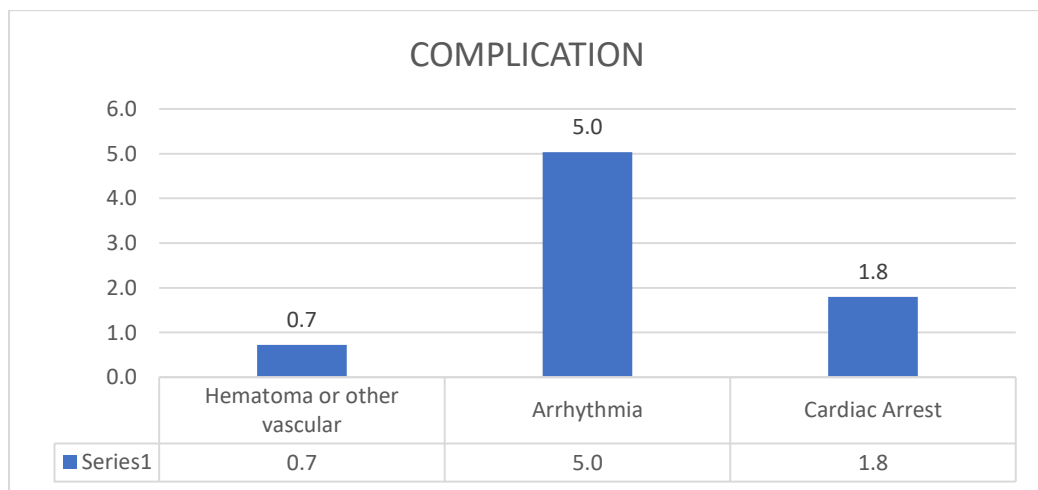


Figure 4

Complication distribution among ST segment elevation MI patients who underwent catheterization procedure



The findings found that a highest percentage of previous diseases among the participants among STEMI patients who had a cardiac cath. procedure were patients with high blood pressure (42.1%), diabetes (31.7%), IHD (30.2%), and smoking (62.6%).

Although, among STEMI patients who had a cardiac cath procedure, the occurrence rate of complications was higher among patients who had a history of IHD (10.7% vs. 7.6%), previous CABG (20% VS. 7.1%), and smoking (10.3% vs. 2.9%) the results found that these differences had no significant difference ($p > 0.05$).

On the other hand, history of chronic kidney failure had a statistically significant difference ($p=0.001$) in the occurrence rate of complications among STEMI patients who had a cardiac cath. procedure, as the occurrence rate of complications was higher among patients with a history of chronic renal failure than that of patients who haven't a previous history of chronic renal failure (50 % vs. 6.9%).

The results also showed that the percentage of smokers was high (62.6%) among STEMI patients who had a cardiac cath. procedure and it had a statistically significant difference between the smoking and non-smoking participants with the occurrence rate of complications ($p=0.023$).

Table 1

previous medical history and complication among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure

		Outcome (complications)			χ^2	P value
<i>Previous history</i>	Total	No	Yes			
IHD	<i>No</i>	194(69.8%)	182(93.8%)	12(6.2%)	1.722	.189
	<i>Yes</i>	84(30.2%)	75(89.3%)	9(10.7%)		
MI	<i>No</i>	275(98.9%)	254(92.4%)	21(7.6%)	.248	.619
	<i>Yes</i>	3(1.1%)	3(100.0%)	0(0.0%)		
PCI	<i>No</i>	228(82.0%)	210(92.1%)	18(7.9%)	.211	.646
	<i>Yes</i>	50(18.0%)	47(94.0%)	3(6.0%)		
CABG	<i>No</i>	268(96.4%)	249(92.9%)	19(7.1%)	2.301	.129
	<i>Yes</i>	10(3.6%)	8(80.0%)	2(20.0%)		
HTN	<i>No</i>	161(57.9%)	149(92.5%)	12(7.5%)	.006	.941
	<i>Yes</i>	117(42.1%)	108(92.3%)	9(7.7%)		
DM	<i>No</i>	190(68.3%)	174(91.6%)	16(8.4%)	.646	.421
	<i>Yes</i>	88(31.7%)	83(94.3%)	5(5.7%)		
Smoker	<i>No</i>	104(37.4%)	101(97.1%)	3(2.9%)	5.188	.023
	<i>Yes</i>	174(62.6%)	156(89.7%)	18(10.3%)		
Dyslipidemia	<i>No</i>	251(90.3%)	230(91.6%)	21(8.4%)	2.444	.118
	<i>Yes</i>	27(9.7%)	27(100.0%)	0(0.0%)		
CKD	<i>No</i>	274(98.6%)	255(93.1%)	19(6.9%)	10.470	.001
	<i>Yes</i>	4(1.4%)	2(50.0%)	2(50.0%)		
Free	<i>No</i>	192(69.1%)	177(92.2%)	15(7.8%)	.059	.807
	<i>Yes</i>	86(30.9%)	80(93.0%)	6(7.0%)		

Table 2 showed that the characteristics of the PCI catheterization procedure in terms of the arterial access, the diseased vessel, and the kind of intervention had a statistically significant difference between the participants and the occurrence rate of complications among STEMI patient who had a cardiac catheterization procedure (p values=0.001, 0.001, 0.005 respectively).

The rate of catheter entry through the radial artery was the most widely used (94.2%) compared with femoral artery (5.8%), the LAD artery was the most frequent diseased vessel (30.6%), and the balloon and stent were the most common type of intervention (27.7%).

The occurrence rate of complications by radial artery access are less than femoral artery (5.7% vs. 37.5%), the right coronary artery and balloon & stent intervention were higher susceptible to complications (18.4 % & 15.6% respectively).

Finally, the percentage of patients who received medical treatment was 43.7%.

Table 2

procedure characteristic and complication among ST – segment elevation myocardial infarction patients who underwent a catheterization procedure

		Outcome (complication)			X ²	P value
		Total	No	Yes		
Arterial Access	Radial	261(94.2%)	246(94.3%)	15(5.7%)	21.694	.000
	Femoral	16(5.8%)	10(62.5%)	6(37.5%)		
Vessel Disease	Normal	123(44.2%)	122(99.2%)	1(0.8%)	17.997	.001
	LAD	85(30.6%)	76(89.4%)	9(10.6%)		
	RCA	38(13.7%)	31(81.6%)	7(18.4%)		
	LCX	27(9.7%)	23(85.2%)	4(14.8%)		
	Multi Vessels	5(1.8%)	5(100.0%)	0(0.0%)		
PCI intervention type	Balloon	10(3.6%)	9(90.0%)	1(10.0%)	14.787	.005
	Stent	48(17.3%)	45(93.8%)	3(6.3%)		
	Balloon & Stent	77(27.7%)	65(84.4%)	12(15.6%)		
	Second Stage	21(7.6%)	18(85.7%)	3(14.3%)		
	Medical Treatment	122(43.9%)	120(98.4%)	2(1.6%)		

Table 3 shows that the arterial access method had a statistically significant difference ($p>0.001$) and the occurrence rate of hematoma among STEMI patients who had a cardiac cathprocedure, as hematoma occurred among patients who had a catheterization through the femoral artery more than radial artery (12.5% vs. 0% respectively).

On the other hand, the diseased artery and the type of the interventions, through the PCI, had no statistically significant difference in the occurrence rate of hematoma among STEMI patients who had a cardiac cathprocedure.

Table 3

Procedure characteristics and Hematoma among ST- segment myocardial infarction patient who underwent a catheterization procedure

			Hematoma		X ²	P value
Total			No	Yes		
Arterial	Radial	261(94.2%)	261(100.0%)	0(0.0%)	32.862	.000
Access	Femoral	16 (5.8%)	14(87.5%)	2(12.5%)		
Vessel	Normal	123(44.2%)	123(100.0%)	0(0.0%)	6.855	.144
Disease	LAD	85(30.6%)	85(100.0%)	0(0.0%)		
	RCA	38(13.7%)	37(97.4%)	1(2.6%)		
	LCX	27(9.7%)	26(96.3%)	1(3.7%)		
	Multi Vessels	5(1.8%)	5(100.0%)	0(0.0%)		
PCI	Balloon	10(3.6%)	10(100.0%)	0(0.0%)	2.721	.606
interve	Stent	48(17.3%)	47(97.9%)	1(2.1%)		
ntion	Balloon &	77(27.7%)	76(98.7%)	1(1.3%)		
type	Stent					
	Second Stage	21(7.6%)	21(100.0%)	0(0.0%)		
	Medical	122(43.9%)	122(100.0%)	0(0.0%)		
	Treatment					

Table 4 shows that the diseased artery had a statistically significant difference ($p=0.05$) with the occurrence rate of arrhythmia in ECG among STEMI patients who had a catheterization procedure.

The arrhythmia occurred more higher among the patients of the diseased right coronary artery (10.5%) and had a catheterization through the femoral artery route (12.5%).

As for the method of arterial access and the type of the interventions via the catheter, there was no statistically significant difference with the occurrence rate of ECG arrhythmia among STEMI patients who had a catheterization procedure.

Table 4

Procedure characteristics and Arrhythmia among ST- segment elevation myocardial infarction patient who underwent a catheterization procedure

		Arrhythmia			X^2	P value
		Total	No	Yes		
Arterial Access	Radial	261(94.2%)	249(95.4%)	12(4.6%)	1.962	.161
	Femoral	16(5.8%)	14(87.5%)	2(12.5%)		
Vessel Disease	Normal	123(44.2%)	122(99.2%)	1(0.8%)	9.384	.052
	LAD	85 (30.6%)	78(91.8%)	7(8.2%)		
	RCA	38(13.7%)	34(89.5%)	4(10.5%)		
	LCX	27(9.7%)	25(92.6%)	2(7.4%)		
	Multi Vessels	5(1.8%)	5(100.0%)	0(0.0%)		
PCI intervention type	Normal	123(44.2%)	123(100.0%)	0(0.0%)	5.630	.229
	Balloon	10(3.6%)	9(90.0%)	1(10.0%)		
	Stent	48(17.3%)	46(95.8%)	2(4.2%)		
	Balloon & Stent	77(27.7%)	67(87.0%)	10(13.0%)		
	Second Stage	21(7.6%)	21(100.0%)	0(0.0%)		
	Medical Treatment	122(43.9%)	121(99.2%)	1(0.8%)		

Table 5: The findings found that there was a statistically significant difference in the occurrence of cardiac arrest attributed to the history of IHD, CKD, and previous CABG (p values= .014, <.001,& .047 respectively) among STEMI patients who had a catheterization procedure.

The occurrence rate of cardiac arrest were higher among the participants' with history of IHD (4.8 %), CKD (25%) and CABG (10%) compared to non IHD (0.5%), non CKD (1.5%) and no history of CABG (1.5%).

Although the occurrence of cardiac arrest was higher among the other previous medical history, but these other medical history were not statistically significant ($p > 0.05$) with the occurrence with cardiac arrest among STEMI patients who had a catheterization procedure.

Table 5

Previous Medical History and Cardiac Arrest among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure

		Cardiac Arrest			X^2	P value
		Total	No	Yes		
IHD	No	194(69.8%)	193(99.5%)	1(0.5%)	5.985	.014
	Yes	84(30.2%)	80(95.2%)	4(4.8%)		
MI	No	275(98.9%)	270(98.2%)	5(1.8%)	.056	.814
	Yes	3(1.1%)	3(100.0%)	0(0.0%)		
PCI	No	228(82.0%)	225(98.7%)	3(1.3%)	1.673	.196
	Yes	50(18.0%)	48(96.0%)	2(4.0%)		
CABG	No	268(96.4%)	264(98.5%)	4(1.5%)	3.950	.047
	Yes	10(3.6%)	9(90.0%)	1(10.0%)		
HTN	No	161(57.9%)	158(98.1%)	3(1.9%)	.009	.924
	Yes	117(42.1%)	115(98.3%)	2(1.7%)		
DM	No	190(68.3%)	188(98.9%)	2(1.1%)	1.891	.169
	Yes	88(31.7%)	85(96.6%)	3(3.4%)		
Smoker	No	104(37.4%)	104(100.0%)	0(0.0%)	3.043	.081
	Yes	174(62.6%)	169(97.1%)	5(2.9%)		
Dyslipidemia	No	251(90.3%)	246(98.0%)	5(2.0%)	.548	.459
	Yes	27(9.7%)	27(100.0%)	0(0.0%)		
CKD	No	274(98.6%)	270(98.5%)	4(1.5%)	12.369	.000
	Yes	4(1.4%)	3(75.0%)	1(25.0%)		
Free	No	192(69.1%)	187(97.4%)	5(2.6%)	2.281	.131
	Yes	86(30.9%)	86(100.0%)	(0.0%)		

Table 6 shows that the arterial catheter access and the catheterization medical procedures had a statistically significant difference ($p=0.001$ & <0.001 respectively) with the occurrence rate of cardiac arrest among STEMI patients who had a catheterization procedure.

Cardiac arrest occurred more among patients who had a catheterization through the femoral artery (12.5%) and patients in the second stage (14.3%).

The diseased artery had no statistically significant difference ($p>0.05$) with the occurrence rate of cardiac arrest among STEMI patients who had a catheterization procedure.

Table 6

Procedure characteristics and Cardiac arrest among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure

		Cardiac Arrest			X^2	P value
		Total	No	Yes		
Arterial Access	Radial	261(94.2%)	258(98.9%)	3(1.1%)	10.958	.001
	Femoral	16(5.8%)	14(87.5%)	2(12.5%)		
Vessel Disease	Normal	123(44.2%)	123(100.0%)	0(0.0%)	5.630	.229
	LAD	85(30.6%)	83(97.6%)	2(2.4%)		
	RCA	38(13.7%)	36(94.7%)	2(5.3%)		
	LCX	27(9.7%)	26(96.3%)	1(3.7%)		
	Multi Vessels	5(1.8%)	5(100.0%)	0(0.0%)		
PCI	Balloon	10(3.6%)	10(100.0%)	0(0.0%)	20.373	.000
interventi	Stent	48(17.3%)	48(100.0%)	0(0.0%)		
on type	Balloon & Stent	77(27.7%)	76(98.7%)	1(1.3%)		
	Second Stage	21(7.6%)	18(85.7%)	3(14.3%)		
	Medical Treatment	122(43.9%)	121 (99.2%)	1(0.8%)		

Table 7: The pre- and post-catheterization hemoglobin levels had a statistically significant difference ($p>0.001$) related to gender as the mean of pre and post catheterization hemoglobin levels were higher for males (14.3 and 13.6) compared to the hemoglobin levels for females (12.3 and 11.8).

The other pre- and post- catheterization blood tests (Creatinine& Troponin) for STEMI patients who had a catheterization procedure had no statistical significance difference related to gender

Table 7

Pre and post lab (HB, creatinine& troponin) according to participant gender

	Gender	N	Mean	Std. D	T	P value
Pre Hb	Male	198	14.3665	2.15304	7.653	<.001
	Female	80	12.3207	1.63232		
Pre Creatinine	Male	197	.9376	.42563	.816	.415
	Female	80	.8825	.67299		
Pre Troponin	Male	197	.6809	2.97506	.358	.721
	Female	80	.5500	2.12499		
Post Hb	Male	198	13.6210	2.10782	6.573	<.001
	Female	80	11.8681	1.75358		
Post Creatinine	Male	197	.8421	.34044	.289	.773
	Female	80	.8268	.52221		
Post Troponin	Male	197	1.5452	7.42861	1.419	.157
	Female	80	.3627	.85684		

Table 8: The mean of pre- and post-catheterization creatinine levels had a statistically significant difference ($p=0.002, 0.003$) related to the previous medical history of IHD as the mean of pre and post catheterization creatinine levels were higher for males (1.06 and 0.94) compared to the free IHD participants (0.8 and 0.79).

The other averages of pre- and post- catheterization blood tests (Hb& Troponin) for ST-SEMI patients who had a catheterization procedure had no statistical significance difference related to previous medical history of IHD.

Table 8*Pre and post lab (Hb, creatnine & troponin) according to participant history of IHD*

	IHD	N	Mean	Std. D	T	P value
Pre Hb	No	194	13.6711	2.09	-1.220	.224
	Yes	84	14.0242	2.46945		
Pre Creatinine	No	194	.8594	.45457	-3.166	.002
	Yes	83	1.0673	.59538		
Pre Troponin	No	194	.6772	2.93805	.315	.753
	Yes	83	.5633	2.27858		
Post Hb	No	194	13.1202	2.02525	.043	.966
	Yes	84	13.1081	2.45837		
Post Creatinine	No	194	.7908	.34618	-3.020	.003
	Yes	83	.9472	.49044		
Post Troponin	No	194	1.2821	6.59393	.316	.752
	Yes	83	1.0204	5.58535		

Table 9: The table shows that there is a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin and creatinine related to the presence of a history of hypertension (p values < 0.05).

The average levels of hemoglobin were higher among the study participants who did not have a history of hypertension, while the average levels of creatinine were higher among those with a history of hypertension.

Table 9*Pre and post lab (HB, creatnine & troponin) according to participant history of HTN*

	HTN	N	Mean	Std. D	T	P value
Pre Hb	No	161	14.2839	1.92343	4.625	.000
	Yes	117	13.0815	2.40737		
Pre Creatinine	No	161	.8505	.31754	-2.777	.006
	Yes	116	1.0205	.68129		
Pre Troponin	No	161	.5029	2.51650	-.998	.319
	Yes	116	.8376	3.05271		
Post Hb	No	161	13.4974	1.96511	3.517	.001
	Yes	117	12.5925	2.31169		
Post Creatinine	No	161	.7709	.18456	-3.331	.001

Table 10: The table shows that there is a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin and creatinine related to the presence of a history of DM (p values < 0.05).

The average levels of hemoglobin were higher among the study participants who did not have a history of DM, while the average levels of creatinine were higher among those with a history of DM.

Table 10

pre and post lab (Hb, creatnin & troponin) according to participant with history of DM

	DM	N	Mean	Std. D	T	P value
Pre Hb	No	190	14.1246	2.20778	3.930	.000
	Yes	88	13.0290	2.05867		
Pre Creatinine	No	189	.8404	.25731	-4.001	.000
	Yes	88	1.0963	.79569		
Pre Troponin	No	189	.6020	2.69069	-.363	.717
	Yes	88	.7312	2.89749		
Post Hb	No	190	13.5258	2.05906	4.823	.000
	Yes	88	12.2330	2.12106		
Post Creatinine	No	189	.7816	.19933	-3.481	.001
	Yes	88	.9580	.63369		
Post Troponin	No	189	1.2841	6.67475	.311	.756
	Yes	88	1.0311	5.43935		

Table D1 in Appendix D: the table shows that there is a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin related to the smoking (p values < 0.05).

The average levels of hemoglobin were higher among the study participants who are smoker (14.3) compared to the hemoglobin average for non-smokers, (12.8).

Table D2 in Appendix D: The table shows that there is a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin and creatinine and pre- catheterization troponin related to the presence of a history of CKD (p values < 0.05). While troponin after did not have any statistically significant difference.

The average levels of hemoglobin were lower among the study participants who have a CKD, while the average levels of creatinine were higher among those with a CKD.

Table D3 in Appendix D: The table shows that there is a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin and creatinine related to the occurrence of complications (p values < 0.05).

While averages of pre- and post-catheterization troponin did not have any statistically significant difference.

The average levels of hemoglobin were lower among the study participants who have among patients developed complication, while the average levels of creatinine were higher among those developed complication.

Table D4 in Appendix D: The table shows that there is a statistically significant difference between the average levels of the mean of pre- and post-catheterization creatinine, pre- catheterization troponin and post catheterization Hb among those develop cardiac arrest (p values < 0.05).

Creatinine was higher before and after catheterization among the participants who had a cardiac arrest while hemoglobin in post catheterization was lower among the participants who has had cardiac arrest. While pre catheterization Hb and post catheterization troponin did not have any statistically significant difference.

Table D5 in Appendix D: Despite the presence of these differences between males and females as well as the age group, these differences did not have any statistical significance ($p > 0.05$) with the existence rate of complications among ST- SEMI patients who had a catheterization procedure.

However, the occurrence rate of complications among males was higher(8.6%) than females (5%). Likewise, complications occurred more among the age group over forty years old (7.8%) compared to the age group under forty years old (0%)

In the follow tableD6 in Appendix D: The findings reveled that the percentage of hematoma occurrence was 0.7% among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure.

Although the occurrence rate of hematoma was higher among males (1%) and the age group over 40 years (0.7%), these differences had no statistical significant with the occurrence of hematoma among STEMI patients who underwent a catheterization procedure ($p > 0.05$).

In the next table D7 in Appendix D: The finding clarified that there was no statistically significant difference attributed to the previous medical history of the participants and the occurrence of hematoma among STEMI patients who underwent a catheterization procedure.

Table D8 in Appendix D: The findings revealed that the incidence of arrhythmia in the ECG was 5.2% among ST- SEMI patients who had a cardiac cath procedure. Despite the arrhythmia occurrence rate was higher among males (5.6%) and the age over 40 years (5.2%), but these differences had no statistical significant with the occurrence rate of arrhythmia among ST- SEMI patients who had a cardiac cath procedure ($p > 0.05$).

Table D9 in Appendix D: The findings found that there was no statistically significant difference ($p > 0.05$) attributable to the previous medical history of the study participants with the occurrence rate of arrhythmia by ECG among STEMI patients who had a catheterization procedure.

Table D10 in Appendix D: The results showed that the occurrence of cardiac arrest was 1.79% among STEMI patients who had a catheterization procedure..

Despite the cardiac arrest occurrence rate was higher among males (2.0%) and the age over 40 years (1.9%), but these differences had no statistical significant with the occurrence rate of arrhythmia among STEMI patients who had a catheterization procedure ($p > 0.05$).

Table D11 in Appendix D: The results of pre- and post- catheterization blood tests (Hb, Creatinine, & Troponin) for STEMI patients who had a catheterization procedure. had no statistical significance difference related to age, with the exception of the mean of post catheterization hemoglobin level, which had a statistically significant difference attributable to age ($p = 0.045$), where the post catheterization hemoglobin mean level was higher among the group age who < 40 years compared to the age group who > 40 years (14.46 vs. 13 respectively).

History of previous PCI had no statistical significance (p value > 0.05) for the mean of pre- and post-catheterization of blood tests (Hb, creatinine, & troponin). See table D12 in Appendix D for more information.

History of previous CABG had no statistical significance (p value > 0.05) for the mean of pre- and post-catheterization of blood tests (Hb, creatinine, & troponin). See table D13 in Appendix D for more information.

History of Dyslipidemia had no statistical significance (p value > 0.05) for the mean of pre- and post-catheterization of blood tests (Hb, creatinine, & troponin). See table D14 in Appendix D for more information.

Table D15 in Appendix D: the development of hematoma had no statistically significant difference (p value > 0.05) attributed to the averages of pre- or post-catheterization blood tests (Hb, creatinine, & troponin). See table D15 for more information.

Table D16 in Appendix D: There is no statistically significant difference between the averages of pre- or post-catheterization blood tests (Hb, creatinine, & troponin) between the participants who developed arrhythmia in the ECG and those who did not, with the exception of the post catheterization hemoglobin average, as it was lower in the participants who developed arrhythmia in their ECG (11.8 vs. 13.1), and this difference was statistically significant ($p=0.026$).

History of MI had no statistical significance (p value > 0.05) for the mean of pre- and post-catheterization blood tests (Hb, creatinine, & troponin). See table D17 in Appendix D for more information.

Chapter Four

Discussion and Conclusion

4.1 Discussion

In a discussion chapter we provided the current study findings, in which the researcher presents a comprehensive critique of the results from their own point-of-view and compares the current findings with the previous literature results.

The current study outcomes corroborate those of Qamar et al.(2023),study, which found in comparison between gender, STEMI male patient largest compared to female patient who underwent Percutaneous coronary intervention.

Similar to this study Abdel-Ghany et al.(2021) also discover to combat coronary heart disease at the community level, programs that target the common modifiable cardiovascular risk factors—HTN, DM, CRF, and smoking—are essential.

Despite the presence of these differences between males and females as well as the age group, these differences did not have any statistical significance ($p > 0.05$) with the occurrence rate of patient who underwent a catheterization procedure complications among (STEMI) patient.

However, the occurrence rate of complications was higher among males compared to females . Likewise, complications occurred more among the groupage who over 40 years old compared to the age group under 40 years old , corroborate those of (Osman et al., 2021)

The present study's findings the highest percentage among STEMI patient who underwent a catheterization procedure patients, the occurrence rate of complications was higher among patients who had a history of IHD , previous CABG , and smoking the results found that these differences had no significant difference ($p > 0.05$).

On the other hand, history of CKD had a statistically significant difference ($p=0.001$) in the occurrence rate of complications among STEMI patient who underwent a catheterization procedure, as the occurrence rate of complications was higher among patients with a history of chronic renal failure than that of patients without a history of chronic renal failure as study (El-Ahmadi et al., 2019).

The results also showed that the percentage of smokers was high among STEMI patient who underwent a catheterization procedure, and it had a statistically significant difference between the smoking and non-smoking participants with the occurrence rate of complications ($p=0.023$) As study (Redfors et al., 2020).

Our result is in alignment with Batra et al.(2020)investigated the rate of catheter entry through the radial artery was the most widely used compared with femoral artery, the LAD artery was the most frequent diseased vessel , and the balloon and stent were the most common type of intervention.

The occurrence rate of complications by radial artery access are less than femoral artery, the right coronary artery and balloon & stent intervention were higher susceptible to complications.

Similar to the current study, Batra et al.(2020)also discovered that the arterial access method had a statistically significant difference ($p>0.001$) and the occurrence rate of hematoma among STEMI patient who underwent PCI, as hematoma occurred among patients who had a catheterization through the femoral artery more than radial artery.

The result showed that the diseased artery had a statistically significant difference ($p=0.05$) with the occurrence rate of arrhythmia in ECG among STEMI patient who underwent a catheterization as study (Khani et al., 2022)

The arrhythmia occurred more higher among the patients of the diseased right coronary artery and had a catheterization through the femoral artery route.

Similar to the current study showed that the occurrence rate of cardiac arrest among STEMI patient who underwent a catheterization procedure was higher among males and the age over 40 years , but these differences had no statistical significant with the occurrence rate of arrhythmia among STEMI patient who underwent a catheterization procedure ($p>0.05$).

The study by Samanta et al.(2019),which revealed that the results showed there was a statistically significant difference in the occurrence of cardiac arrest attributed to the history of IHD, CKD, and previous CABG among STEMI patient who underwent a catheterization procedure.

The occurrence of cardiac arrest was higher among the other previous medical history, but these other medical history were not statistically significant ($p > 0.05$) with the occurrence with cardiac arrest among STEMI patient who underwent a catheterization procedure.

The current study outcomes corroborate those of Batra et al.(2020)study, which found in the arterial catheter access and the catheterization medical procedures had a statistically significant difference with the occurrence rate of cardiac arrest among STEMI patient who underwent a catheterization procedure.

Cardiac arrest occurred more among patients who had a catheterization through the femoral artery and patient in the second stage.

The current study outcomes corroborate those of Separham et al.(2021) study ,The results of pre- and post- catheterization blood tests (Hb, Creatinine, & Troponin)for STEMI patient who underwent a catheterization procedure had no statistical significance difference related to age, with the exception of the mean of post catheterization hemoglobin level, which had a statistically significant difference attributable to age ($p=0.045$), where the post catheterization hemoglobin mean level was higher among the age group below 40 compared to the age group above 40 years.

History of diabetes , Dyslipidemia, previous PCI and previous CABG, had no statistical significance (p value > 0.05) for the mean of pre- and post-catheterization blood tests (Hb, creatinine, & troponin)..

The study by Hoffmann et al.(2022) Which revealed that the results showed there is a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin and creatinine related to the presence of a history of hypertension (p values < 0.05).

The average levels of hemoglobin were higher among the study participants who did not have a history of hypertension, while the average levels of creatinine were higher among those with a history of hypertension.

The study by Glerup et al.(2020), Which revealed that the results showed a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin related to the smoking (p values < 0.05). The average levels of hemoglobin were higher among the study participants who are smoker compared to the hemoglobin average for non-smokers.

Similar to the current study, Zhu et al.(2023) ,also discovered that the average levels of hemoglobin were lower among the study participants who have a CKD, while the average levels of creatinine were higher among those with a CKD.

There is a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin and creatinine and pre- catheterization troponin related to the presence of a history of CKD (p values < 0.05). While troponin after did not have any statistically significant difference.

The study by Yang & Huang .(2022)which revealed that the results showed the average levels of hemoglobin were lower among the study participants who have among patients developed complication, while the average levels of creatinine were higher among those developed complication.

Similar to the current study, Khalid et al.(2020), also discovered there is a statistically significant difference between the average levels of the mean of pre- and post-catheterization hemoglobin and creatinine related to the presence of a history of DM (p values < 0.05).

The current study outcomes corroborate those of Gkargkoulas et al.(2019)study, there is no statistically significant difference between the averages of pre- or post-catheterization blood tests (Hb, creatinine, & troponin) between the participants who developed arrhythmia in the ECG and those who did not, with the exception of the post catheterization hemoglobin average, as it was lower in the participants who developed arrhythmia in their ECG, and the difference was statistically significant($p=0.026$) Similar to the current study, Samanta et al.(2019), also discovered there is a statistically

significant difference between the average levels of the mean of pre- and post-catheterization creatinine, pre- catheterization troponin and post catheterization Hb among those develop cardiac arrest. Creatinine was higher before and after catheterization among the participants who had a cardiac arrest while hemoglobin in post catheterization was lower among the participants who has had cardiac arrest. While pre catheterization Hb and post catheterization troponin did not have any statistically significant difference.

The study by Homorodean et al.(2019), which revealed that the results the presence of a medical history of CKD had 15 times higher likely for the occurrence of cardiac arrest compared to others, as well as for the femoral arterial access used for PCI. Moreover, the diseased artery is 2 times higher for the occurrence of cardiac arrest, while for pre-catheterization pain is 15 times higher for the prediction of the heart

The study by Lapostolle et al.(2019), which revealed that the result higher use of Glycoprotein Iib/IIIa inhibitors and higher bleeding were all linked to morphine administration. For STEMI patients who underwent PCI, prudent morphine use is advised, with non-opioid analgesics preferred for non-severe acute pain.

4.1.1 Evidence to support

According to Batra et al.(2020). Indian Heart Journal for patients with STEMI, transradial access is a safer and more successful main PCI method than transfemoral access. The trans-radial approach was found to be linked to a noteworthy decrease in bleeding problems and post-procedure in-hospital mortality.

According to Lapostolle et al.(2019). "American Journal of Cardiovascular Drug higher use of Glycoprotein Iib/IIIa inhibitors, and higher bleeding were all linked to morphine administration. For STEMI patients who underwent PCI, prudent morphine use is advised, with non-opioid analgesics preferred for non-severe acute pain.

4.1.2 Incongruent Proof

However, according to Le May et al.(2020) JAMA cardiology found no difference in survival or other clinical end points when comparing the use of radial and femoral access for patients with STEMI referred for primary PCI, despite the fact that small, absolute differences in end points cannot be determined with certainty.

According to Eitel et al.(2020)The administration of morphine did not impact the clinical prognosis or myocardial damage in acute reperfused STEMI patients in our investigation. Smaller infarcts in patients who present early (≤ 120 min) with morphine may indicate a cardioprotective benefit; nevertheless, this data has to be evaluated in more carefully planned clinical trials.

In our study, which comprised 287 respondents, the majority were males (71.2%), and the age group over 40 years constituted the highest proportion (96.4%) among ST-segment elevation myocardial infarction (STEMI) patients who underwent a catheterization procedure. The most prevalent previous diseases among these patients were high blood pressure (42.1%), diabetes (31.7%), ischemic heart disease (30.2%), and smoking (62.6%). Our study revealed that there was a statistically significant difference between patients with and without a history of complications in the occurrence rate of the complications. When analyzing the smoking status and the presence of complications, it was observed that smoking level correlated with the development of complications observing the statistic value of $p = 0.023$. A and comparing them with previous research studies, Wichian et al. (2020) noted a similar trend in the outcomes.

The rate of all-cause mortality in patients with chronic kidney failure was significantly higher than that in patients without such a condition (50% vs. 6.9%, $p = 0.001$). Additionally, It entails that the majority of patients are male and their mean age is approximately 60 years.

According to Azzolini et al (2022) also analyzed the social participation status of primary care patients, health care system navigation, and patient experiences during the COVID-19 pandemic. found high proportion of masculine population percentage and higher population of patients above the age of fifty. Moderate to severe chronic kidney

disease According to Amon et al.(2022) put the rates of adverse events, which are in line with our study about chronic kidney failure.

Moreover, our work revealed that radial artery catheterization for access in the present population had lower complication profile compared to those patients who underwent femoral artery catheterization an observation akin to study conducted by Batra et al.(2020). However, it is important to note that 31 trials, 7462 participants confirmed that the radial approach was associated with a reduced risks of mortality, heart failure, and bleeding compared to the femoral approach.

Concerning the adverse events, Amon et al.(2022) have also pointed out that moderate to severe CKD predicted the development of the subsequent adverse events, which is consistent with our findings of a higher frequency of complications in patients with a history of chronic renal failure. Further, they reported that major bleeding conditions are detrimental in that, akin to our study, major bleeding events are unfavourable in the context of the study population. In a broader perspective our study supports previous studies looking for modifiable predictors of adverse outcomes in STEMI patients who undergo catheterization interventions. Additionally, we emphasize the effectiveness of radial artery access in terms of complications as compared to the femoral approach and the conclusion derived from the present literature.

In our study, catheterization procedures that were performed for patients with ST-segment elevation myocardial infarction or STEMI the occurrence rate of hematoma was significantly different based on the method used to access the arteries. Specifically, with reference to the occurrence of hematoma, patients who had their catheterization through the femoral artery experienced higher occurrence of hematoma compared to those who experienced catheterization through the radial artery (12. 5% vs. 0% respectively) and the P-value was equal to 0. 001.

Another similar study by Scherthaner et al.(2018), also aimed to establish the frequency of access site hematoma in patients undergoing percutaneous coronary intervention (PCI) for myocardial infarction with ST-segment elevation. They reported that access site morbidity used to be significantly higher with femoral access than in radial access group (hematoma: 24).

This may predict an overall trend across such studies, where femoral artery access is shown more likely than radial artery access to lead to development of hematoma in patients with STEMI undergoing catheterization.

Both the present work and prior research by Stone et al.(2014) are devoted to identifying factors contributing to poor outcomes in patients with STEMI undergoing catheterization. In this aspect, there is similarity in the kind of data analyzed which may include the patient characteristics, diseases or other conditions, procedures undertaken but rather the findings of the two types of studies differ together with the population under investigation.

Both articles reveal the following findings: There is no statistically significant difference in the rate of reinfarction or complications in terms of age or gender; Both studies report a slightly higher complication rate among male and those above forty years of age but the difference was not statistically significant. This is true, especially for hypertension, diabetes and chronic kidney disease (CKD), as was highlighted in the previous.

4.2 Recommendations

Based on the discussion of the current study's results, the researcher recommends the following:

- Receive targeted educational sessions to familiarize the staff of intensive care nurses on why important to continue ECG monitoring for identification of arrhythmias; to assess patients' hemodynamic status, especially in the context of heart failure symptoms; and provide individualized, more comfortable care.
- Enhance Vascular Access Protocols: Realize that femoral access seems to be associated with higher reinfarction rates; Attempt to perform more radial access PCI for the similar offending, if possible.
- Multivessel Disease Management: The chance is higher of reinfarction in the multivessel disease than in single-vessel disease. Have closer management and control strategies to these managed outpatients and also contemplate on doing total revascularization when relevant.

- **Optimize Stent Selection:** While drug-eluting stents (DES) were used in a majority of cases, stent selection should be carefully considered, especially in complex lesions, to minimize the risk of reinfarction.
- **Reduce Procedural Complications:** Lower fluoroscopy time and contrast volume during PCI to minimize the risk of complications, as increasing values of these measures were linked with reinfarction.
- **Standardize Care Pathways:** Two: Policies and procedures on the management of STEMI patients should be formulated to provide for streamlined care after PCI by adopting practices that were determined in this study.
- **Education and Training:** Work with other interventional cardiologists and support personnel to organize actual in-service education programs to update the knowledge of participants concerning procedural techniques for the management of various challenging cases and minimize reinfarction manifestations.
- **Data Monitoring and Reporting:** Implement PCIs that will allow for the constant tracking of supervisory reviews of hospitals to assess PCI's reinfarction rates so as to check on any deviations from best practices.
- **Further Studies on Vascular Access:** Do additional studies to ensure the radial approach better than the femoral approach for complications' reduction in assorted patient populations.
- **PI:** Fostering an understanding of method uncertainties, patient risks and reinfarction mechanisms will facilitate more effective targeted interventions in high risk patients post-PCI.

4.3 Limitations

The study, on the other hand, was limited by:

1. This study involved a retrospective cohort of patients who had PCI after experiencing an ST-elevation myocardial infarction. In STEMI patients, we discovered a few significant clinical symptoms, co-morbidities, and aberrant ECG readings.
2. The study's participants were drawn from just one hospital. It is best to conduct a regional or even national investigation before extrapolating the findings to the entire population.
3. Due to the nonrandomized retrospective cohort design, there may have been some missing or underreported data in this study.

List of Abbreviation

Abbreviation	Full Form
ACS	Acute Coronary Syndrome
CKD	Chronic Kidney Disease
DM	Diabetes mellitus
HB	Hemoglobin
HTN	Hypertension
IHD	Ischemic heart disease
IRB	Institutional Review Board
LAD	Left anterior descending artery
LCK	Left circumflex artery
MACCE	Major Adverse Cardiovascular And Cerebrovascular
MACE	Major Adverse Cardiac Events
MI	Myocardial Infarction
P-value	Probability Value
PCI	Percutaneous Coronary Intervention
RCA	Right coronary artery
SPSS	Statistical package for social sciences
STEMI	ST- segment Elevation Myocardial Infarction
TR-band	Trans radial band
UPAT	Universal pain assessment Tool

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Appendixes

Appendix A

Data Collection Tool

- **Baseline patient characteristic**

Age	18-40 years	41-70 years
Gender	Male	Female

- **Previous Medical history**

Ischemic heart disease	Yes ()	NO ()
Previous myocardial infarction	Yes ()	NO ()
Previous PCI	Yes ()	NO ()
Previous CABG	Yes ()	NO ()
Hypertension	Yes ()	NO ()
Diabetes Mellitus	Yes ()	NO ()
Smoker	Yes ()	No ()
Dyslipidemia	Yes ()	NO ()
Chronic kidney disease	Yes ()	NO ()
Free	Yes ()	NO ()

- **Procedure Characteristic**

Arterial Access	Radial Artery	Femoral Artery
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- **Diseased vessels**

Left anterior descending artery(LAD)
Right Coronary Artery (RCA)
Left Circumflex artery (LCX)
Chronic total occlusion
Multi-vessel disease

- **Lab profiles**

Pre PCI	Post PCI
Hemoglobin (g/dl)	Hemoglobin (g/dl)
Creatinine (mg/dl)	Creatinine (mg/dl)
Troponin(ng/dl)	Troponin(ng/dl)

- **ECG**

Pre PCI	Post PCI
Sinus rhythm	Sinus rhythm
ST elevation	ST elevation
ST depression	ST depression
T wave inversion	T wave inversion

- **Universal Pain scale: (PRE PCI)**

No pain (0)	Mild (1-3)	Moderate (5-7)	Sever (8-10)
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- **Universal Pain scale; (POST PCI)**

No pain (0)	Mild (1-3)	Moderate (5-7)	Sever (8-10)
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- **Procedural characteristics:**

Balloon angioplasty	Yes ()	NO ()
Stent angioplasty	Yes ()	NO ()
Stent and balloon	Yes ()	NO ()
Second stage	Yes ()	NO ()
Medical Treatment	Yes ()	NO ()

- **Outcomes of PCI:**

Hemorrhagic complications	Yes ()	NO ()
Hematoma, pseudoaneurysm or other vascular complication	Yes ()	NO ()
Coronary artery perforation	Yes ()	NO ()
Arrhythmia complications	Yes ()	NO ()
Acute stent thrombosis	Yes ()	NO ()
Cardiac death	Yes ()	NO ()
Myocardial infarction	Yes ()	NO ()
Revascularization	Yes ()	NO ()

Appendix B

Consent Form

انا الطالبة حنين فتحي محمد القصاروة في كلية الدراسات العليا للتربص من جامعة النجاح الوطنية تحت اشراف الدكتور جمال قدومي، نود اخذ الموافقة منكم للمشاركة في دراسة وجمع معلومات عن نسبة الانتشار والتنبوات والنتائج لمرضى احتشاء عضلة القلب الذين خضعوا لتدخل عن طريق الجلد والبيانات التي يتم جمعها سيتم التعامل معها بسرية تامة، واذ لن يتم جمع اسم المريض وسيتم التعامل معهم بأرقام بيانية فقط، كما وان المعلومات لن تصل الا لباحث فقط ولن تستخدم الا لأغراض خاصة بالمشروع، ويمكن للمشاركة الانسحاب من المشروع في أي وقت يريده ولن تكون هناك عقوبة على الانسحاب او عدم مشاركته أي لن يؤثر على المريض او علاجه او رعايته، ومشاركة المريض قد يعود بالنفع عليه.

عنوان الدراسة:

الانتشار والتنبوات والنتائج لمرضى احتشاء عضلة القلب الذين خضعوا لتدخل تاجي عن طريق الجلد

الهدف من الدراسة:

هدفت هذه الأطروحة إلى تقييم تأثير إجراء القسطرة على مستوى ألم الصدر والتغيرات في تخطيط القلبالذين يعانون من احتشاء عضلة القلب والذين خضعوا لإجراء قسطرة في مستشفى ابن سينا التخصصي

فترة المشاركة في الدراسة:

تبدأ مشاركة المريض من وقت دخوله الى قسم الطوارئ حتى خروجه من قسم العناية القلبية المكثفة بعد

اجراء القسطرة القلبية

اجراء الدراسة:

بعد الحصول على موافقة جامعة النجاح الوطنية ووزارة الصحة ومستشفى ابن سينا التخصصي، عدت إلى نظام الكمبيوتر يوميًا وأبحث عن مرضى احتشاء عضلة القلب بارتفاع القطعة ST الذين خضعوا لتدخل تاجي عن طريق الجلد خلال هذه الفترة من أغسطس 2022 إلى أكتوبر 2023. بعد ذلك، كنت أسجل جميع المعلومات المسجلة عن هؤلاء المرضى. يتم تسجيل كل شيء عن المريض من خلال النظام من وقت الدخول حتى خروجه من المستشفى.

في مستشفى ابن سينا التخصصي المريض الذي تم إدخاله إلى قسم الطوارئ يشكو من ألم في الصدر، يتم وضع المريض على السرير، يتم توصيله بجهاز مراقبة القلب، أخذ العلامات الحيوية، أخذ التاريخ المرضي من المريض أو الأسرة عن طريق الممرضة والطبيب، ووضع الحقن الوريدية، أخذ عينة دم لاجراء الفحوصات اللازمة، بناءً على طلب الطبيب، نقوم بإجراء تخطيط القلب للمريض، لمراقبة أي تغييرات، واعطاء جرعة من الأسبرين 300 مليغرام وبلافيكس 600 مليغرام، وقياس إذا كان المريض يعاني من آلام شديدة في الصدر، فإنه يعطي مسكن حسب طلب الطبيب واعداد المريض للقسطرة ويتم اجراء صورة تلفزيونية للقلب بواسطة اخصائي القلب ثم يتم تحويل المريض الى قسم العناية القلبية المكثفة والحصول على نموذج الموافقة وتنظيف المنطقة الكعبية والفخذية ثم يتم نقله الى قسم القسطرة.

بعد عملية القسطرة:

يعود المريض من قسطرة القلب يتم وضعه على السرير ويتم توصيله بجهاز مراقبة القلب للعلامات الحيوية التي يتم التقاطها وتسجيلها ومراقبة مكان العملية من أي نزيف أو ورم دموي.

يتم سحب ضمادة الضغط الشرياني تدريجيا حسب سياسة المستشفى (2 مل كل 15 دقيقة) ونقوم بإجراء تكرار تخطيط القلب بعد القسطرة لمراقبة اي تغييرات في تخطيط كهرباء القلب وقياس درجة الالم بعد القسطرة اذا تحسنت

سرية المعلومات:

لحماية خصوصية المريض تم تسجيل النتائج من رمز سري ، وتم تسجيل فقط اسم المريض في نموذج الموافقة وتم الابقاء على رمز سري معين في ملف مغلق ومحمي بعناية ويكون الوصول لهذه المعلومات يتم فقط من قبل الباحث الرئيسي للدراسة والافراد المرخص لهم، مع ذلك قد تتم مراجعة سجلات الدراسة من قبل اللجنة الاخلاقية التي تجري على البشر في جامعة النجاح الوطنية وتمت مراقبة السجلات الخاصة بك ويمكن مراجعتها دون انتهاك السرية وأي بيانات يمكن أن تنتج عن الدراسة لن تذكر أسماء المشاركين في الدراسة

المشاركة الطوعية/ الانسحاب:

ان مشاركة المريض في هذه الدراسة طوعية تماما، يمكنك سحب موافقة المريض في أي وقت تريده، وإذا اخترت عدم مشاركة في الدراسة او انسحابه في وقت لاحق من هذه الدراسة لن تتأثر الرعاية الطبية المقدمة له او تتغير بأي شكل من الاشكال

إذا كنتم ترغبون بانسحاب المريض من الدراسة، يمكنك الاتصال بالباحث

الاتصال للحصول على اجوبة وعلى اسئلتك ومخاوفك وشكوك:

إذا كان لديكم أي اسئلة، مخاوف او شكاوي يرجى الاتصال بالباحث للدراسة

الموافقة على مشاركة في الدراسة:

لقد قرأنا الوصف اعلاه من هذه الدراسة وقد تمت الإجابة على جميع اسئلتنا، ونحن نعلم بإمكاننا ان نرفض مشاركة المريض او انسحابه من الدراسة في أي وقت وعلى ذلك نعطي موافقة على مشاركة المريض في هذه الدراسة.

رقم الهاتف

الباحث

Appendix C

IRB

An-Najah National
University
Faculty of Medicine &
Health Sciences
Institutional Review Board



جامعة النجاح الوطنية
كلية الطب وعلوم الصحة
لجنة أخلاقيات البحث العلمي

Ref: Mas . May. 2023/3

IRB Approval Letter

Title of Research:

Prevalence, Predictors, and Outcomes for ST- segment elevation myocardial infarction patient undergoing percutaneous coronary intervention

Submitted by:

Haneen Fathe Mohammad Alqassarwe

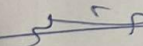
Supervisor:

Jamal Qadoumi

Approved:

4th May. 2023

Your Study Title "*Prevalence, Predictors, and Outcomes for ST- segment elevation myocardial infarction patient undergoing percutaneous coronary intervention .*" reviewed by An-Najah National University IRB committee and was approved on 4th . 2023


Hasan Fitian, MD

IRB Committee Chairman



Appendix D

Tables of Study

Table D1

pre and post lab (Hb, creatinine & troponin) according to participant smoking

	Smoker	N	Mean	Std. D	T	P value
Pre Hb	No	104	12.8274	2.15975	-5.846	.000
	Yes	174	14.3459	2.05647		
Pre Creatinine	No	104	.8723	.36218	-1.254	.211
	Yes	173	.9514	.57841		
Pre Troponin	No	104	.4427	1.86110	-.939	.349
	Yes	173	.7635	3.17058		
Post Hb	No	104	12.4515	2.08803	-4.078	.000
	Yes	174	13.5140	2.11066		
Post Creatinine	No	104	.8312	.33706	-.207	.836
	Yes	173	.8415	.43512		
Post Troponin	No	104	.4000	.89106	-1.651	.100
	Yes	173	1.6868	7.91097		

Table D2

Pre and post lab (Hb, creatin & troponin) according to participant with history of CKD

	CKD	N	Mean	Std. D	T	P value
Pre Hb	No	274	13.8226	2.199	2.822	.005
	Yes	4	10.7100	1.06886		
Pre Creatinine	No	273	.8837	.33716	-13.037	.000
	Yes	4	3.5150	2.10118		
Pre Troponin	No	273	.5685	2.52519	-3.814	.000
	Yes	4	5.7327	9.18194		
Post Hb	No	274	13.1645	2.13873	3.109	.002
	Yes	4	9.8325	.49135		
Post Creatinine	No	273	.8055	.24299	-14.807	.000
	Yes	4	3.0375	1.69049		
Post Troponin	No	273	1.1799	6.32424	-.518	.605
	Yes	4	2.8250	4.62269		

Table D3*pre and post lab (Hb, creatnin& troponin) according to participant outcome(complication)*

	Outcome:Complication	N	Mean	Std. D	T	P value
Pre Hb	No	192	13.5338	2.34009	-	.006
	Yes	86	14.3226	1.81268	2.774	
Pre Creatinine	No	191	.9679	.59252	2.272	.024
	Yes	86	.8190	.20112		
Pre Troponin	No	191	.5918	2.42702	-4.61	.645
	Yes	86	.7569	3.38108		
Post Hb	No	192	12.8621	2.22236	-	.003
	Yes	86	13.6847	1.90890	2.975	
Post Creatinine	No	191	.8790	.46671	2.588	.010
	Yes	86	.7458	.14694		
Post Troponin	No	191	1.1107	6.27199	-3.66	.715
	Yes	86	1.4103	6.39318		

Table D4*pre and post lab (Hb, creatnin& troponin) according to participant cardiac arrest*

	Cardiac Arrest	N	Mean	Std. D	T	P value
Pre Hb	No	273	13.7814	2.22644	.201	.841
	Yes	5	13.5800	1.84716		
Pre Creatinine	No	272	.8808	.36803	-12.215	.000
	Yes	5	3.1434	1.55082		
Pre Troponin	No	272	.5908	2.74588	-2.350	.019
	Yes	5	3.4876	1.41364		
Post Hb	No	273	13.1766	2.13317	3.490	.001
	Yes	5	9.8400	.46690		
Post Creatinine	No	272	.8222	.34404	-4.953	.000
	Yes	5	1.6816	1.46386		
Post Troponin	No	272	1.1903	6.35567	-.260	.795
	Yes	5	1.9310	1.01103		

Table D5

Demographics and complication among ST- segment elevation myocardialinfarction patients who underwent a catheterization procedure

		Outcome (complication)			X^2	P value
		Total	No	Yes		
Age	18-40	10(3.6%)	10(100.0%)	0(0.0%)	.848	.357
	40-70	268(96.4%)	247(92.2%)	21(7.8%)		
Gender	Male	198(71.2%)	181(91.4%)	17(8.6%)	1.049	.306
	Female	80(28.8%)	76(95.0%)	4(5.0%)		

Table D6

Demographic and Hematoma among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure

		Hematoma			X^2	P value
		Total	No	Yes		
Age	18-40	10(3.6%)	10(100.0%)	0(0.0%)	.075	.784
	40-70	268(96.4%)	266(99.3%)	2(0.7%)		
Gender	Male	198(71.2%)	196(99.0%)	2(1.0%)	.814	.367
	Female	80(28.8%)	80(100.0%)	0(0.0%)		

Table D7

Previous medical history and hematoma among STEMI patients who underwent a catheterization procedure

		Hematoma			X^2	P value
		Total	No	Yes		
IHD	No	194(69.8%)	193(99.5%)	1(0.5%)	.374	.541
	Yes	84(30.2%)	83(98.8%)	1(1.2%)		
MI	No	275(98.9%)	273(99.3%)	2(0.7%)	.022	.882
	Yes	3(1.1%)	3(100.0%)	0(0.0%)		
PCI	No	228(82.0%)	226(99.1%)	2(0.9%)	.442	.506
	Yes	50(18.0%)	50(100.0%)	0(0.0%)		
CABG	No	268(96.4%)	266(99.3%)	2(0.7%)	.075	.784
	Yes	10(3.6%)	10(100.0%)	0(0.0%)		
HTN	No	161(57.9%)	160(99.4%)	1(0.6%)	.052	.820
	Yes	117(42.1%)	116(99.1%)	1(0.9%)		
DM	No	190(68.3%)	188(98.9%)	2(1.1%)	.933	.334
	Yes	88(31.7%)	88(100.0%)	0(0.0%)		
Smoker	No	104(37.4%)	104(100.0%)	0(0.0%)	1.204	.273
	Yes	174(62.6%)	172(98.9%)	2(1.1%)		
Dyslipidemia	No	251(90.3%)	249(99.2%)	2(0.8%)	.217	.642
	Yes	27(9.7%)	27(100.0%)	0(0.0%)		
CKD	No	274(98.6%)	272(99.3%)	2(0.7%)	.029	.864
	Yes	4(1.4%)	4(100.0%)	0(0.0%)		
Free	No	192(69.1%)	190(99.0%)	2(1.0%)	.902	.342
	Yes	86(30.9%)	86(100.0%)	0(0.0%)		

Table D8

Demographic and Arrhythmia among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure

		Arrhythmia			X^2	P value
		Total	No	Yes		
Age	18-40	10(3.6%)	10(100.0%)	0(0.0%)	.550	.458
	40-70	268(96.4%)	254(94.8%)	14(5.2%)		
Gender	Male	198(71.2%)	187(94.4%)	11(5.6%)	.388	.533
	Female	80(28.8%)	77(96.3%)	3(3.8%)		

Table D9

Previous medical history and Arrhythmia among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure

		Arrhythmia			X^2	P value
		Total	No	Yes		
IHD	No	194(69.8%)	184(94.8%)	10(5.2%)	.019	.891
	Yes	84(30.2%)	80(95.2%)	4(4.8%)		
MI	No	275(98.9%)	261(94.9%)	14 (5.1%)	.161	.688
	Yes	3(1.1%)	3(100.0%)	0(0.0%)		
PCI	No	228(82.0%)	215(94.3%)	13(5.7%)	1.175	.278
	Yes	50(18.0%)	49(98.0%)	1(2.0%)		
CABG	No	268(96.4%)	255(95.1%)	13(4.9%)	.534	.465
	Yes	10(3.6%)	9(90.0%)	1(10.0%)		
HTN	No	161(57.9%)	153(95.0%)	8(5.0%)	.004	.952
	Yes	117(42.1%)	111(94.9%)	6(5.1%)		
DM	No	190(68.3%)	178(93.7%)	12(6.3%)	2.056	.152
	Yes	88(31.7%)	86(97.7%)	2(2.3%)		
Smoker	No	104(37.4%)	101(97.1%)	3(2.9%)	1.608	.205
	Yes	174(62.6%)	163(93.7%)	11(6.3%)		
Dyslipidemia	No	251(90.3%)	237(94.4%)	14(5.6%)	1.586	.208
	Yes	27(9.7%)	27(100.0%)	0(0.0%)		
CKD	No	274(98.6%)	261(95.3%)	13(4.7%)	3.382	.066
	Yes	4(1.4%)	3(75.0%)	1(25.0%)		
Free	No	192(69.1%)	184(95.8%)	8(4.2%)	.981	.322
	Yes	86 (30.9%)	80(93.0%)	6(7.0%)		

Table D10

Demographic and Cardiac arrest among ST- segment elevation myocardial infarction patients who underwent a catheterization procedure

		Cardiac Arrest			X^2	P value
		Total	No	Yes		
Age	18-40	10(3.6%)	10(100.0%)	0(0.0%)	.190	.663
	40-70	268(96.4%)	263(98.1%)	5(1.9%)		
Gender	Male	198(71.2%)	194(98.0%)	4(2.0%)	.191	.662
	Female	80(28.8%)	79(98.8%)	1(1.3%)		

Table D11

pre and post lab (Hb, creatinine & troponin) according to participant age

	Age	N	Mean	Std. D	T	P value
Pre Hb	18-40	10	14.75	1.76	1.415	.158
	40-70	268	13.74	2.22		
Pre Creatinine	18-40	10	.926	.301	.027	.978
	40-70	267	.921	.515		
Pre Troponin	18-40	10	.155	.197	-.570	.569
	40-70	267	.661	2.80		
Post Hb	18-40	10	14.46	1.83	2.014	.045
	40-70	268	13.06	2.15		
Post Creatinine	18-40	10	.812	.250	-.206	.837
	40-70	267	.838	.405		
Post Troponin	18-40	10	.154	.195	-.536	.592
	40-70	267	1.243	6.41		

Table D12

pre and post lab (Hb, creatinine & troponin) according to participant previous history of PCI

	PCI	N	Mean	Std. D	T	P value
Pre Hb	No	228	13.7755	2.02869	-.037	.970
	Yes	50	13.7884	2.95517		
Pre Creatinine	No	227	.9186	.54196	-.212	.832
	Yes	50	.9355	.32158		
Pre Troponin	No	227	.7316	3.00912	1.140	.255
	Yes	50	.2413	.86018		
Post Hb	No	228	13.1110	2.09338	-.091	.927
	Yes	50	13.1418	2.46789		
Post Creatinine	No	227	.8368	.43436	-.081	.936
	Yes	50	.8418	.18256		
Post Troponin	No	227	1.4293	6.93675	1.271	.205
	Yes	50	.1797	.55198		

Table D13*pre and post lab (Hb, creatinine & troponin) according to participant previous history of CABG*

	CABG	N	Mean	Std. D	T	P value
Pre Hb	No	268	13.7840	2.21975	.239	.811
	Yes	10	13.6130	2.26787		
Pre Creatinine	No	267	.9152	.49649	-1.092	.276
	Yes	10	1.0941	.78758		
Pre Troponin	No	267	.6321	2.79247	-.341	.733
	Yes	10	.9349	1.38915		
Post Hb	No	268	13.1552	2.13691	1.547	.123
	Yes	10	12.0810	2.64354		
Post Creatinine	No	267	.8374	.40437	-.056	.955
	Yes	10	.8447	.29391		
Post Troponin	No	267	1.2196	6.41402	.217	.828
	Yes	10	.7787	.98232		

Table D14*pre and post lab (Hb, creatinine & troponin) according to participant Dyslipidemia*

	Dyslipidemia	N	Mean	Std. D	T	P value
Pre Hb	No	251	13.8224	2.25269	1.023	.307
	Yes	27	13.3630	1.84352		
Pre Creatinine	No	250	.9348	.52792	1.306	.193
	Yes	27	.8004	.24992		
Pre Troponin	No	250	.7079	2.89117	1.192	.234
	Yes	27	.0432	.12016		
Post Hb	No	251	13.1178	2.17660	.029	.977
	Yes	27	13.1052	2.04600		
Post Creatinine	No	250	.8433	.41481	.711	.478
	Yes	27	.7856	.22775		
Post Troponin	No	250	1.3168	6.61976	.909	.364
	Yes	27	.1566	.60118		

Table D15*pre and post lab (Hb, creatinine & troponin) according to participant hematoma*

	Hematoma	N	Mean	Std. D	T	P value
Pre Hb	No	276	13.7726	2.22449	-.462	.645
	Yes	2	14.5000	.56569		
Pre Creatinine	No	275	.9225	.50971	.297	.767
	Yes	2	.8150	.50205		
Pre Troponin	No	275	.6471	2.76306	.285	.776
	Yes	2	.0885	.12233		
Post Hb	No	276	13.1210	2.16778	.404	.686
	Yes	2	12.5000	.42426		
Post Creatinine	No	275	.8380	.40114	.169	.866
	Yes	2	.7900	.42426		
Post Troponin	No	275	1.2118	6.32201	.251	.802
	Yes	2	.0885	.12233		

Table D16*pre and post lab (Hb, creatinine & troponin) according to participant arrhythmia*

	Arrhythmia	N	Mean	Std. D	T	P value
Pre Hb	No	264	13.8164	2.22755	1.262	.208
	Yes	14	13.0500	1.94855		
Pre Creatinine	No	263	.9211	.51637	-.079	.937
	Yes	14	.9321	.35087		
Pre Troponin	No	263	.6657	2.82302	.591	.555
	Yes	14	.2188	.37604		
Post Hb	No	264	13.18	2.13549	2.243	.026
	Yes	14	11.86	2.33252		
Post Creatinine	No	263	.8384	.40372	.128	.898
	Yes	14	.8243	.34736		
Post Troponin	No	263	1.2549	6.46108	.585	.559
	Yes	14	.2426	.45912		

Table D17*pre and post lab (Hb, creatinine & troponin) according to participant MI*

	MI	N	Mean	Std. D	T	P value
Pre Hb	No	275	13.7728	2.22035	-.357	.721
	Yes	3	14.2333	2.31589		
Pre Creatinine	No	274	.9213	.51136	-.108	.914
	Yes	3	.9533	.18771		
Pre Troponin	No	274	.6499	2.76775	.395	.693
	Yes	3	.0170	.02339		
Post Hb	No	275	13.1198	2.14906	.239	.812
	Yes	3	12.8200	3.70907		
Post Creatinine	No	274	.8373	.40223	-.155	.877
	Yes	3	.8733	.22591		
Post Troponin	No	274	1.2055	6.33243	.046	.963
	Yes	3	1.0373	1.78979		

Appendix E

Facilitating the research mission of the Professional and Ethical Issues Committee of IbnSina Hospital Administration

حضرة الاخوة الكرام/ كلية التمريض/ جامعه النجاح الوطنية،
الزميلة العزيزة حنين قصاروة،،

من مبدأ حرص ادارة مستشفى ابن سينا التخصصي على دعم
البحث العلمي والمسيرة التعليمية،
ونظرا لاستيفاءكم المتطلبات الاساسية (تسهيل المهمة البحثية+
IRB) للجنة القضايا المهنية الأخلاقية التابعة لإدارة مستشفى
ابن سينا التخصصي، فإنه يسرنا اعلامكم بالموافقة على
طلبكم الخاص بالبحث العلمي المقدم من قبلكم والتابع لجامعة
النجاح الوطنية،

كما ويشترط لدينا:

1. تسليم ادارة المستشفى صورة عن نتيجة
الدراسة التي ستجرى في مستشفى ابن سينا
التخصصي تبعا للاستبيان الذي ستعاب
مدخلاته من المستشفى، وذلك للتوثيق.
2. تحديد موعد البدء بالدراسة في مستشفى
ابن سينا التخصصي والفترة التي ستجرى
عليها الدراسة من قبلكم.

راجين ان لا تترددو بالتواصل معنا متى شئتم،
تقبلو منا فائق الاحترام،،



جامعة النجاح الوطنية
كلية الدراسات العليا

الانتشار والتنبؤات والنتائج لمرضى احتشاء عضلة القلب بارتفاع
اس تيالذي يخضع لتدخل تاجي عن طريق الجلد

إعداد

حنين فتحي القصاروة

إشراف

د. جمال قدومي

قدمت هذه الرسالة استكمالاً لمتطلبات الحصول على درجة الماجستير في تريض العناية المكثفة، من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس - فلسطين.

2024

الانتشار والتنبؤات والنتائج لمرضى احتشاء عضلة القلب بارتفاع اس تي الذي يخضع لتدخل تاجي عن طريق الجلد

إعداد

حنين فتحي القصاروة

إشراف

د. جمال قدومي

الملخص

مقدمة: يعد العمر والجنس والتدخين والتاريخ المرضي السابق لمرضى السكري ومرضى الكلى المزمن وامراض القلب وامراض ارتفاع ضغط الدم عامل خطر لمرضى احتشاء عضلة القلب الذين خضعوا للتدخل التاجي عن طريق الجلد ويزداد خطر الوفاة عند حدوث السكتة القلبية لدى مرضى احتشاء عضلة القلب الذين خضعوا للتدخل التاجي عن طريق الجلد.

الهدف: هدفت هذه الأطروحة إلى تقييم تأثير إجراء القسطرة على مستوى ألم الصدر والتغيرات في تخطيط القلب الذين يعانون من احتشاء عضلة القلب والذين خضعوا لإجراء قسطرة في مستشفى ابن سينا التخصصي.

الطرق: استخدمت الدراسة دراسة اترابية كمية بأثر رجعي تم الحصول على بيانات عينة مكونة من 278 مريضاً بالغاً مصاباً باحتشاء عضلة القلب النصفية تتراوح أعمارهم بين 18 و70 عاماً من ملف المريض بعد التدخل التاجي عن طريق الجلد وتم الحصول عليها من نظام المعلومات المحوسب في المستشفى وموافقة مجلس المراجعة المؤسسية في جامعة النجاح الوطنية.

النتائج: هناك اختلاف في تاريخ مرض الكلى المزمن والتدخين ومتوسط مستويات الهيموجلوبين والكرياتنين قبل وبعد القسطرة عند مستوى 0.05 في حدوث المضاعفات بين مرضى احتشاء عضلة القلب الذين خضعوا لإجراء القسطرة.

هناك اختلاف كبير في الجنس والتدخين وتاريخ الإصابة بالسكري وتاريخ الإصابة بالضغط ومرضى الكلى المزمن مع متوسط مستويات الهيموجلوبين قبل وبعد القسطة والكرياتنين والتروبونين بين مرضى احتشاء عضلة القلب الذين خضعوا لإجراء القسطة.

تاريخ مرض الكلى المزمن وأمراض القلب وتحويل مسار الشريان التاجي والوصول الى الشرايين ومتوسط مستويات متوسط الكرياتنين قبل وبعد القسطة والتروبونين قبل القسطة والهيموجلوبين بعد القسطة هناك اختلاف كبير بينهم وبين السكتة القلبية بين مرضى احتشاء عضلة القلب الذين خضعوا لإجراء القسطة.

كان لطريقة الوصول الشرياني فرق ذو دلالة احصائية مع معدل حدوث ورم دموي بين مرضى احتشاء عضلة القلب الذين خضعوا لإجراء القسطة كما حدث ورم دموي بين المرضى الذين اجريت لهم قسطة من خلال الشريان الفخذي اكثر من الشريان الكعبري.

كان لدى الشريان المصاب فرق ذو دلالة احصائية مع معدل حدوث عدم انتظام دقات القلب في تخطيط القلب بين مرضى احتشاء عضلة القلب الذين خضعوا لإجراء قسطة حيث كان عدم انتظام دقات القلب بشكل اعلى بين مرضى الشريان التاجي الايمن للمريض والذين خضعوا للقسطة عبر الشريان الفخذي.

الاستنتاج: إن مرضى احتشاء عضلة القلب الذين خضعوا لتدخل تاجي عن طريق الجلد معرضون لخطر حدوث مضاعفات مثل الورم الدموي وعدم انتظام ضربات القلب والسكتة القلبية إن المراقبة والإدارة المبكرة أمران بالغ الأهمية، وخاصة للمرضى الذين تزيد أعمارهم عن 40 عامًا، والذكور، والمدخنين، وأولئك الذين يعانون من أمراض مصاحبة مثل مرض السكري وارتفاع ضغط الدم ومرضى الكلى المزمن ومرضى القلب التاجي. وفقًا لنتائج الدراسة الحالية، فإن معدل انتشار احتشاء عضلة القلب لدى الأشخاص الذين تزيد أعمارهم عن 40 عامًا وأقل من 70 عامًا كان (69.4% مقابل 3.6%) على التوالي لذلك، بناءً على نتائج الدراسات التي تمت مراجعتها وإدراجها في التحليل التلوي، تم الإبلاغ عن أن معدل انتشار احتشاء

عضلة القلب لدى الأفراد الذكور الذين تزيد أعمارهم عن 70 عامًا كان أعلى، وهو ما يعتبر تحذيرًا لصناع السياسات الصحية بشأن أهمية هذا العمر لإجراءات التشخيص والكشف عن احتشاء عضلة القلب.

الكلمات المفتاحية: القسطرة، احتشاء عضلة القلب النصفية، السكتة القلبية، ورم دموي، عدم انتظام ضربات القلب، مرض القلب، مرض الكلى المزمن.