Factors Affecting Quality of Life Among Patients with Coronary Artery Disease

A Dissertation Submitted

By

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To

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In

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(بسم الله الرحمن الرحيم)

وَلَقَدْ نَعْلَمُ أَنَّكَ يَضِيقُ صَدْرُكَ بِمَا يَقُولُونَ فَسَبِّحْ بِحَمْدِ رَبِّكَ وَكُن مِّنَ السَّاجِدِينَ وَاعْبُدْ رَبَّكَ حَتَّى يَأْتِيَكَ الْيَقِينُ ﴿97﴾

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We, the examining committee, certify that we have read this dissertation entitled **(Factors Affecting Quality Of Life Among Patients With Coronary Artery Disease)** submitted by **Iman Qasim Kteo,** from the Department of Family and Community Health Nursing, and we have examined the student in its contents, and what is related to it and we decide that it is adequate for awarding the **(Doctorate of Philosophy in Nursing)** with specialty of **(Adult Nursing)** at an estimate of (   ).

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Dedication

To the most prominent man in my life who motivated me to persevere throughout my life (dear father) ,To the giving heart (My beloved mother)

To my best friend and partner, my husband... To my children (Fadhel & Mahdi)

To the one who left us in his body but not in his soul, To my second mother, who encouraged and supported me in my studies and persevered through hardships in order for my accomplishment, to (the late Fathia Abdul-Hur), God have mercy on her

My sisters & brother with my love…….

My country Iraq….

To all of them: I dedicate this work, which I ask Allah Almighty to accept sincerely....

Iman Qasim Alhussein

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Acknowledgement

Abstract

Coronary artery disease is the common cause of death globally, it can effect on patient physical , emotional , social and environmental aspects , coronary artery disease can disrupt the patient quality of life. Fortunately, ischemic heart disease can be treated successfully with lifestyle changes, medicines, and surgical procedures. Early recognition of the risk factors and primary prevention have significantly decreased the morbidity and mortality associated with CAD.

The objectives of the study are to Asses patients quality of life after coronary artery disease, find out the relationship between the quality of life for patients who complain from CAD and the demographical data and find out the relationship between the quality of life for patient with CAD and their clinical information.

Descriptive cross sectional study design was selected to achieve the objectives of the study. Non probability (purposive) sample of 120 patients (male and female) were selected to study the factors affecting quality of life for patients with coronary artery disease in Al-Najaf Al-Ashraf city.

The results were represent that the highest percentage for age categories were up to 55 year old, for gender were male patients, highest percentage were primary school graduate, about occupation were a house wife, marital status were married, regarding the monthly income had insufficient and majority of study sample lived in urban areas. The result of clinical information about the study sample, the highest percentage were non-smoking, about the duration of smoking per years were between the (11 – 20) years, regarding to chronic disease the highest percentage indicated (Hypertension and Hyperlipidemia, related to the body mass indix were had overweight , Concerning the duration of disease (years),

the highest percentage were equal and less than 5 years , regarding to number of blocked arteries majority of study subjects had two blocked arteries and concerning the cardiac catheterization majority of study subjects had both diagnostic and treatment catheterization. According to finding of the study, the overall assessment of study subject quality of life were poor, there were high-significant relationship between the study subjects (monthly income and number of blocked arteries) with their overall assessment of (QoL) at p-value less than 0.05.

The study concluded that, the quality of life is based on the individual perceptions to their various life aspect. The study declared that there were many independent factors that may have an effect on the individual quality of life. It is necessary to identify the factors that influence QoL. This will aid healthcare providers in determining the best interventions, improving health, and ensuring a maintained or improved QoL, which is significant for patients with coronary artery disease management. The study recommended additional research of factors that have not previously been investigated, as well as further research to determine other variables that may have a greater effect on life satisfaction, are also should be study.

Table of content

List of abbreviations

Items	Meaning
%	percent
$\chi 2$	Chi- square
$\leq$	Less than or equal.
$\geq$	Greater than or equal.
ACC	American College of Cardiology
ACE	Angiotensin converting enzyme
ACS	Acute coronary syndrome
AHA	American heart association
ANOVA	Analysis of variance
ASCVD	Atherosclerotic cardiovascular disease
AV	Atrioventricular node
BCE	before common era
BDI	Beck Depression Inventory
BMI	body mass index
BNP	brain natriuretic peptide
BP	Blood pressure
CABG	Coronary artery bypass grafting
CAD	Coronary artery disease
CCU	Cardiac care unit
CE	common era
CHD	Coronary heart disease
CK	creatinine kinase
CRP	C-reactive protein
CVDs	Cardio vascular diseases
df	Degree of freedom
DHA	docosahexaenoic acid
ECG	Electro cardio graph
ECM	extracellular matrix
ED	Emergency department
EPA	eicosapentaenoic acid
ESC	European Society of Cardiology

F	F- statistics
Freq.	Frequency
GP	Glycoprotein
Hb	Hemoglobin
HCP	Health care provider
HDL	High density lipoprotein
HF	Heart failure
HIV	human immunodeficiency virus
HR	Heart rate
HRQoL	health-related quality of life
HRT	hormone replacement therapy
HS	High significant
ICU	Intensive care unit
IHD	Ischemic heart disease
IV	Intravenous
LDL	Low density lipoprotein
LOC	Level of consciousness
LV	left ventricular
M	Mean
MI	Myocardial infarction
MOS	Medical Outcomes Study
MS	Mean of score.
N	Total number of the sample
N.S	Not significant
NHLBI	National Heart, Lung, and Blood Institute
NSTEMI	Non-ST-elevation myocardial infarction
NTG	Nitroglycerin
ORs	Operative rooms
P	probability value
PCI	Percutaneous coronary intervention
PTCA	Percutaneous Transluminal Coronary Angioplasty
QOL	Quality of Life
r	Alpha correlation coefficient
RAND	Corporation - Research ANd Development
RCU	Respiratory Care Unit
S	Significant

SA	Sinoatrial node
SCA	sudden cardiac arrest
SCD	sudden cardiac deaths
SD	standard deviation
SF-36	Short Form Health Survey
Sig.	Significant
SIP	Sickness Impact Profile
SMC	structural maintenance of chromosomes
SNS	Sympathetic nervous system
SPO2	Saturation of Peripheral Oxygen
SPSS-16.0	Statistical Package of Social Sciences-version 16
SPSS-V19	Statistical Package for Science Service version- 19
STEMI	ST-elevation myocardial infarction
WHO	World health organization

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Chapter one

(Introduction)

Chapter one

1.1. *Introduction*

In many developed countries, The main reason of death and disability is coronary artery disease, particularly among the elderly (Salari et al ., 2018 ; Malakar e t al., 2019). The World Health Organization states that, 17.9 million people died from cardiovascular disease in 2019, accounting for 32 percent of all deaths globally. 85 percent of the deaths were caused by heart attacks and strokes. Around three-quarters of coronary artery disease mortality occurs in low- and middle-income countries. In 2019, Cardio vascular diseases were responsible for 38 percent of the 17 million premature deaths caused by noncommunicable diseases (before the age of 70).

According to the American Heart Association, 16.5 million persons over the age of 20 have coronary artery disease in 2018. Ischemic heart disease-related death is on the decline in industrialized countries such as the United States and the United Kingdom. This reduction can be linked to a better understanding of illness prevention. Guidelines for primary and secondary prevention are available and are being actively implemented; however, in order to reduce cardiovascular morbidity and mortality rates, healthcare practitioners must be aware of implementation awareness in many aspects, which is crucial. Diagnosis and management of coronary artery disease, and the involvement of the health professionals in clients management and nursing interventions, are the emphasis of this activity. The drop in mortality in developed countries can be attributed to increase use of primary and secondary cardiovascular preventive strategies. High-risk cardiovascular problems can be prevented with primary prevention techniques because there is no prior history of such complications.

Preventative measures that are secondary in nature are therapies that help people with a history of CAD avoid further heart disease (Benjamin et al., 2018 ; Regmi & Siccardi ,2020).

Coronary artery disease is a collection of clinical symptoms produced by an insufficient supply of coronary blood to the heart muscle. Sub intimal atheroma deposition, which results in arterial luminal stenosis or occlusion, as well as arterial wall thickening, is the most common cause. The proximal sections of larger coronary arteries, particularly at or just beyond branching points, are the most typically affected by coronary atherosclerosis. Higher oxygen demand occurs when coronary blood flow is restricted by atherosclerotic stenosis, resulting in myocardial ischemia and necrosis. In the presence of symptomatic CAD, compensatory physiologic processes are insufficient to guarantee adequate myocardial perfusion. Supply ischemia, which causes myocardial infarction (MI) and the majority of bouts of unstable angina, or demanding ischemia, which happens when coronary blood supply is insufficient during periods of high cardiac demands, is the result (Mattia & Manetta, 2017).

Coronary artery disease is more prevalent in white people than in black people, and men are more affected than women. After menopause, however, women's threat of the coronary artery disease equals the same of the men. Coronary artery disease is more prevalent in industrialized countries than in developing countries, and it disproportionately affects wealthy individuals. Certain risk factors appear to increase the probability of developing coronary artery disease. These risk factors include High low density lipoprotein (LDL) cholesterol, low high density lipoprotein (HDL) cholesterol, Type 2 diabetes mellitus, Hypertension, Smoking, Dyslipidemia, Chronic kidney disease, Obesity and metabolic syndrome and obesity may also play a role in developing the coronary heart disease, are including the modifiable risk factors. Being older than 45, gender, race,

and family history are all non-modifiable risk factors, while Risk enhancing factors includes : Premature menopause, Preeclampsia, Chronic inflammatory conditions (for example rheumatoid arthritis, HIV, psoriasis), Persistently elevated triglycerides and being postmenopausal for women (Bahall et al., 2020).

Furthermore, atherosclerotic, or the obstruction the coronary arteries with fibrous, fatty plaque, is the most significant reason of coronary artery disease. A type of blood vessel disease known as coronary artery disease lies under the umbrella concept of cardiovascular disease (atherosclerosis). Atherosclerosis was originated of two Greek phrases: athere, which literally translates as "fatty mush," & skleros, which literally translates as "hard." Consequently, it is hypothesized that atherosclerosis begins initially soft fatty tissue that harden with time. In order to avoid confusion, atherosclerosis is also referred to as arterial hardening. Although atheromas (fatty deposition) can grow in every artery in the body, they are more likely to occur in the coronary arteries than in any other artery. Arteriosclerotic heart disease, circulatory heart problems, ischemic heart disease, heart disease, and coronary artery disease are all terms used to describe this disease process. (Heitkemper et al., 2014 ; Felman, 2019).

It is possible to have an impact of the physical, psychological, and social aspects of persons life when they have coronary artery disease. The first is a physical issue: coronary artery disease and/or obstruction can limit the blood flowing to the heart muscle. Myocardial ischemia evolves to myocardial infarction with the passage of time. The most common symptom of stable angina is chest discomfort (the chest discomfort associated with stable angina is frequently mid-sternal in location, squeezing in nature, and linked with a sense of stress or anxiety, spreading to the arms, jaw, neck, upper abdomen or back), or these symptoms include dyspnea, physical function impairment, sexual intercourse, and limitations

on everyday activities, worsened by activity, both physical and emotional due to increased oxygen demand and improve with rest due to decreasing oxygen demand (Regmi & Siccardi , 2020).

Another aspect of CAD that is important to consider is its psychological impact. Patients with coronary artery disease frequently experience stress, bad mood, anxiety, and depression. It will have an immediate impact on the function of the heart. Sympathetic nerves will be activated, causing an increasing in the heart rate, atrial as well as ventricular contractions, and blood vessel constriction. Patients' perceptions of the sickness become worse as a result of these circumstances. Last but not least, coronary artery disease has a societal influence. Social interaction is harmed, hobby activity is reduced, and you resign from your job. Physical limits will result as a result of this (Molazem et al., 2013; Santoso et al., 2017).

There are many dangerous problems associated with coronary artery disease. For example, a cholesterol plaque ruptures the walls of the arteries and a blood clot form. A full blockage of the heart artery may result in a heart attack. The heart muscle may be damaged as a result of a lack of blood supply. The heart may become too weak to pump enough blood to support the body's needs if particular parts of the heart are chronically deprived of oxygen and nutrients due to diminished blood flow, or if the heart has been damaged by a heart attack. Heart failure is the medical term for this condition. Inadequate blood supply to the heart, as well as damage to heart tissue, can interfere with the heart's electrical impulses, resulting in irregular heart rhythms (Arnett et al., 2019).

Ischemic heart disease, fortunately, can be successfully managed with lifestyle changes, medications, and surgical treatments. The morbidity and mortality associated with CAD have been dramatically reduced as a

result of early detection of risk factors and primary prevention. Even better, by adopting heart-healthy behaviors like eating a diet low in cholesterol, saturated fats, trans fats, and sodium, include enough of fresh fruits and vegetables, as well as whole grains, you can lower your risk of ischemic heart disease. Maintaining a healthy body weight is one of the most important things you can do for your health. Losing weight has indeed been associated to the increased of the risk of ASCVD in numerous studies. Low calorie diets (800 to 1500kcal/day), high levels of physical exercise, and weight loss maintenance planning are also strong recommendations. Taking actions to alleviate stress and despair stopping smoking and avoiding secondhand smoke are two important steps to take. Limiting the amount of alcohol consumed for men, 1 to 2 drinks per day are recommended, and for women, 1 drink per day is recommended (Amsterdam et al., 2014 ; Regmi & Siccardi ,2020).

The goal of coronary artery disease treatment is to reduce the frequency and severity of angina symptoms while increasing the duration of one's functional capacity. Furthermore, one aims to increase the length of one's life while simultaneously decreasing the incidence of acute coronary syndromes. These objectives can be met by increasing myocardial oxygen supply, decreasing myocardial oxygen consumption, or a combination of the two. Treatment with pharmacotherapy and the stabilization of atherosclerotic plaques can help to reduce cardiac mortality and the occurrence of myocardial infarction (heart attack). Antiplatelet medicines, nitrates, β-blockerser, calcium antagonists, and ranolazine are among the few therapeutic drugs used to treat symptomatic angina caused by coronary artery disease. Drug therapy, coronary balloon angioplasty, and coronary artery bypass graft surgery are the three surgical alternatives for stable angina (Fihn et al., 2012 ; Mattia & Manetta, 2017; Malakar et al., 2019).

Coronary artery disease can result in a range of difficulties in individuals, as well as having a significant influence on the economy. Consequently, the decreased cardiac and physical capability that occurs in the aftermath of an ischemic heart attack in a patient suffering from ischemic heart disease has an influence on their quality of life (QoL) (Taghadosi et al., 2014) .

Furthermore, according to a research published by the European Society of Cardiology (ESC) in 2019, there are international inequities in disease burden and health-care delivery among the 56 member nations, with cardiovascular disease mortality being greater in middle-income countries due to significant financial constraints. Furthermore, those that suffer from coronary artery disease who reported a lower quality of life (QoL) had a higher risk of composite CHD/cerebrovascular outcomes. Nonetheless, identifying influencing factors that affect QoL might lead to more effective ways for improving QoL and outcomes in CHD patients (Timmis et al., 2020). Measures of quality of life have become an important and frequently mandatory component of evaluating health outcomes. Measuring quality of life in populations suffering from chronic disease provides a relevant tool to evaluate the impact of health-care interventions when a cure is not available (Mei et al., 2021).

Quality of life is defined by the World Health Organization as an individual's view of their place in life in relation to their goals, expectations, standards, and concerns in the context of the culture and value systems in which they live. It reveals a patient's personal sense of life in terms of physical and psychosocial function that is consistent with their standards and expectations. Furthermore, quality of life (QoL) is a good predictor of mortality and the need to be admitted to the hospital.

Moreover, it is quite useful in making decisions about subsequent treatments (Taghadosi et al., 2014).

Patients that suffer from coronary artery disease are particularly concerned about the deterioration of their symptoms and physical functions, as well as changes in their social roles, as a result of the disease's progression. They also experience a variety of issues, such as physical dysfunction, sleep disorders, low energy, and emotional reactivity. People experience varying levels of quality of life depending on the severity of their illness. People who are suffering from cardiovascular disease who seem to have a low quality of life (QoL) have a greater risk of rehospitalization and cardiac death (Ghasemi et al., 2014). Additionally, other characteristics have been found as being associated with the quality of life of patients who have a specific cardiac illness. Age, employment position, marital status, disease duration, and self-reported severity, for example, have all been shown to be associated with the quality of life of coronary artery patients (He et al., 2020).

1.2. Importance of study:

It is becoming increasingly clear that it is necessary to consider how healthcare treatments affect patients' lives rather than just their bodies, which is one of several factors driving the rapid growth of quality of life assessments at the healthcare services. For the patients that complain from chronic, debilitating or life-threatening illnesses who have little hope of being cured and who are faced with conditions that will damage in terms of their physical, mental, and social health, this is particularly crucial. Improving the overall quality of life for coronary heart disease patients are usually considered as one of the most important aims in their care.

In Iraq, the prevalence of coronary heart disease continues to rise. In December 2020, the World Health Organization published data on

causes of mortality across all WHO member countries for the year 2019. According to the data, there were 36,600 fatalities in Iraq in 2019 due to ischemic heart disease, 2500 deaths due to hypertensive heart disease, and 300 deaths due to rheumatic heart disease in the country. Heart disease was the main cause of death in Iraq in 2019, according to WHO data. Patients with cardiovascular disorders have been proven to be less satisfied with their life than those who have been admitted to the hospital for other reasons. Coronary heart disease (CHD) is attributed to a considerable reduction in health-related quality of life depending on the patients' health outcomes (Imanuna et al., 2021).

This research is undertaken to ascertain of the patients' quality of life. Concerning to most recent World Health Organization mortality data, IHD consider the main reason of the mortality along with the countries across the world of all economic levels. The death rate for coronary artery disease is declining worldwide, but it remains extremely high in many countries, particularly those in the lower and medium income brackets. Cardiovascular risk factors are becoming increasingly prevalent. Globalization appears to have played a role in increasing the prevalence of risk factors in developing nations. Therefore, improvements in primary prevention techniques as well as the execution of public health policies are required in order to reduce global mortality from this disease (Nowbar et al., 2019).

Behavioral changes that are harmful to one's health result in metabolic/physiological changes and a variety of risk factors such as high blood pressure (hypertension), being overweight or obese, having diabetes, and having high blood lipids (dyslipidaemia) age, gender, family history, smoking, physical inactivity, high levels of stress, and an unhealthy diet are all factors to consider. These intermediate risk factors induce damage to coronary and cerebral blood vessels as a result of atherosclerosis, a process

that occurs over many years, beginning in childhood and expressing itself as heart attacks and strokes in middle-aged and older individuals. However, due to the fact that the underlying pathophysiological process that causes heart attacks and strokes is the same, common approaches to prevention that address behavioral risk factors as well as metabolic risk factors are helpful for both conditions (Mendis et al., 2011; mayo clinic, 2020).

According to the Khan et al., (2020) study, IHD affects roughly 126 million people worldwide (1,655 per 100,000), or around 1.72 percent of the world's population. Globally, IHD was responsible for nine million fatalities. Men were more usually affected than women, and the disease first appeared in the fourth decade and became more common as people became older. The prevalence of IHD is increasing over the world. According to their research, the current prevalence rate of 1,655 per 100,000 people is anticipated to rise to 1,845 by 2030. The largest prevalence can be found in Eastern European countries. In many regions, age-standardized rates have declined, removing the influence of population changes over time.

The multifaceted influence of this clinical disease and its treatment on patients' daily lives is reflected in their quality of life on an individual basis (QoL). A high quality of life must be carefully measured because it is associated with high hospitalization and mortality rates and because it gives significant information that cannot be gained directly through the use of clinical, biochemical, or imaging measures. As a result, QoL assessment (global score, subscale scores, replies to various items, etc.) is an important criterion for evaluating the impact of cardiac rehabilitation program structuring (exercise training, nutritional counseling, psychosocial support and interventions, etc). These programs must also incorporate efforts to optimize and promote adherence to lifestyle changes

and medical therapy in order to increase long-term efficiency (Farcaş et al., 2018).

Ischemic heart disease is associated with a decreased quality of life as a result of repeated hospitalizations, as well as a poor long-term outlook. Many patients also have depression and anxiety symptoms, which have a severe impact on their prognosis as a result of their condition (Goreishi et al., 2012).

In the current study, the quality of life for the coronary artery disease patients was evaluated. In An- Najaf AL-Ashraf was found out the factors affecting with the quality of life in these patients. Identifying the quality of life of CAD patients adds considerably to the treatment of the disease and the reduction of psychological and physical issues. Determining and identifying the factors that negatively and positively influence individuals with coronary artery disease's quality of life are very important since some factors lead to the worsening of the patient's condition, such as socioeconomic status, which negatively affects the physical status of the patients.

1.3. Problem statement

The present study attempts to determine the "Factors affecting quality of life among patients with coronary artery disease"

1.4. The objectives of the study are to:-

1. Asses patients quality of life after coronary artery disease.
2. Find out the relation between the quality of life for patient with coronary artery disease
and their demographic data
3. Find out the relation between the quality of life for patient with coronary artery disease and their clinical information.

1.5. Research question

Is there a relationship between patient factors (socio demographical and clinical) and his / her quality of life .

1.6. Definitions of terms

1.6.1. Factors Affecting

Theoretical definition:

Factor is a characteristic, condition, or behavior that increases the likelihood of getting a disease or injury. Risk factors are often presented individually, however in practice they do not occur alone. They often coexist and interact with one another (Australian Institute of Health and Welfare,2015).

Operational definition

Personal characteristics (socio demographical and clinical) that has positive or negative effect on the quality of life of the patients with coronary artery disease .

1.6.2.Quality of life

Theoretical definition

It is the degree to which an individual is healthy, comfortable, and able to participate in or enjoy life events (Britannica, 2021).

Operational definition

The degree of satisfaction and dissatisfaction that a patient with CAD feels in regarding to their various aspects of life (physical, psychological, sociological and environmental well-being)**.**

1.6.3. Coronary artery disease

Theoretical definition

Plaque (atherosclerosis) builds up in the arteries of the heart, reducing blood flow to the heart muscle, a condition also referred to as Ischemic heart disease (IHD) (NHLBI , 2019).

Operational definition

Disease of the heart and coronary vessels that are rich in oxygen or atherosclerotic heart disease, they are serious conditions caused by a buildup of plaque in the coronary arteries and impaired the blood supply to the heart muscle.

Chapter two

(Review of literature)

Chapter Two

Literature Review

2.1. Epidemiology

Atherosclerotic cardiovascular disease is a leading cause of death in both developed and developing countries worldwide. The most common cause of coronary artery disease (CAD) is coronary artery atherosclerosis, this results is an inflammatory response. Greek words (athero) and (sclerosis) are combined to form the word atherosclerosis. The words "gruel" and "hardening" are derived from the Greek words gruel and sclerosis, which respectively mean (gruel) and "hardening." Despite the fact that the global coronary heart disease (CHD) mortality has decreased over the last 40 years. Between the 1990s and the 2000s, acute MI mortality dropped by up to 50%. CHD was found to be responsible for one-third to half of all cases of cardiovascular disease (CVD). Every year, CHD kills around four million people across Europe and Northern Asia's 49 countries. Furthermore, roughly 1.5 million Americans experience a heart attack or stroke each year, resulting in 250,000 deaths (McCullough, 2007; Malakar , et al., 2019 ; Sida Jia et al., 2020).

2.2. History of coronary artery disease

Between 1800 and 2000, the increase in life expectancy in industrialized countries resulted in atherosclerotic vascular disease overtaking infectious disease as the leading cause of mortality in these countries. Atherosclerosis, or at least its clinical manifestations, is regarded to be mostly caused by a human's life style, and it has been suggested that if modern humans could live more like preindustrial or even pre-agricultural people, they might be able to avoid developing atherosclerosis, or at least its clinical manifestations. Human groups that live in dry, warm, or cold climates have all created their unique techniques of mummification

for their dead members of the community. As a result, preindustrial or pre-agricultural societies gave an opportunity for a natural experiment: measuring the amount of vascular calcifications in various contexts and cultures using advanced CT scanning. Vascular calcification, a characteristic of mature atherosclerotic plaques, is pathognomonic for atherosclerosis in contemporary humans. A naturally mummified Iceman from modern-day Italy who lived roughly 3000 BCE was found to have calcification linked with atherosclerosis after being subjected to CT scanning (before common era). More than a century ago, Johann Nepomuk Czermak and Sir Marc Armand Ruffer identified atherosclerosis in many Egyptian mummies dating from around 1000 BCE. They have discovered atherosclerosis in 20 of 44 Egyptian mummies who lived between 1981 BCE and 364 CE, spanning numerous kingdoms and dating from different periods of history (common era). It is possible that ancient Egyptian society and conduct, on the other hand, exhibited distinct traits in terms of atherogenic development (Allam et al.,2011; Thompson et al., 2013)**.**
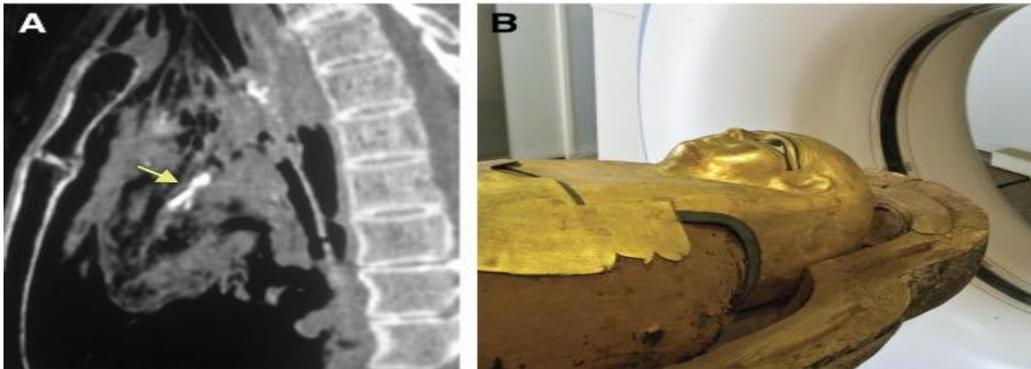
Figure (2-1) Atherosclerosis in ancient Egyptian   mummies (Allam et al.,2011)
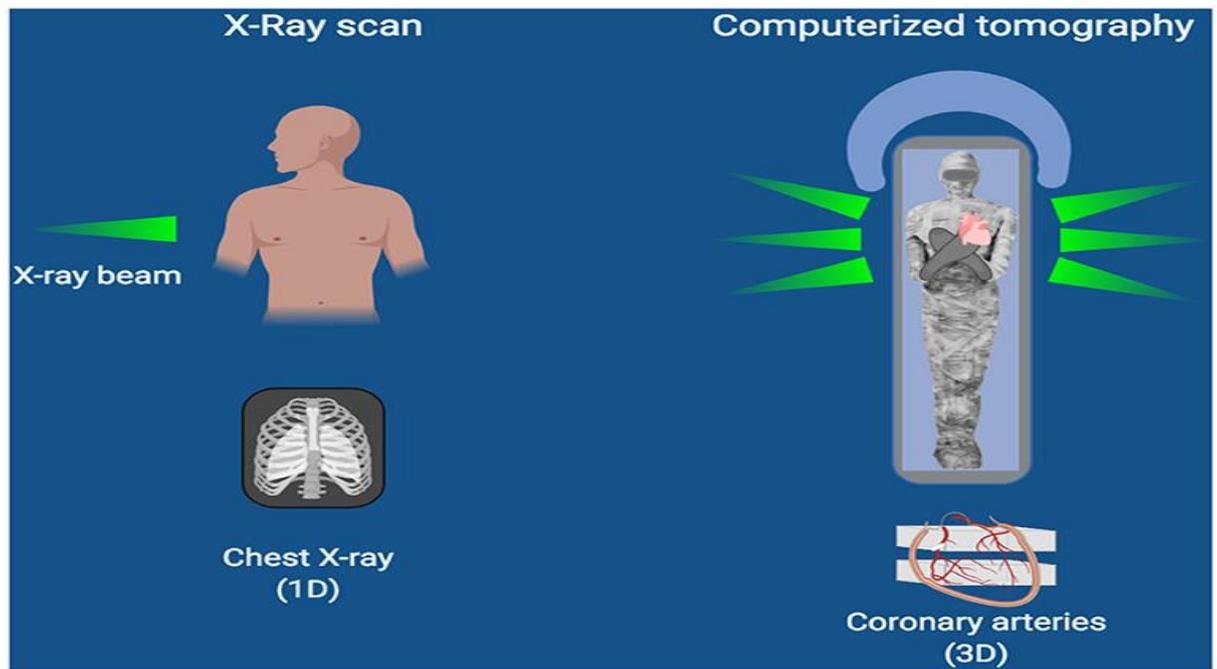
Figure (2-2) Is Atherosclerosis a Disease of Modern Times (Delgado-Coello, 2020)

Other ancient cultures, such as those with completely different dietary patterns and genetic composition than the Egyptians, are now being investigated to determine if atherosclerosis was prevalent among them. The current HORUS study (named after Horus, the ancient Egyptian deity) investigated these and related issues by CT scanning the remains of mummies from a variety of geographically and temporally distinct civilizations. At an Egyptian museum, the Horus team used CT to examine mummies. In mummies with healthy circulatory systems, they identified varied degrees of atherosclerosis and even some arterial calcification (Finch, 2011).

Atherosclerosis was also found in ancient human bones from Egypt, as well as ancient cevializations from Peru, the Aleutian Islands, and the United States (Delgado-Coello , 2020). The frozen bones of Otzi have been discovered near the Austrian-Italian border, according to reports. Otzi, who had atherosclerosis and lived 3,255 years ago, was a historical figure. Mummies from the Inuit population of Greenland, some of which

date back 500 years, have been studied (national geographic., 2013; Wann et al ., 2019).

Despite the fact that they were still young when they died, researchers identified calcified atheromas in the mummies of two of the men and two of the women. When calcified plaque was identified in the arterial wall, they classed atherosclerosis as definite, and when calcifications were found along an artery's anticipated route, they classified it as likely (Allam et al., 2011).

2.3. Anatomy and physiology

The heart and blood vessels made up the cardiovascular system. Associated with cellular homeostasis, this system transports nutrients, oxygen, hormones, and other substances to the body's cells while also eliminating 'waste' metabolic products, which help to keep the body's cells protected from toxicity. In order to maintain blood composition and consequently intracellular homeostasis, the cardiovascular system must rely on the collaboration of other systems. As an example, the digestive and excretory organs play an important function in maintaining the homeostatic composition of the blood, and the autonomic nervous system and the endocrine system collaborate in an attempt to regulate cardiovascular (and other system) activity. Each cooperative component functions as a homeostatic control system, and any disruption in one of them results in the malfunction of the others as a result of the interdependence of the functions of the organs and their systems. As the body has a finite amount of blood, cardiovascular function must be adaptable in order to Ensure that the tissues receive enough blood supply during the various metabolic demands that arise after surgery, trauma, times of distress, and whether resting or exercising. Although blood may be directed to the most active portions of the body and away from the less active sections, adequate blood flow to the most vital organs (brain and heart) must always be maintained, as these

high-priority tissues are more sensitive to reduce blood supply. As a result, the circulatory system keeps blood flowing to meet intracellular homeostatic needs by supplying the 'various components of the heart.' The heart (='cardio-') serves as the transport system's pump, while the delivery channels are the hollow blood arteries (='vascular') that lead from and eventually return to the heart. Blood is used as a transport medium (Saladin, 2017; Jarvis & Saman, 2018).

The heart

The primary function of the heart is to stimulate the flow of blood in the body in a single direction, as described above. It also generates a hormone that is crucial in the regulation of blood volume and, as a result, in the regulation of blood pressure, among other functions. While the creation of the pressure gradient aids in the encouragement of the blood flow, it is the pumping action of the heart that raises blood pressure to a level that is sufficient to ensure a better flow of blood to the cells. To avoid heart congestion, the amount of the blood evacuated from the cardio by this pumping motion needs to be proportional to the quantity of blood reaching the heart during the 'filling' period of each pump cycle. If this is not the case, the heart becomes congested. As the physical activity level performed by the body increases, the time required for blood circulation around the body reduces, resulting in the heart having to pump more blood in a given length of time (or per unit of time). As a result, the heart must be adaptable, having a varied pumping pace based on the body's requirements. The regulation of the heart pump is discussed in further detail later. This section explains the heart's basic anatomy and function with regard to the unidirectional circulation of blood (Peate & Evans, 2020).

Heart size and location

The heart is located between the lungs in an oblique position (since the heart has a slightly leftward tilt) and is enclosed within the

medial cavity of the thorax, which is known as the mediastinum. It is located in front of the spinal column and behind the sternum. The heart weighs between 250 and 350 grams, and its size is typically compared to a closed fist to show the approximate, but varied, dimensions. Heart's broad base, which is formed by the upper chambers, or atria, is approximately 9 cm wide and extends 12–14 cm into the second or third intercostal space on the right side, extending 12–14 cm into the second or third intercostal space. The organ's base is anchored by vessels, allowing the organ's more pointed apex to travel higher during contraction. The tip of the lower chambers, or ventricles, of the heart (especially the left ventricle), forms the apex, which is pointed inferiorly and anteriorly towards the left hip. It is supported by the diaphragm, a muscle that connects the thoracic and abdominal parts of the body's trunk. The apical heartbeat, which is created by contraction of the heart muscle, can be felt on the left side of the chest, approximately 8 cm from the sternum, between the fifth and sixth intercostal gaps. The apical heartbeat is produced by contraction of the heart muscle. Approximately two-thirds of the distance from the sternum to the left is where the heart is located. The main vessels termed the aorta, vena cava, and pulmonary artery entering and leaving the heart via the upper border of the heart, which is created by the atrial chambers (David, 2014).

The functional anatomy of the heart

The cardiac is a four-chambered structure surrounded by a supportive and protective membrane known as the pericardium, which provides support and protection. A particular type of muscle known as cardiac muscle is responsible for the majority of the walls of the heart (or myocardium). The septa, or tissue walls, that separate the chambers of the heart are responsible for this separation. The valve structures that connect the atria and ventricles are responsible for communication (David, 2014).

The heart wall

In the heart, there are three layers: the epicardium (which is a component of the pericardium), the myocardium (from the Greek'myo-' meaning muscle), and the endocardium (from the Greek 'endo-' meaning inner).

The myocardium

The myocardium is a specific cardiac muscle that can only be found in the heart. It is striated like skeletal muscle, but it is not controlled by the brain. A nucleus and one or more branches exist in each fiber (cell). There is a lot of overlap between the cell's ends and branches and those of its neighbors. It is seen thicker and darker than the striations under a microscope, these "joints," or inter-calated discs, are visible. In the heart, this arrangement gives the illusion of a single sheet of the muscle rather than the many separate cells that would otherwise be present. As all of the fibers are related, they do not need their own nerve supply. It is through these branches and intercalated discs that an impulse is transmitted from one muscle cell to the next, resulting in the entire muscle sheet contracting. Myocardium, with its 'sheet' shape, allows for efficient and coordinated contraction of the atria as well as the ventricles. Additionally, the heart's electrical signals are sent through the myocardium by a network of specialized fibers. Compared to the rest of the myocardium, which is much thinner and thinner, the apex is thicker. This graphic depicts the relative importance of each of the heart's chambers in the overall operation of pumping blood. Thickness of the left ventricle, which is responsible for the most effort, is the greatest. Atrial natriuretic peptide is secreted by specialized muscle cells in the atria's walls (Waugh & Grant, 2014).

Fibrous tissue in the heart.

The myocardium is maintained by a network of tiny fibers that runs across the entire heart muscle. The fibrous skeleton of the heart is what is referred to as such. In addition, a ring of fibrous tissue separates the atria from the ventricles, which prevents electrical impulses from traveling between the two chambers. Because of this, whenever an electrical wave crosses the atrial muscle, it can only propagate to the ventricles by way of the conducting system that connects the fibrous ring of the atrioventricular node and the atrioventricular node (Waugh & Grant, 2014).

The endocardium

A continuous layer of endocardium surrounds the endothelial lining of blood arteries that leave and enter the heart; it also covers the valves that separate the heart chambers. Squamous endothelium is a smooth, gleaming white film that lies atop a thin sheet of connective tissue. Its smooth surface prevents the blood-clotting cascade from being activated. The presence of fat, calcium, or fibrin deposits roughens the endocardium, making blood clotting more likely (Peate & Evans, 2020) .

Extrinsic innervation of the heart

Although external nerve stimulation is not necessary for cardiac contraction, the autonomic nervous system influences the intrinsic conduction system's activity. Two 'cardiac centres' in the brainstem's medulla oblongata control autonomic nerve activity to the heart. The cardiac accelerator center regulates sympathetic neural activity in the heart, while the cardiac inhibitory center regulates parasympathetic nerve activity. During the conduction system of the heart, neurons from both centers innervate ganglia, which are groupings of nerve cells within the heart wall from which the neurons innervate the SA and AV nodes, which are considered to be elements of the heart's conduction system, as well as

portions of its muscle. Sympathetic stimulus (such as that experienced during exercise or the stress response) causes the heart rate to accelerate and the force of myocardial contraction to rise. Paradoxically, parasympathetic stimulation slows the heart rate while having little or no influence on the force of myocardial contraction, and conversely (David, 2014).

Arteries and Arterioles

Arteries are strong, elastic arteries that are well-suited for carrying blood out from the heart under conditions of relatively high pressure (high blood pressure). These vessels subdivide into ever thinner tubes, which in turn give rise to finer, branched arterioles (pronounced ar-te′re-olz) throughout time. Each of the three layers that make up an artery's wall is described below. TUNICA INTERNA: The innermost layer of the skin (tunica interna) is made up of a layer of simple squamous epithelium, known as endothelium, that sits on a connective tissue membrane that contains elastic and collagen fibers in abundance. By providing a smooth surface that allows blood cells and platelets to move through the vessel without being harmed and by secreting biochemicals that inhibit platelet aggregation, the endothelium aids to avoid blood clotting. It is also possible that the endothelium contributes to the regulation of local blood flow by secreting chemicals that dilate or constrict blood vessels. Nitric oxide is released by the endothelium, which relaxes the smooth muscle of the vessel, to name a couple of examples. Atherosclerosis is a condition in which fatty deposits form on the inner walls of arteries, as described in the clinical application. The middle layer (tunica media) of the artery wall accounts for the majority of its thickness. It is made up of smooth muscle cells that wrap around the tube and a thick layer of elastic connective tissue that provides flexibility. An uneven network of elastic and collagen fibers forms the majority of the outer layer (tunica externa), which is relatively

thin in comparison to the rest of the body. This layer is responsible for connecting the artery to the surrounding tissues.

Smooth muscle in artery and arteriole walls is innervated by sympathetic branches at the autonomic nerves system. Vasomotor fibers cause the smooth muscles to contract, narrowing of vessel's diameter and limiting blood flow. Vasoconstriction (vas″o-konstrik′ shun) is the term for this activity. When vasomotor impulses are blocked, smooth muscle cells relax and the vessel width expands, enabling more blood to flow. Vasodilation (vas″o-di-la′shun) is the name for this response. Blood flow and blood pressure are substantially influenced by changes in the diameters of arteries and arterioles. The walls of the bigger arterioles, like the walls of arteries, are made up of three layers. As the arterioles reach the capillaries, their walls thin. Only an endothelial lining and a few smooth muscle cells make up the wall of a very small arteriole, which is surrounded by a small quantity of connective tissue (Ong & McVicar, 2019).

2.4. The pulmonic and systemic circuits

Cardiovascular system consists of the two sections: the pulmonic circuit that transports the blood to the lungs for gas exchange before returning it to the heart, and a systemic circuit that transports blood to every organ in the body, including various portions of the lungs and the heart's own wall. The pulmonary circuit is supplied by the right half of the heart. It collects blood that has traveled throughout the body and pumps it into the pulmonary trunk, a major artery. The oxygen-depleted blood is then sent to the lungs, where it releases carbon dioxide and takes in a fresh supply of oxygen. It then travels through the pulmonary veins to the left side of the heart. The systemic circuit is supplied by the left-sided of the heart. It transports the blood to the aorta, the body's biggest artery. The aorta has branches that carry oxygen to the all body system while also collecting carbon dioxide and other pollutants. As soon as it has completed

the gaseous exchange with the tissues, this blood returns to the heart via the two major veins in the body: the superior vena cava, which drains the upper body, and the inferior vena cava, which drains everything below the diaphragm and the aorta. Because of their comparatively enormous sizes, the pulmonary trunk, pulmonary veins, aorta, and the two venae cavae are together referred to as the big vessels (great arteries and veins) in the body (Saladin, 2017 ; Hansen, 2017).

A well-oxygenated blood supply is needed by the heart itself in order to support its activity. Specifically, the right and left coronary arteries, which reside atop the epicardium and pierce the myocardium with deeper branches to supply this highly active layer of muscle, transport this oxygen and nutrients to the heart (Jarvis & Saman., 2018). The left and right coronary arteries are the two primary coronary arteries that carry blood, nutrients and oxygen to the cardiac muscle. They are developed from the root of the aortic artery, the area immediately around and beyond the aortic valve, and go throughout the body. The anterior descending and circumflex coronary arteries are formed by the division of the left main coronary artery. In the heart, the anterior descending artery provides the blood to the anterior inter-ventricular septum, the cardiac left ventricle, and the apex of the heart, among other places. A blood supplied to the left ventricle's lateral wall is provided via the circumflex branch. The right portion of the coronary artery provides blood to the right ventricle and produce the posterior descending artery. So the posterior descending artery is responsible for supplying blood to the posterior part of the heart (Villa et al.,2016; Rehman et al., 2021).

Aortic pressure controls the flow of blood through the coronary arteries. Other aspects also include heart rate (maximum blood flow occurring during ventricular diastole, when the heart muscle relaxes), metabolic functions of the heart, the blood vessel tension (constriction),

and the collateral circulation are all other elements to consider. Diastole is shortened when the heart rate rises, which might reduce myocardial perfusion. When the heart rate increases, patients, especially those with coronary artery disease (CAD), might suffer myocardial ischemia (inadequate oxygen delivery). On the other hand there is no interactions among the major coronary arteries, collateral channels connect minor arteries. These channels that grow as big vessels are increasingly clogged, giving alternative routes for blood flow (Heinrich and Schelbert, 2010 ; Grossman, 2013).

2.5. Coronary circulation

The endocardial cells in the heart are constantly being nourished by the blood that flows through the chambers of the heart. The myocardial and pericardial cells, on the other hand, are too far away from the blood supply to get nutrition from that also. The coronary circulation, which is made up of a variety of blood vessels, is responsible for supplying nutrition. Myocardium is perforated by a large number of veins that deliver blood to the region of the myocardial and pericardial cells, respectively. As a result of its constant pumping action, the heart muscle consumes more oxygen than any other tissue, making this arrangement absolutely necessary for optimal function. In a resting state, the heart consumes (8 ml/100 gram) of the cardiac tissue each minute in terms of oxygen consumption. The supply of the blood through the coronary circulation accounts for the one-twentieth of the entire output of the heart, despite the fact that the heart weighs only one-hundredth of the total weight of the body. The primary coronary arteries — the right as well as the left coronary arteries—section from the Aorta exactly superior to the aortic valve, and they are responsible for coronary artery disease. They are located on the heart's surface (the epicardium), and they form an atrioventricular groove around the heart (Jarvis & Saman., 2018 ;Ong & McVicar, 2019).

The above vessels reminded ancient anatomists of either a crown, or corona, which is how they got their name, corona vessels. Their branches and subbranches reach the heart muscle to a great depth. There are two branches of the right coronary artery that supply the right-side of the heart, that include the right atrium with the blood, and the posterior inter ventricular artery that extends to the apex and feeds the right posterior ventricular walls. The left coronary artery branch is the left anterior descending artery, that supplies the inter ventricular septum and the anterior wall of the both ventricles, and the circumflex branch, which provides the left atrium as well as the posterior left ventricular wall. When the heart is relaxed, the coronary veins deliver the most blood. They are generally ineffectual during ventricular contraction because their inputs from the aorta are partially obstructed by the cusps of the opened aortic valve, and they are compressed by the contracting myocardium. Blood is collected from the left ventricle via the cardiac veins, which join to form the coronary sinus, after supplying the heart tissue. This discharges into the right atrium's posterior portions. The large cardiac vein, the medium cardiac vein, and the tiny cardiac vein make up the sinus. The anterior cardiac vein, which empties directly into the anterior parts of the right atrium, collects blood from the right-side of the heart walls. As a result of the working heart muscle takes greater oxygen from the blood it receives than other tissues, blood returned to the atrium that will contain extremely minimal oxygen less than any other venous blood in the body (Grossman, 2013; Ong & McVicar, 2019).

2.5.1.Factors influencing coronary blood flow are:

The oxygen is demanded by the cardiac muscle: at rest, the blood supplied of the coronary circulations to the heart muscle is approximately three times greater than the blood supplied of the typical blood circulation; during the times of increasing oxygen requirement (for

an example: the exercise or stress), the additional oxygen demanded is delivered by an increased the coronary blood circulate. The change in the blood flow is closely proportional to the increase or decrease in oxygen demand. The mechanism is internal to the tissue (i.e., it is regulated by the tissue), but the metabolic stimulus that causes the excess blood to be produced has not yet been discovered.

- The autonomic nervous system has an indirect effect on coronary blood flow, according to neural mechanisms. Heart rate is slowed as a result of parasympathetic activation, which leads to a decrease in cardiac oxygen consumption and, consequently, decreased coronary flow. Contrarily, the sympathetic stimulation raised the cardiac rate and myocardial contractility, boosting oxygen consumption and coronary flow while decreasing the heart rate and myocardial contractility.

- Due to the fact that aortic pressure is produced by the heart, it is the most important element influencing the pace of blood flow to the cardiac muscle. When the heart contracts, a rise in aortic pressure occurs, that this leads in the increasing of coronary blood flowing (Ong & McVicr ,2019).

Coronary arteries of the heart

Right coronary artery

Right (acute) marginal artery

Left coronary artery

Circumflex artery

Left (obtuse) marginal artery

Left anterior descending artery

Diagonal arteries
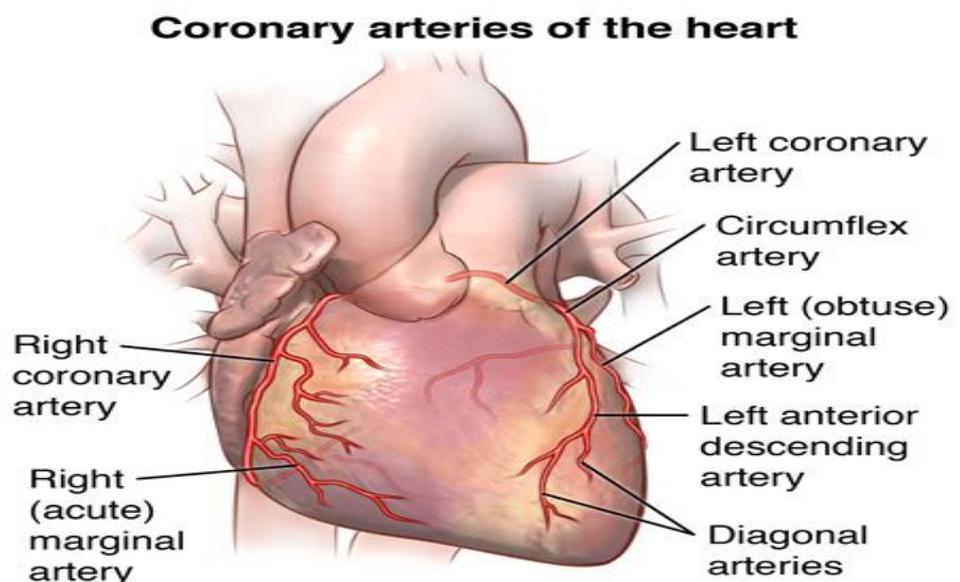
Figure (2-3) coronary arteries of the heart (LeMone et al., 2014)

2.6. Definition of coronary artery disease

Coronary artery disease is characterized by a narrowing of the coronary arteries, which results in inadequate blood supplied to the myocardium, which causes the heart to fail. Atherosclerosis, a vascular illness in which fatty deposits accumulate in the artery wall, causing arterial degeneration and blocked blood flow, is the most common cause. The atherosclerotic plaque (atheroma) is made up of lipids, smooth muscle, and scar tissue, and it can develop into a calcified complex plaque, which causes the artery walls to stiffen. Myocardial infarction (heart attack) occurs when a coronary artery becomes clogged to the point where cardiac muscle begins to die due to a lack of oxygen. When a partial blockage of an artery causes the artery to constrict, it can create a brief feeling of heaviness and chest pain known as angina pectoris. An atheroma can lead to a heart attack in a variety of ways. The atheroma itself may narrow the artery to the point that there is insufficient blood flow to maintain the heart muscle, particularly during exercise when the metabolic demands of the myocardium increase dramatically. Platelets frequently cling to atheromas and cause blood clots. A blood clot may complete the job if the atheroma has already blocked off the vascular space (lumen). An additional risk is that the clot will break loose from the atheroma and will constrict a smaller coronary artery further downstream (LeMone et al., 2014 ; Regmi & Siccardi., 2021).
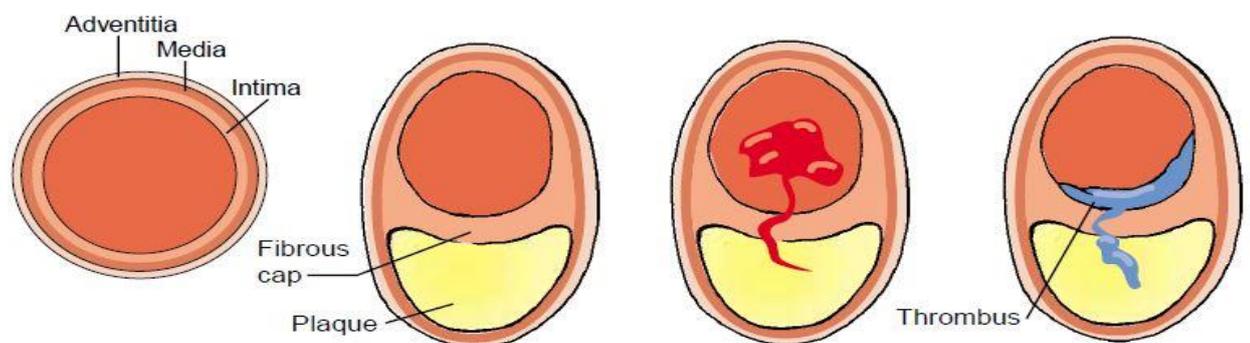
Figure (2-4) Atherosclerosis formation (Williams & Hopper, 2015)

2.7. Atherosclerosis

Atherosclerosis is an uncontrolled built up of the lipid or the fatty components, as well as the fibrous tissue inside of the lining walls of the arteries, is the major leading of the cardiovascular disease within the United. States. These compounds constrict and narrow the coronary arteries, resulting in a reduction of the blood circulation to the cardiac muscle. Atherosclerosis is characterized by the chronic inflammatory process to the arterial wall injury, along with modifications to the morphological and biochemical characteristics of the walls of arteries (Williams & Hopper, 2015).

Atherosclerosis is a form of arteriosclerosis which is a thickening of the arteries that affects the heart and blood vessels. The creation of fibro fatty plaques in the endothelium wall of medium and large arteries, like the aorta and its branches , also coronary arteries , and the big vessels which nourishing the brain , is known as atherosclerosis. The term of atherosclerosis originates from the Greek terms atheros (gruel or paste) and the sclerosis (hardness) (hardness). Contrary to popular belief, cardiovascular disease (CVD) remains the leading cause of death for the both men and women in the United States, despite a slight decline in mortality of atherosclerosis over the previous several decades. Because of the increasing public awareness of the elements that contribute to the emergence of this condition, it is likely that the stated drop in death rate is to new and enhanced techniques of medical management as well as enhanced health care approaches as a result of these developments. It is estimated that 33.6 percent of all fatalities in the United States were caused by the major complications of atherosclerosis in 2011. These problems include stroke , ischemic heart diseases and the peripheral vascular diseases. Because atherosclerosis is such an insidious illness, its clinical manifestations do not usually reveal themselves until 20 to 40 years or

more after the onset of the disease. In addition to that Fibrous plaques are most typically found in the arteries of Americans in their third decade of life or later (Williams & Hopper, 2015; Libby et al., 2019; Alfarisi et al., 2020).

2.7.2. Atherosclerosis development

Atherosclerosis was defined in relation to the creation of atheromatous plaques inside the endothelium lining of a major as well as medium_sized arteries , which are extend through the bloodstream also have eventually block it. There are numerous stages to the development of atherosclerotic lesions, including: (1) the endothelial cellular injuries. (2) the migration of the inflammatory component (3) proliferating of SMCs and the fat accumulation as well as (4) progressive formations of the atherosclerotic plaques with a fat center.

2.7.2.a. Endothelial Cell Injury

Blood vessels are made up of one layer of the cells that having cell to cell contacts. This layer helps to keep the subendothelial membranes by interact with the blood cells and additional blood components in the usual course

of   events. Several

factors, including

smoking, high

LDL cholesterol levels, immunologica
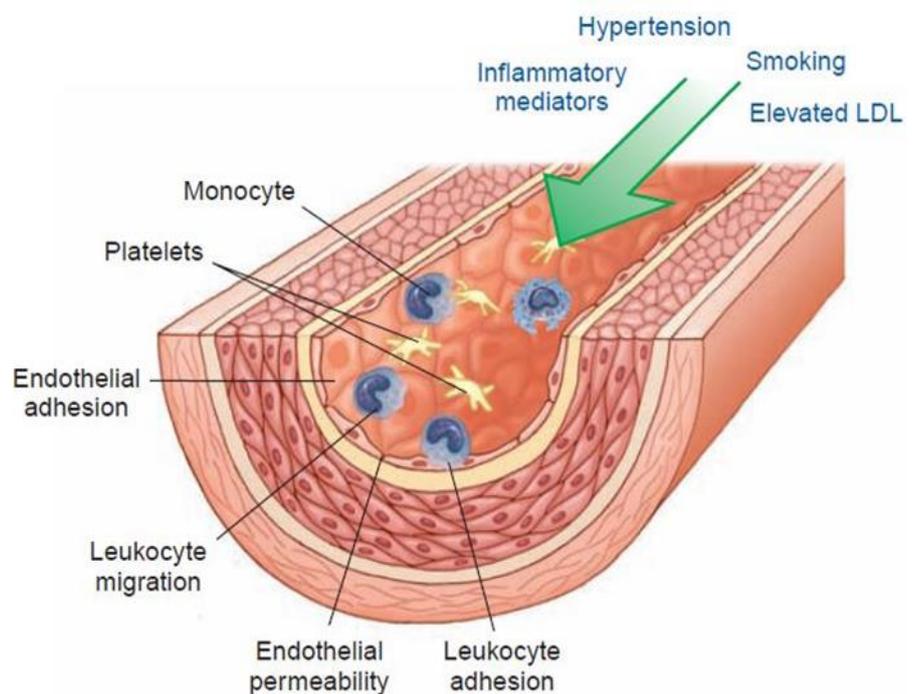
l processes, and mechanical tension related to high blood pressure, all have the risk to cause the endothelial damage, which results in the adhesion of monocytes and platelet .

2.7.2.b. Migration of Inflammatory

When endothelial cells express specific attachment molecules which bind monocytes with the other inflammatory component which are responsible for development of the atherosclerotic plaques, they signal to the body that it is time to start clogging the arteries. After adhering with the endotheliums , monocytes travel among the endothelial cells to locate within the intima, where they undergo transformation into macrophages and ingest lipoproteins, primarily LDL cholesterol.
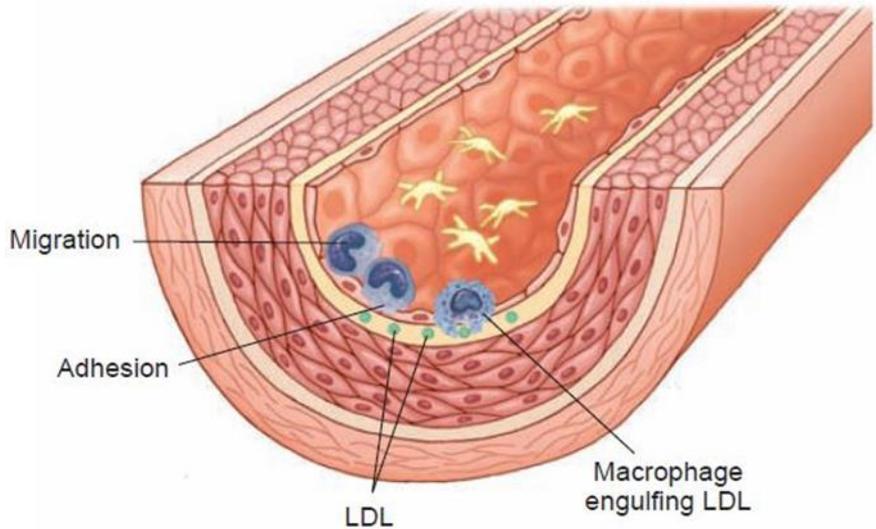
2.7.2.c. Lipid accumulation and proliferation of smooth muscle cell

Even though the hiring of the monocytes , one's distinction into the macrophages and subsequent absorption of fats, and their final
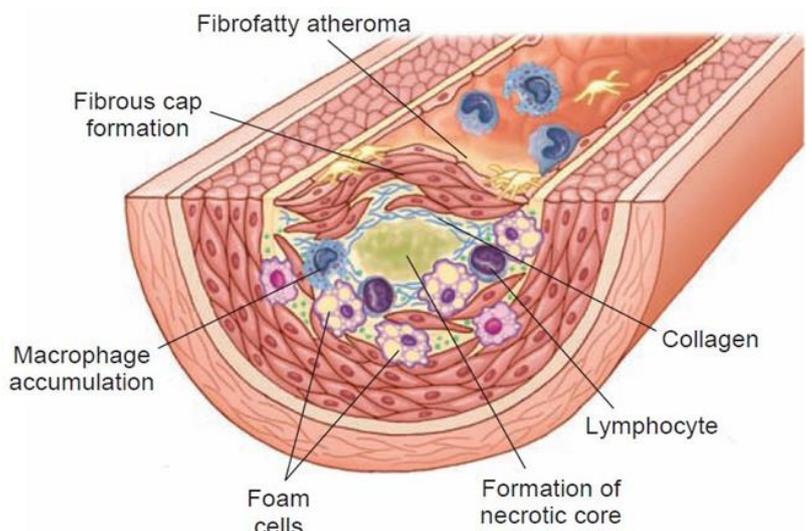
transformation in to the foam cells seems to be beneficial since it also eliminates extra lipids out from bloodstream, the built up of lipids over time eventually leads to the advancement of the lesion . Activated macrophages produce hazardous oxygen radicals which oxidize L.D.L, Foam cells are formed by ingesting this mixture. E.C.M and S.M.C migration and proliferation are also aided by growth factors produced by these cells.

2.7.2.d. Plaque Structure

Atherosclerotic plaques are composed of   S.M.Cs, Leukocytes,   such   as macrophages   and others,;   the extracellular   matrix (E.C.M),   which includes   the collagen plus the elastic fibers   and the intracellular and extracellular lipids. Also the outer protective sheath is often made up of the S.M.Cs as well as thick E.C.M. A cellular region (the shoulder) is slightly below and also to the side of the fibrous cap contains macrophages, SMCs, and lymphocytes. The central base of the lipid rich foam cells and fatty detritus lies beneath the fibrous cap. Bleeding of the lesion or thrombotic obstruction of the artery lumens can occur if an unstable or fragile fibrous cap ruptures, ulcerates, or erodes (Porth & Grossman, 2014).
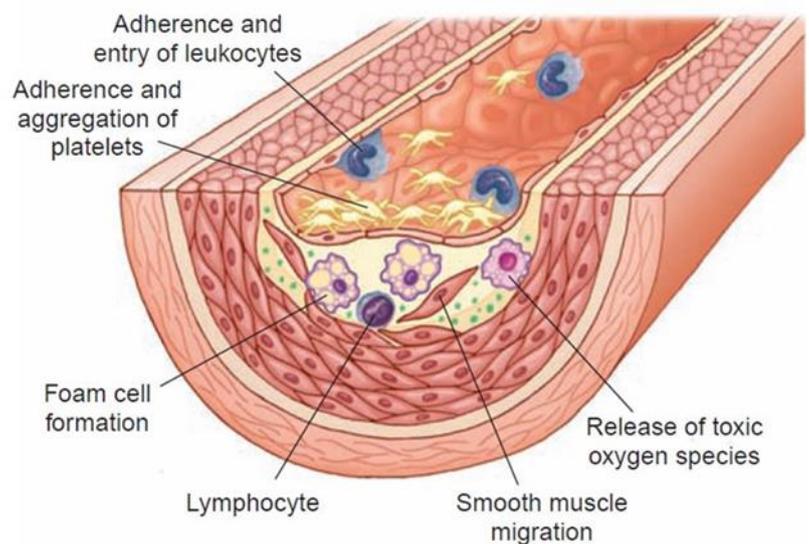
Figures (2- 5a, 5b, 5c and 5d) The Development of Atherosclerosis (Porth & Grossman, 2014).

2.8. Angina pectoris

The angina pectoris is a medical condition that is frequently characterized by bouts or paroxysms of anterior chest pain or pressure. In most cases, the culprit is a lack of coronary blood flow. Insufficient flow causes a reduction in oxygen supplied in response to increased cardiac demand for oxygen during physical activity or emotional stress. To put it in another way, the demand for oxygen outnumbers the supply. The severity of angina is determined by the triggering activity and its impact on daily activities. Myocardial cells become ischemic and switch to anaerobic metabolism when their oxygen needs exceed what partially blocked arteries can supply. Anaerobic respiration leads to the formation of lactic acid, which activates nerve terminals in the muscle, resulting in muscle pain (Ford & Berry, 2020; WebMD, 2021).

2.8.2. Types of Angina

2.8.2.a. Stable angina.

Typically, stable angina is provoked by physical exercise. The demand for more blood is increased as patients climb the stairs, exercise, or stroll; however, narrower arteries reduce the amount of blood that can be delivered. The presence of additional factors such as mental stress, low weather and large meals can also cause arteries to narrow and angina to occur. Smoking is one of the most common causes of angina (Brunner & Suddarth, 2017; Rieckmann et al., 2020).

2.8.2.b. Unstable angina

If fatty deposits (plaques) in a blood vessel rupture or a blood clot forms, the flow through a constricted artery can be immediately blocked or reduced. This might result in a sudden and significant decrease in blood flow to the heart muscle. Unstable angina can also be caused by blood clots that completely or partially obstruct the blood arteries that

provide blood to the heart. Unstable angina becomes worse and is not improved by rest or medicine. If the blood flow does not improve, the heart will be deprived of oxygen, resulting in a heart attack. Unstable angina is dangerous and necessitates immediate medical attention (Willerson, 2015; Wang, 2020).

2.8.2.c. Prinzmetal's angina

Angina is induced by a sudden spasm in a coronary artery, which narrows the artery briefly. This constriction restricts blood flow to your heart, resulting in severe chest pain and discomfort. Prinzmetal's angina is more common while the patient is at rest, usually overnight. Clusters of attacks are common. Emotional stress, smoking, blood vessel-tightening medications (such as some migraine treatments), and cocaine usage can all cause Prinzmetal's angina (Loscalzo, 2013; medicalnewstoday.com,2021).

2.9. Acute coronary syndromes

Acute coronary syndromes are indications of ischemic heart disease and encompass a broad clinical range that encompasses unstable angina/non-ST elevation myocardial infarction (MI) and ST-elevation myocardial infarction (MI) (Lewis et al., 2016).

2.9.1. Myocardial Infarction

Myocardial infarction occurs when a coronary artery is completely blocked, blocking off blood supplied a region of the myocardium. If the blood flow to the affected tissue is not restored, the tissue becomes ischemic and finally dies (infarcts). The necrotic area is surrounded by wounded or damaged tissue, which is surrounded by ischemia tissue. Myocardial cells lyse and release a variety of cardiac isoenzymes into the circulation when they die. A rise in the serum concentrations of creatinine kinase (CK) and cardiac-specific troponins is a

particular marker of myocardial infarction. Around 65 percent of MI-related deaths occur during the first hour. Despite the fact that sudden cardiac death can occur in a person who has had no previous heart symptoms, it is discovered that 80% to 90% of those who die from sudden cardiac death have substantial narrowing at approximately one major branch of the coronary arteries. According to the European Society of Cardiology/American College of Cardiology, the diagnosis of acute evolving or recent MI must meet one of the following criteria (Heitkemper et al., 2014; Lewis et al., 2016)

A: A typical rise and gradual decline (troponin) or a more rapid rise and decline (CK-MB) of biochemical are markers of myocardial necrosis in the presence of at least one of the following:

      i. Ischemic symptoms

      ii. Development of pathologic Q waves on ECG

      iii. ECG changes indicative of ischemia (ST-segment elevation or depression)

      iv. Coronary artery intervention (e.g., coronary angioplasty)

B: The region of infarction grows throughout minutes to hours, according to pathologic findings of acute MI. Ischemia develops as cells are deprived of oxygen, cellular injury ensues, and the lack of oxygen leads to infarction, or cell death. The idiom "time is muscle" expresses the need of receiving appropriate therapy in order to improve patient results. Nearly one million Americans complain from acute MIs every year, with one-fourth of them dying to their injuries. Almost half of all people that are dying rarely make it to the hospital. The type of MI (N.S.T.E.M.I & S.T.E.M.I), the site of the injuries to the intra-ventricular (anterior , inferior, posterior and lateral wall) , as well as the period at the moment as

during infarction procedure are all utilized to further diagnose a MI (acute, evolving, or old).

C. ST-segment elevation is caused by an area of ischemia necrosis that penetrates the full thickness of the ventricular wall.

D. Unstable angina is caused by the rupture of a coronary artery plaque, fragmentation, and distal arterial embolization, which results in myocardial necrosis. Non-ST elevation MI is characterized by the absence of ST elevation (Saleh & Ambrose, 2018; Nascimento. et al., 2019).

2.10. Etiology and risk Factors

The changeable risk factors are something which a person has oversight, like by adopting the healthy life style as well as changing a personal preference, also by the taking medications. The situation over which a person has no control is referred to as a non-modifiable risk factor. A risk factor might work alone or by the conjunction with the another risk factors. The highest risk that a person's suffer of coronary artery disease, the more risk factors that they have. Those who are at risk should get frequent medical exams and participate in the healthy hearts activities (a concerted attempt to mitigate the number and severity of risks) (Hajar, 2017).

2.10.1. Non_modifiable risk factors

- **The age:** The prevalence of coronary artery disease (C.A.D) elevated after the age about 35 for the both male and female. So the male and women over the age about 40 years which have a greater chance of getting coronary artery disease (CAD) of 49 percent and 32 percent, respectively (Sanchis-Gomar et al., 2016).

- **Gender:** Although the incidence of coronary artery disease is highest among middle-aged men, men over the age of 45 and women

over the age of 55 have an increased risk of developing CAD. Women are diagnosed with heart disease 10 years later than men. The cardioprotective effects of estrogen could be one reason for this. Hormone replacement medication, on the other hand, does not protect women beyond menopause and may even be detrimental. Women are more likely to have co-morbidities than males when they are diagnosed with CAD (e.g., hypertension, diabetes). After their first MI, women are more likely than males to die. Black women had greater incidences of coronary artery disease (CAD) than white or Hispanic women. Men and women are affected differently by non-modifiable CHD risk variables like as age and family history (Bots et al ., 2017; Gao et al., 2019)

- **The ethnicity:** Hispanics., Blacks., Southeast Asians., as well as Latinos which consider a higher risk of C.A.D morbidity and mortality than other ethnic groups.
  - White men have the greatest incidence of coronary artery disease (CAD).
  - Blacks have a younger onset of coronary artery disease (CAD). ((Blacks have a greater incidence and mortality rate from CVDs, including as CAD and strokes, than the general population in the United States. Black women had a higher incidence and death rate from CAD than white and Hispanic women.
  - Native Americans: ((Native Americans die from heart disease at a younger age than the general population. The mortality rate for people under the age of 65 is double that of other Americans. Tobacco use, hypertension, obesity, and diabetes are all major modifiable CVD risk factors for Native Americans.))
  - Hispanics: ((Hispanics have a somewhat lower rate of coronary artery disease (CAD) than non-Hispanic whites or blacks.

Hispanics have a lower rate of coronary artery disease death than non-Hispanic whites)) (Safarova et al., 2016; Volgman., et al , 2018).

- **Family history:** Another important risk factor is family history. Patients younger than 50 years old also having a family history of early heart diseases which are with a more mortality rate from CAD. A father as well as the brother who diagnosed with the CAD before the age of fifty five years old, and also the mother or the sister whom diagnosed before the age of sixty five, which both involves the risk factors, according to a separate article. The genetics of coronary artery disease and myocardial infarction (CAD/MI) are complicated and poorly understood. The hereditary contribution to coronary artery disease (C.A.D) is thought to be in the range of 40% to 60%. This percentage is primarily related to the genes which are regulate established risk factors (e.g., metabolism of the fat) (Hajar, 2017 ; Brunner & Suddarth, 2017 ; 2021 StatPearls)

2.10.2. Modifiable Risk Factors

❖ Smoking:

The use of tobacco products is a third important risk factor for coronary artery disease (CAD). The people who smoke the tobacco or utilize smokeless tobacco have a substantially higher chance of getting CAD than those who do not. Furthermore, tobacco uses lowers estrogen levels, premenopausal women who smoke are more likely to develop coronary artery disease. Nicotine in tobacco smoke stimulates the release of catecholamines (epinephrine and norepinephrine). Increased heart rate (HR), peripheral vasoconstriction, and blood pressure (BP) are all caused by these neurohormones. The workload of the heart is increased as a result of these changes. Tobacco smoke causes a rise in LDL, a decrease in HDL, and the release of harmful O2 radicals. All of these factors contribute to

thrombosis and vascular irritation. Carbon monoxide, which is contained in tobacco smoking, reduces the number of sites available for O2 transport, lowering hemoglobin's carrying capacity. As a result, the impacts of increased cardiac activity and carbon monoxide's O2-depleting affect drastically in reducing the amount of O2 accessible to the heart muscle. Carbon monoxide is also thought to be a chemical irritant that damages the endothelium (Malakar et al., 2019).

❖ High blood pressure:

Hypertension is concerning with the increasing the risk of the coronary artery disease (C.A.D.), stroke, peripheral vascular disease (PVD), heart failure (HF), and death. Hypertension is linked to a higher risk of coronary artery disease in the postmenopausal female than of the male and premenopausal female. A normal blood pressure reading is 120 mm Hg/80 mm Hg, according to the most recent published hypertension guidelines. Elevated blood pressure (BP 120-129 mm Hg/80 mm Hg), stage 1 hypertension (BP 130-139 mmHg/80-89 mm Hg), or stage 2 hypertension (BP >140 mm Hg/ > 90 mm Hg) are the three types of hypertension. Although the etiology of hypertension is unclear in 90% of individuals affected, it is frequently treatable with lifestyle changes and drugs. All people with high blood pressure and hypertension should make lifestyle modifications as part of their treatment. To achieve therapeutic goals, people with the stage one or two of high blood pressure frequently require pharmacological therapy, often more of the one medicine. Teach patients the importance of achieving and maintaining target BP goals. Endothelial damage is caused by the shearing stress of high blood pressure, which accelerates the progression of atherosclerosis. Atherosclerosis, in turn, produces narrowing and thickening of artery walls, as well as a reduction in vascular dispensability and flexibility. Blood must be pumped with more force via damaged arteries. The increased force causes an increase in BP.

With each contraction, so the extra effort causes left ventricular (LV) hypertrophy and a reduction in stroke volume (Malakar et al., 2019)

❖ **High blood cholesterol levels:**

High blood cholesterol levels can raise the risk of plaque development and atherosclerosis. A high level of low-density lipoprotein (LDL) cholesterol, also known as bad cholesterol, can induce high cholesterol. High-density lipoprotein (HDL) cholesterol, also known as good cholesterol, can have a role in the development of atherosclerosis (Kwon et al., 2019;Yi et al., 2019).

❖ **Diabetes**:

Diabetes increases the risk of coronary heart disease. Obesity and high blood pressure are both risk factors for type 2 diabetes and coronary artery disease. Diabetes patients, especially those with well-controlled blood glucose levels, have a 2 to 4 times higher risk of coronary artery disease. Diabetes patients develop CAD more frequently and at a younger age. When it comes to the beginning of CAD symptoms, there is no age difference between males and females with diabetes. When a person has a MI, undiagnosed diabetes is frequently identified. Diabetes patients are more likely to experience endothelial dysfunction. This could explain why fatty streaks appear in the arteries. Diabetes patients have altered lipid metabolism and have elevated cholesterol and triglyceride levels. Diabetes should be managed with lifestyle changes and medication to attain a glycosylated hemoglobin (A1C or Hb A1C) level less than 7%. (Poznyak et al., 2020 ; Mayo Clinic, 2021).

❖ **Overweight or obesity:**

Obese individuals have a greater mortality rate than coronary artery disease. Obesity is defined as having a body mass index (BMI) greater than 30 kg/m2 and a waist circumference larger than 40 inches for

males and 35 inches for women. BMI is calculated by multiplying an individual's weight (kilogram) by the square of their length in the meters. The risk as for coronary artery disease is related to the degree of fat. Obese individuals may have elevated LDL and triglyceride levels, which are closely associated with atherosclerosis. Obesity is frequently associated with high blood pressure and insulin resistance. Individuals who store lipid in the belly (an apple form) rather than the hips and buttocks (a pear image) which are considered higher prevalence of coronary artery disease (CAD) (Merai et al., 2016; Malakar, 2019).

❖ **Physical inactivity:**

The fourth major changeable risk factor for CAD is physical in activity. Physical inactivity is defined as a lack of consistent physical exercise. For at least five days each week, the ACC and the AHA recommend 30 to 60 (minutes) of the exercising, like briskly walking, for example. The exact mechanism through which physical inactivity predisposing the person to CAD is un clear. HDL levels are higher in physically active people. Exercise boosts thrombolytic activity, which lowers the chance of clotting. In addition, exercise may aid in the development of heart collateral circulation. Exercise training reduces the incidence of coronary artery disease in physically inactive people through improving cholesterol metabolism, increasing HDL synthesis, and improving O2 extraction by the muscles. This reduces the workload on the heart. Regular physical activity can help persons with CAD manage their symptoms, increase their functional ability, and improve other risk factors like insulin resistance and glucose intolerance.

❖ **High stress:**

The accumulation of stress in the life can damage the arteries and exacerbate the effects of other risk factors for coronary artery disease. Among the psychological risk factors for coronary artery disease include

depression, acute and chronic stress (for example, poverty or being a caregiver), anxiety, hostility and anger, as well as social isolation and lack of social support. Stress plays a role in the development and progression of coronary artery disease. The physiologic mechanisms by which stress predisposes a person to the development of CAD are sympathetic nervous system (S.N.S) stimulation and its influence on the heart. Increased catecholamine release (epinephrine, norepinephrine) is caused by SNS stimulation, which may contribute to endothelial damage, inflammation, and platelet activation. SNS activation increases myocardial O2 demand via increasing HR and the power of cardiac contraction. Stress-related mechanisms can result in higher cholesterol and glucose levels, as well as alterations in blood coagulation, all of which contribute to atherosclerosis development (Merai et al., 2016; Brown et al., 2021).

❖ **Unhealthy diet:**

Consuming an excessive amount of food high in saturated fat, trans fat, salt, and sugar can increase your risk of developing coronary artery disease. Homocysteine Homocysteine levels in the blood are related to the elevated risk of coronary artery disease (C.A.D) and other CVDs. Homocysteine is formed when the essential amino acid methionine is broken down in the presence of dietary proteins. Elevated levels of homocysteine may be associated to atherosclerosis via the (1) destroying the entire lining of the blood vessels, (2) enhancing plaque buildup, as well as (3) changing the clotting process to form clots that are more likely to happen. Although folic acid reduces homocysteine levels, research has not demonstrated that lowering homocysteine levels reduce the risk of coronary artery disease (CAD) (Merai et al., 2016; Malakar., 2019; Mayo Clinic, 2021 ; Brown et al., 2021)

❖ **Substance Use:**

Illegal drug use, such as cocaine and methamphetamine, can result in coronary artery spasm and myocardial ischemia, as well as chest

pain. Initially, the majority of individuals with drug-induced chest discomfort cannot be separated from those with coronary artery disease (CAD). They frequently experience sinus tachycardia, elevated blood pressure, and chest discomfort. Chest pain develops as a result of increased myocardial oxygen demand resulting from increased heart rate and contractility, as well as coronary vasoconstriction. Coronary spasm can result in myocardial infarction. Serum cardiac biomarkers and an electrocardiogram (ECG) are used to assess whether or not a patient is suffering from ACS. A drug screen may be beneficial in determining what caused the cardiac episode (Mahtta et al., 2021).

❖ Homocysteine

Homocysteine levels in the blood are related to the elevated risk of coronary artery disease (C.A.D) with the other CVDs. Homocysteine is formed when the necessary amino acid methionine is broken down in the presence of ingested protein. Homocysteine excess may be linked to the atherosclerosis via the (1.) harming the entire lining of the blood arteries, (2.) encouraging accumulation of lesion, also (3.) altering the clotting process, increasing the likelihood of clots occurring. Although folic acid reduces homocysteine levels, research has not demonstrated that lowering homocysteine levels reduce the incidence of coronary artery disease (CAD) (Li et al., 2020).

❖ Metabolic syndrome

The metabolic syndrome, a collection of metabolic risk factors that exist in an individual, was a significant risk factor of the coronary heart disease. Three of the following conditions constitute a diagnosis of this syndrome:

- Diabetes mellitus (high fasting blood glucose levels or poor glucose tolerance test results) Insulin resistance.

- Obesity is at the heart of the issue (waist circumference greater of the 35 inches for the female greater about the 40 inches of the male)

- Triglyceride levels of greater of the 150 mg./dL. in the female and less than 50 mg/dL in the male are indicative of dyslipidemia.

- Involving a blood pressure which is consistently above 130/85 mm Hg.

- Ailment that causes inflammation (increased levels of the C-reactive protein).

- Prothrombotic condition (elevated level of fibrinogen) (Mahalle et al., 2014; Alshammary et al., 2021).

2.10.3. Risk factors unique to women

Women-specific risk factors include menopause prematurely, oral contraceptive use, and hormone replacement therapy (HRT). Serum HDL levels decrease and LDL levels increase during menopause, increasing the risk of coronary heart disease. Early menopause (natural or surgically induced) increases the risk of coronary heart disease and myocardial infarction. Women who undergo bilateral oophorectomy before to the age of 35 without hormone replacement are eight times more likely to have a heart attack than women who experience menopause naturally. In these women, estrogen replacement therapy reduces their risk of coronary heart disease and myocardial infarction. In contrast, oral contraceptives increase the incidence of MI, especially in women who also smoke (Demel et al., 2018 ; Young & Cho, 2019 ; Prabakaran et al., 2021)

2.11. Pathophysiological mechanisms

The inner lining of the arteries is damaged in several stages by atherosclerosis. An injury to the artery's inner lining cells, the endothelial cells, causes inflammation and an immune response. Smooth muscle cells proliferate more rapidly when the endothelium is damaged. Collagen and fibrous proteins are secreted by these cells. Accumulation of fats, platelets,

and other coagulation factors inflammatory marks is used to replace a portion of the artery wall. A fatty streak on the artery lining is an early sign of injury. This accumulation of fatty deposits is referred to as plaque. It is made up of smooth muscle cells, fibrous proteins and cholesterol-rich plastic cells. Additionally, lesion characterized by abnormal, jagged edges which promote the adhesion of blood cells and other substances to the arterial wall. The area of the plaque that is in contact with the bloodstream produces a fibrous cap, a tough shell that is frequently calcium-containing. This deposit becomes calcified and hardened over time, producing turbulence and cell damage. This contributes to the vessel's buildup (Brunner & Suddarth, 2017;Williams & Hopper, 2015). Occasionally, the fibrous cap of the plaque breaks or ruptures, resulting in the formation of the blood clotting. It is possible for this blood clot to dislodge and lodge in a relatively small artery leading to the heart, or it can completely block the coronary artery. Plaque buildup can also narrow the artery, resulting in stenosis. This plaque development can result in a partial or complete obstruction of the artery, resulting in decreased blood flow. As a consequence, the area beyond the obstruction may become ischemic. If blood flow is not restored following CAD, stable angina, unstable angina, myocardial infarction, and sudden cardiac death might occur (Wong ., 2014 ; Severino et al., 2020).

2.12. Sign and symptoms

The narrowing of coronary arteries limits the amount of oxygen-rich blood that can flow to the heart, which becomes more noticeable during vigorous activities that cause the heart to beat more quickly. This results in severe symptoms for some, while others have no symptoms at all. The most common symptom is chest pain or discomfort that happens frequently with physical activity, after eating, or at other predictable periods; this is referred to as stable angina and is caused by narrowing of

the heart's arteries. Chest tightness, heaviness, pressure, numbness, fullness, or squeezing are also symptoms of angina. Stable angina refers to angina that varies in strength, type, or frequency. Additionally, unstable angina may occur prior to myocardial infarction. Around 30% of persons who present to the emergency department with an unknown cause of pain have pain associated with coronary artery disease (Kontos et al., 2010; Quah et al., 2014). If you experience angina or any of the symptoms described below that linger longer than 5 minutes, you should seek medical attention. These symptoms could indicate a heart attack (also known as a myocardial infarction or MI), and prompt treatment is required:

• Difficulty breathing or shortness of breath, Sweating or cold sweat.

 • Fullness, indigestion, or choking feeling in other areas of the upper body, such as the arms, left shoulder, back, neck, jaw, or stomach (may feel like heartburn).

• Nausea or vomiting, Dizziness, light-headedness, acute weakness, or anxiety

• Rapid or irregular heartbeats (Brunner & Suddarth, 2017; Cleveland Clinic, 2021; NHLBI,2021)
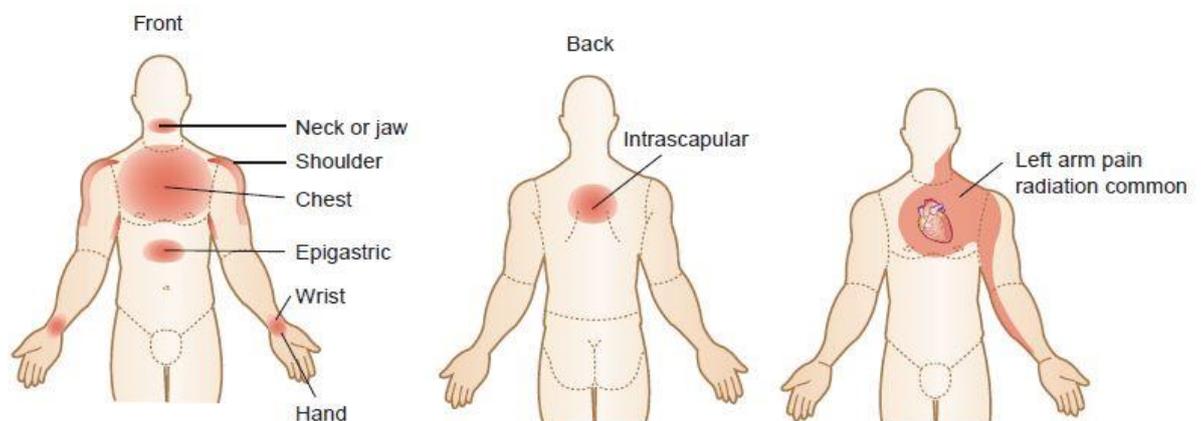
Figure (2-6) Common locations of anginal pain, which may vary in combination and intensity (Williams & Hopper, 2015).

Nonetheless, women's symptoms can differ from men's, and the most frequently reported symptom among women of all races is shortness of breath (McSweeney et al., 2010). Additionally, excessive weariness, sleep difficulties, dyspepsia, and worry are more frequently reported by women than men. Certain women, however, may develop an abnormal heartbeat, dizziness, excessive perspiration, and nausea. Women can also experience burning, discomfort, or pressure in the chest or upper abdomen that can radiate to the arm or jaw, but it is less frequently reported by women than men. Women, on average, develop symptoms ten years later than men. Women are less likely to detect and seek treatment for symptoms (McSweeney et al., 2010; Cleveland Clinic,2021).

2.13. Complications

Arrhythmias (Arrhythmias of the heart, such as ventricular fibrillation, can cause the heart to stop pumping without warning. This type of cardiac emergency can result in sudden death if an external defibrillator or an implantable cardioverter defibrillator does not immediately restore the heart's normal rhythm), acute coronary syndrome, congestive heart failure (which can result in fluid buildup in the lungs, difficulty breathing, and swelling of the legs, liver, or abdomen), free wall rupture and aneurysm formation as well as mitral regurgitation and pericarditis are the every year, as many as 400,000 American people die unexpectedly caused by the acute cardiac attack. These immediate cardiac deaths (SCD) are frequently caused by a fatal arrhythmia, such as ventricular fibrillation. The risk of sudden cardiac arrest (SCA) does, however, increase with age or a family history of heart illness. Men are two to three times more likely than women to have SCA. Following a cardiac attack, scar tissue replaces the destroyed heart muscle cells. Scar tissue can interfere with and harm the electrical system of the heart, causing electrical signals to travel incorrectly throughout the heart. These alterations to the heart raise the likelihood of

severe arrhythmias and sudden cardiac arrest (SCA). The majority of adult instances of SCA appear to be caused by an acute coronary syndrome. However, many of these adults had no indications or symptoms of CAD prior to developing SCA. The risk of SCA is the greatest during the first six months following a heart attack (NHLBI, 2019; Regmi & Siccardi, 2020 ; Mayoclinic.org, 2021).

2.14. Diagnostic evaluation of coronary artery disease

The many methods of detecting coronary artery disease can be found in the information provided below:

2.14.1. Electrocardiogram (ECG)

Electrocardiogram is a fairly straightforward and extremely useful diagnostic for assessing coronary artery disease. It is used to assess cardiac conduction system activity. It is performed with the help of ten leads that are inserted to the skin at predefined sites. It contains information on the physiology as well as the anatomy of the heart. In most cases, there are 12 lead lines printed on the piece of paper after the test is completed, and each line corresponds to a certain area on your heart. As a result, the heart's pace, rhythm, and axis are the most important pieces of information to note on an ECG. After that, it is possible to gather information about acute and chronic pathologic processes (Hendel et al., 2017).

2.14.2. Echocardiography

Echocardiography is a type of ultrasonography examination of the heart. In serious illnesses, including in inpatient and outpatient settings, it is a valuable and noninvasive mode of testing. In acute situations, it could provide details on the wall motion, valve reiteration as well as narrowing , infectious or immune disorders, also the diameter of the chambers. Furthermore, it is helpful in diagnosing acute pulmonary diseases such as

pulmonary embolism. Additionally, it assesses the pericardial cavity (Fihn et al., 2012; Sicari & Cortigiani, 2017).

2.14.3. Stress Test

For the assessment of coronary artery disease, a noninvasive stress test is used. If angina or a similar condition is suspected, it can be used to rule in or rule out coronary artery disease by correctly interpreting the results in the right context (CAD). Cardiovascular disease is discovered when a patient's heart is stopped because of abnormal EKG changes in ST segments as well as

angina symptoms as a result of stress testing ,

"EKGs" are taken before, throughout and post the procedure, and the patient's condition is constantly monitored for signs of complications. (Fihn et al., 2012; Stokes & Roberts-Thomson, 2017), Figure (2-7) ECG stress test (ATrain Education,2021)
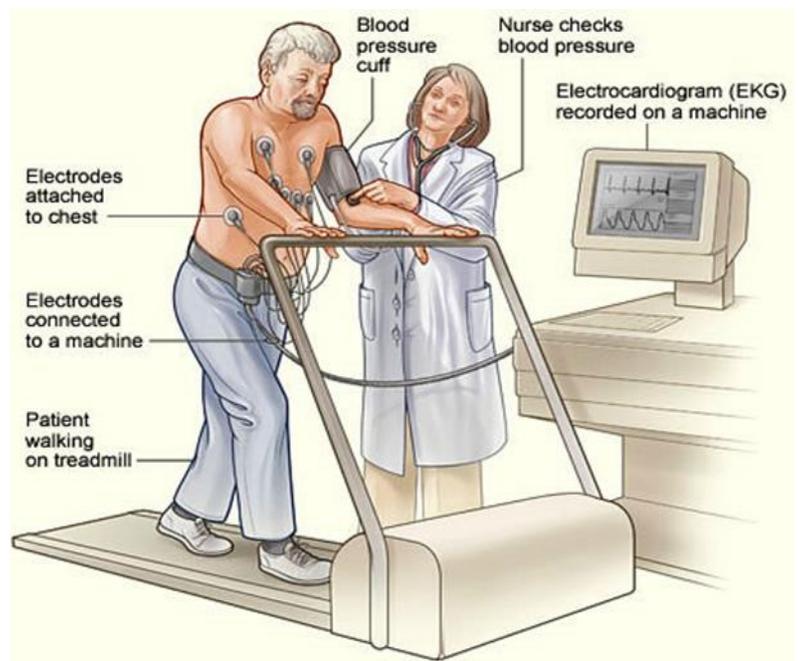
2.14.4. Chest X-ray

The Chest X-ray is utilized to make a preliminary diagnosis of cardiovascular disease. Increased heart size, pulmonary vascular lines, or pleural effusions may indicate pulmonary congestion owing to cardiac failure. Additionally, the chest X-ray can be used to rule out lung pathology such as infection, cancer, or fibrosis. The importance of having a normal

chest X-ray is that it cannot confidently rule out cardiac aetiology in a patient who presents with dyspnea (Stokes & Roberts-Thomson,2017).

2.14.5. Blood work

The results of blood tests can be used to make diagnoses and monitor the effectiveness of treatment. Cardiac enzymes and B-type natriuretic peptides, as well as full blood counts and metabolic panels, are frequently performed in acute conditions. Brain Natriuretic Peptide (BNP)offers information on volume overload caused by cardiogenic causes, however it has limits. In renal disease, it can be mistakenly inflated, and in obesity, it can be abnormally low. Cardiac enzymes like Creatine Kinase and troponin can tell us if we have had an acute ischemic attack. Lipid panels are useful in chronic situations because they provide forecasting data. There are two blood tests that can be used to diagnose acute pericarditis: C-reactive protein (CRP) and ESR (erythrocyte sedimentation rate). It is possible for both the liver as well as the heart to be affected by hemochromatosis infiltrative mechanisms., so a liver function test (LFT) can be used to check for this condition. Increased right heart pressures are also assessed with liver testing, especially in chronic situations (Madjid & Fatemi, 2013; Kadry et al., 2021 ; Polat et al., 2021).

2.14.6. Total serum cholesterol

Hyperlipidemia causes an increase in total serum cholesterol. The ratio of HDL to total cholesterol can be calculated using a lipid profile, which includes triglyceride, HDL, and LDL levels. A ratio of at least 1:5 is recommended, with a ratio of 1:3 being optimum. Increased lipid levels are linked to a higher risk of atherosclerosis. Lipoprotein (a) may be assessed in patients with a strong family history of early CHD or familial hypercholesterolemia. Increased levels of lipoprotein (a) may be associated with an increased risk of coronary heart disease (CHD) (MayoClinic Staff, 2019).

2.14.7. The cardiac catheterization

Acute ischemic heart disease is the best diagnosed and treated with the most precise method available, which is cardiac catheterization. However, this is a risky operation because it is intrusive. Everyone is not a good candidate for the procedure. It is generally recommended that patients with a high pre-test probability of CAD undergo the procedure in non-ACS settings. As part of the American College of Cardiology's (ACS) emergency cardiac catheterization program, all STEMI and selected NSTEMI patients receive an emergency cardiac catheterization. This operation is performed in a cardiac catheterization lab under moderate sedation and is expertised dependant. During the procedure, the patient will be exposed to contrast, which has the potential to induce major allergic responses and kidney impairment (Kosova & Ricciardi, 2017; Manda et al., 2018).

2.15. Medical Management

2.15.1. Nitroglycerin

Nitrates are a critical component of the angina pectoris therapeutic regimen. Nitroglycerin is a vasoactive drug that reduces myocardial oxygen consumption, which reduces ischemia and soothes pain. Nitrates lower preload by causing vasodilation, and high dosages of nitrates also reduce afterload by causing arterial vasodilation. Blood pools in the veins as they dilate, causing venous pooling all through the entire human body. Because of this, the heart receives less blood and the preload (the filling pressure) is decreased (Mattia & Manetta, 2017; Cleveland Clinic, 2021).

2.15.2. Beta-Adrenergic Blocking Agents

Beta-blockers reduce myocardial oxygen consumption by blocking beta-adrenergic sympathetic stimulation to the heart. As a result,

the heart rate is decreased, impulse conduction across the conduction system is slowed, blood pressure is dropped, and myocardial contractility is diminished (force of contraction). This aids in the management of chest discomfort as well as retards the initiation of the ischemia throughout the activity or working. The Beta blockers decrease of the risk of repeated angina, myocardial infarction as well as sudden heart death (Pflieger et al., 2011; Ford & Berry, 2020).

2.15.3. Calcium Channel Blocking Agents

Different situations can lead to a variety of effects from calcium Channel blockers (calcium ions antagonists). There is a decrease in the pulse rate and a decreasing in myocardial contraction strength as a result of these agents impairing sinoatrial and atrioventricular node automaticity and conduction (negative inotropic effect). The heart's workload is reduced as a result. Calcium channel blockers also relax the blood vessels, causing a decrease in blood pressure and an increase in coronary artery perfusion (Mattia & Manetta, 2017 ; Brunner & Suddarth, 2017).

2.15.4. Antiplatelet and anticoagulant medications

Platelet accumulation and thrombus formation, both of which reduce blood flow, can be prevented with antiplatelet medications.

Aspirin: Inhibiting the aggregation of platelets decreases the risk of a heart attack as well as death along with people suffering from coronary artery disease.

Clopidogrel: Clopidogrel (Plavix) is used in conjunction with aspirin in people at high risk of myocardial infarction. Patients are administered multiple platelet inhibitors because the drugs limit platelet activation via distinct routes.

Heparin: The intravenous administration of unfractionated heparin prevents the formation of new blood clots. Using heparin to treat unstable angina reduces the risk of a fatal heart attack. Besides patients with symptomatic which indicate an underlying condition they have a high risk of a cardiac event, admission to the hospital is recommended, as well as heparin infusions administered intravenously (IV) and on a continuous basis (continuous infusion) (Al Shammeri et al., 2014; Safri, 2018; Wan et al., 2020)

2.15.5. Glycoprotein IIb/IIIa Agents

Glycoprotein (GP) IIb/IIIa agents are administered intravenously to hospitalized patients with unstable angina as an adjunctive therapy to percutaneous coronary intervention (PCI). GP IIb/IIIa receptors on platelets are blocked by these drugs, which also inhibit the attachment of the fibrinogen as well as other components that bind platelets together as well as result in the formation of platelet clots from occurring (Tummala & Rai, 2020).

2.15.6. Angiotensin Converting Enzyme inhibitors

The angiotensin converting enzyme (ACE) inhibitors attempt to decrease angiotensin II from being produced, which is a significant vasoconstrictor. This activity lowers blood pressure by reducing peripheral artery resistance (vasodilation).

2.15.7. Statins

Cholesterol and inflammation in arterial walls contribute in the atherosclerosis development. Statins reduce cholesterol levels by inhibiting the generation of cholesterol in the liver. They also lower inflammation and CRP levels, improving CAD patient outcomes. Statins are drugs that are used to prevent and cure atherosclerosis and the diseases that it causes (De Luca et al., 2018 ; Mehra et al., 2020)

2.15.8. Administration of oxygen

Typically, oxygen delivery began just at initiation of chest discomfort in a try to enhance oxygen delivery to the myocardium and alleviate pain. In order to establish the therapeutic effectiveness of oxygen, it is necessary to measure the rate and rhythm of respiration. Pulse oxymeter is being used for the measure blood O2 saturation; a typical level of oxygen saturation (SpO2) is greater than 93% (Samadani & Affana, 2018).

2.16. Surgical management

To restore blood flow and oxygen to ischemic tissue, a variety of procedures can be performed. Transluminal coronary angioplasty, laser angioplasty, coronary atherectomy, and intracoronary stents are all examples of nonsurgical approaches for percutaneous coronary intervention (PCIs). Coronary artery bypass grafting (CABG) is a surgical operation that may be performed to manage coronary artery disease (LeMone et al ., 2014).

2.16.1. Percutaneous trans luminal coronary angioplasty

The PTCA technique is a surgical technique that uses the balloon tipped catheter in order to expand the obstructed coronary arteries as well as relieve hypoperfusion. Also its benefecial in the treatment of the angina as well as a treatment of the A.C.S. CABGs that have become blocked can also be opened with catheter-based treatments. The goal of PTCA is to enhance blood flow by squeezing and   splitting the atheroma within a coronary artery. The PTCA procedure is performed in a cardiac catheterization laboratory(Malik & Tivakaran, 2020).
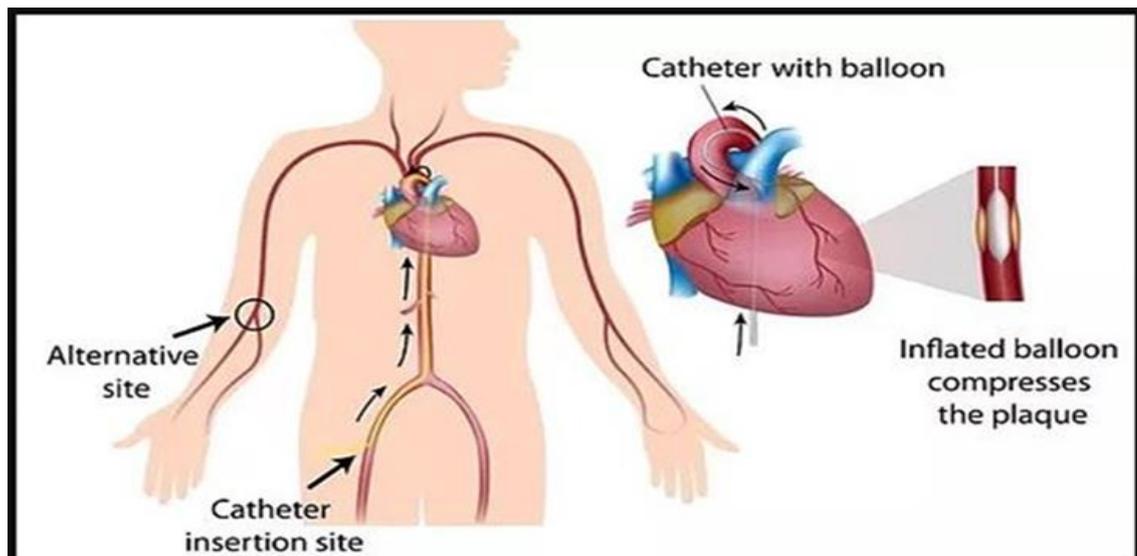
Figure (2-8) Percutaneous Transluminal Coronary Angioplasty (HeartPlac, 2021).

Sheaths are hollow catheters that are put into the femoral artery and occasionally into the femoral vein to act as a passageways for those other catheters. Following that, the catheters have been put via femoral artery, further into coronary arteries via the aortic arch. The angiogram is a diagnostic procedure that uses radiopaque contrast chemicals (often referred to as dye contrast) in order to determine the site as well as the amount of the obstruction. Through the sheath, insertion of the balloon tipped dilation catheter and positioned over the lesion (Malik & Tivakaran, 2020; Saner et al., 2021).

2.16.2. Coronary Artery Stent

A coronary artery stent is used during angioplasty to prevent a coronary artery from closing due to an atherosclerotic lesion. A stent is a thin metal tube that is inserted into the coronary artery at the site of a blockage to allow blood flow through it. A stent is a device that enables assistance towards the coronary arterial walls just at site of obstruction in order to maintain blood circulation through the coronary arteries. Stent placement can result in complications such as thrombosis formation of a

blood clot within a blood artery) , bleeding due to anticoagulation, stent

occlusion, or dissection of the coronary arteries.

Stents with drug-eluting coatings are coated with immunosuppressive medication that is in and around the place where it was placed, reducing the likelihood of the recurrence of obstruction (Bonaventura et al., 2017; Schmidt & Abbott, 2018),(Figure (2-9) Coronary Artery Stent (LeMone et al ., 2014).

2.16.3. Atherectomy

Atherectomy is a surgical procedure that requires a significant amount of invasiveness. that includes cutting, shaving, or grinding the plaque as well as lesion from the coronary arteries. It may be combined with PTCA. Directional coronary atherectomy and transluminal extraction catheter techniques both entail the perform of the catheter to remove the plaque as well as any breaks of it from the coronary artery wall (Malik & Yandrapalli, 2020 ; Beohar et al., 2020) .
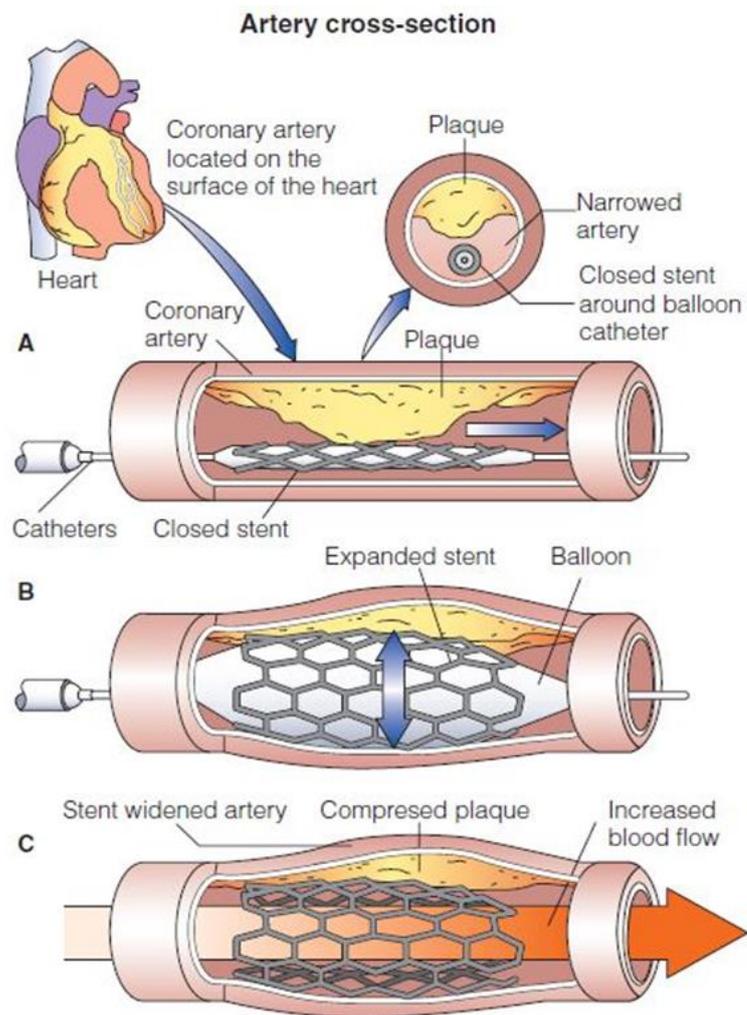
2.16.4. Brachytherapy

Brachytherapy, effectively inhibits smooth muscle cell proliferation, helps to avoid the recurrence of blockage and the development of vascular restenosis. Brachytherapy is the administration of gamma or beta radiation to a lesion by inserting a radioisotope near it. Drug-eluting stents, on the other hand, are more routinely utilized to prevent restenosis than brachytherapy, so they are more cost-effective and more effective than alternative method (Mangione et al., 2017; Varghese et al., 2018) .

2.16.5. Coronary artery bypass grafting (CABG)

Procedure to treat coronary heart disease is performed by inserting an artificial connection (also known as a bypass) among both of the aorta and the coronary artery that extend beyond the obstruction. Once this occurs, blood can begin to perfuse the ischemic portion of the heart. The most typically used arteries for coronary artery bypass grafting are the internal mammary artery in the chest and the saphenous vein in the leg (CABG) . Figure (2-10) Coronary artery bypass grafting (Intermountain Healthcare, 2021)
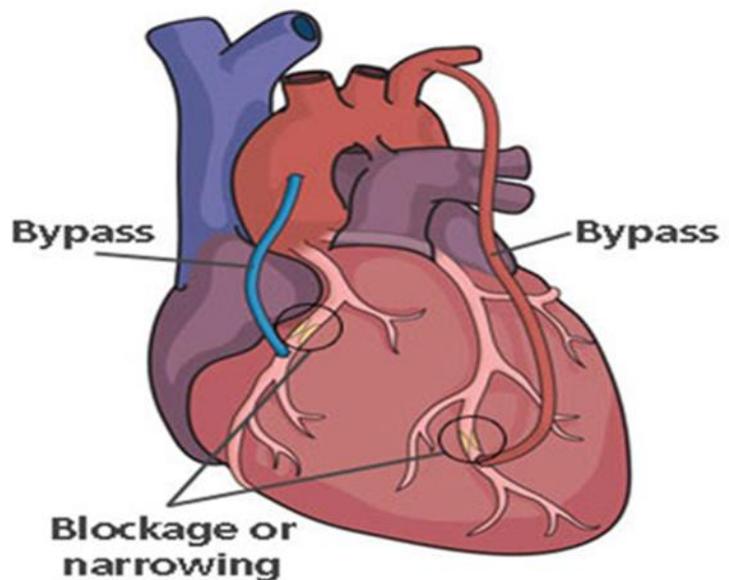
Patients with multiple vascular disease, decreased left ventricular function, or diabetes, as well as those with severe obstruction of the left major

coronary artery, might consider it (Cohn et al., 2015; Fleissner et al., 2015; Melly et al., 2018).

2.17. Prevention

Four modifiable risk factors have previously been identified including key potential factors of the coronary artery disease as well as its related complications: high cholesterol levels, cigarette use, hypertension, and diabetes mellitus. As a result, they get considerable attention in health promotion and lifestyle modification initiative (Kırali, 2015 ; Ambrose & Najafi, 2018 ; Leening & Ikram, 2018).

2.17.1. Smoking

Within months of quitting smoking, the probability of the coronary heart disease (CHD) is reduced and cardiovascular health is improved. People who stop smoking cut their risk by half, regardless of how long they smoked before quitting. Within 3 to 5 years of quitting smoking, the risk becomes comparable to that of a non-smoker for women. Additionally, quitting smoking raises HDL levels, lowers LDL levels, and lowers blood viscosity, all of which are beneficial. All smokers are encouraged to cease through health promotion initiatives that are focused on prevention (Stewart et al., 2017).

2.17.2. Exercise

Increased activity results in an increase in HDL levels. Additionally, regular physical exercise can be reduced the resistance to the insulin and aid in weight loss. Exercise also develops collateral circulation over time, allowing blood to flow around clogged locations. Consult a health care practitioner prior to begin an exercise regimen (HCP) (Winzer et al., 2018).

2.17.3. Diet

The National Heart, Lung, and Blood Institute recommends that all adults make therapeutic lifestyle changes to minimize their risk of coronary artery disease (CAD) by lowering their LDL cholesterol. These recommendations place a premium on reducing saturated fat and cholesterol while increasing complex carbs (e.g., whole grains, fruits, and vegetables) and fiber. Consumption of fat should account for approximately 30% of calories, with the majority coming from mono- and polyunsaturated fats. Saturated fat and cholesterol are found in large amounts in red meat, egg yolks, and whole milk products and should be limited or removed from diets. If the blood triglyceride level is abnormally high, the guidelines recommend limiting or eliminating alcohol and simple carbohydrates from the diet. When omega-3 fatty acids are consumed regularly, they can minimize the risk of coronary artery disease. The AHA recommends eating fatty fish twice a week for persons without coronary artery disease. Fatty fish such as salmon and tuna include two forms of omega-3 fatty acids: eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) . Patients with coronary artery disease are urged to supplement their diets with EPA and DHA. Additionally, the AHA recommends tofu and other kinds of soybean, canola, walnut, and flaxseed since these products include alpha-linolenic acid, which the body converts to omega-3 fatty acid. Changes in lifestyle, such as a low-saturated-fat, high-fiber diet; abstinence from cigarettes; and increased physical exercise, can help reverse coronary artery disease and minimize coronary events (Stewart et al., 2017).

2.17.4. Lose weight

The losing weight likewise has a beneficial effect on the blood pressure control. For obese adults, losing one kilogram of body weight can result in a one-mm Hg reduction in systolic blood pressure. Losing weight

and maintaining a healthy weight can assist in the decreasing the threat of the coronary artery disease (CAD). Losing weight frequently improves other coronary artery disease risk considerations, like the cholesterol levels as well as the blood pressure and, and may also aid with diabetes control (Ades, & Savage, 2014; Regmi & Siccardi , 2021).

2.18. Nursing management of patient with coronary artery disease

On the basis of the data collected, the following major nursing diagnoses may be made:

Nursing Diagnosis: Cardiovascular tissue perfusion is ineffective as a result of decreased coronary artery circulation.

Goals : Pain or the discomfort in the chest alleviated

Nursing intervention

1.The following should be documented and reported to the doctor at the outset:

a. detailed account of the patient's chest pain, including details such as where it occurs, how intense it is, how long it lasts, and any contributing factors. Nausea, excessive sweating, and perhaps even complaints of unusual exhaustion may also be present.

b. Changes in the blood pressure, heart rhythm, brain activity, kidney output, and skin perfusion are all signs of coronary ischemia (eg, color, temperature).

2. As directed, record a 12-lead ECG during symptoms to check for persistent ischemia.

3. Oxygen should be administered as directed.

4. Administer prescribed medication and monitor the patient's response on a regular basis.

5. Use a bedside commode, a stool softener, and an elevated backrest to keep the patient comfortable while they rest. Through being calm and supportive, you can alleviate any fears or anxieties that the child may be experiencing. Make each patient's visit unique based on their response.

Nursing diagnosis: Potential for reduced exchange of gases associated with the failure of left ventricle.

Goals : There were no respiratory issues to deal with.

The nursing interventions

1. When we first started, we did this every four hours, especially in the presence of chest discomfort or symptoms, assess, document, and communicate to the physician abnormal heart sounds (S3 and S4 gallop or new murmur), abnormal breath sounds (particularly crackles), decreased oxygenation, and intolerance to exertion.

The nursing diagnosis: Potential of decreased cardiac output causing peripheral tissue perfusion to be inefficient in nursing diagnosis.

The goal is to maintain or achieve best perfusion of tissue.

The nursing interventions

1. Firstly, each four hours, also with the chest discomfort, evaluate, record, then notify to the doctor the following:

a) Hypotension؛

b. Tachycardia as well as other irregular heart rhythm

c. Activity intolerance

d. Mentation modifications (use family input)

g. Decreased urinary discharge (just under 30 mL/h(

f. Reduced peripheral pulses and extended capillary refill in patients with cool, clammy, cyanotic limbs .

The nursing diagnosis: anxiousness and fear of death related to cardiac symptoms

Goals: Indicators of severe anxiety are absent from this person.

- o There are appropriate nursing interventions to explore the implications of the diagnosis for the patient and to provide details more about diseases, its management, and ways to prevent its advancement.
- o For example, guided imagery as well as music treatment can be used to help the patient cope with their condition.
- o The patient's and their loved ones' spiritual needs can help alleviate their anxieties and fears.

The nursing diagnosis: Acute pain caused by a decrease in coronary artery blood circulation and an increase in myocardial oxygen demand.

Goals: There will be no complaints of pain from the patient.

The nursing interventions:

1. It is important to ensure that a vascular supply is available.
2. Administering pain relievers may necessitate IV access.
3. Using a nasal cannula to administer oxygen as directed to the myocardium, increasing oxygen availability.
4. Achieving a 12-lead Electrocardiogram as ordered to evaluate the ST segment for ischemia or injury to the myocardium.
5. Reducing platelet aggregation by taking aspirin as prescribed.

6. Alleviating pain, administer morphine according to the manufacturer's instructions.

7. Please following all instructions for the use of nitroglycerin (sublingual, spray). Notify your healthcare provider (HCP) if pain persists despite the administration of three doses of NTG, or if your vital signs change. Unstable angina or myocardial infarction can cause chest pain that is not relieved by nitrates.

8. Keeping a close eye on the patient and reevaluating their level of pain five minutes after the medication has been administered. Never leave a patient alone who is experiencing chest pains.

9. Notifing the HCP of any changes to the ECG. A high ST-segment reading may indicate a heart issue.

10. Helping the patient feels more secure by providing reassurance and emotional support during the healing process. Patients and their loved ones often worry about the patient's prognosis, making emotional support essential.

11. Encouraging patients with chest discomfort to rest and reduce their anxiety in order to alleviate their stress and discomfort.

12. Keeping track of patients data in a medical file so that their condition can be shared and their treatment plan can be followed.

The nursing diagnosis: Ineffective management of atherosclerosis as well as coronary artery disease regimen are due to a lack of knowledge.

Goals: Knowledge and maintenance of atherosclerosis as well as CAD will be reported by the patient.

The nursing interventions :

- Determining if the patients cognitive and functional impairments will hinder their ability to learn the desired information.
- Include an important other in the client's learning process, if possible.

- At the outset, gathering more details about the client's current understanding of atherosclerosis as well as cardiovascular disease (CVD).

- Prioritizing teaching topics by gathering information on the patients readiness to learn, their desired learning needs, and their feelings about making lifestyle changes part of their daily routine.

- Assessing cultural views, as they may affect learning.

- Ensuring the physical well-being of the patients during instruction in order to improve learning.

- It is best to tailor the instruction to each student's specific learning style and interests by using materials written in simple language or using visual aids like diagrams.

- In order to aid comprehension, providing written information in the patient's native language and use a translator as necessary.

- The pathophysiology of the atherosclerosis as well as coronary artery disease (CAD) should be explained in order to help patients better understand the disease and its treatment.

- Describing the actions, side effects, as well as importance of taking prescribed medications as directed to alleviate pain and avoid complications.

- Promoting healthy habits, such as losing the weight, quitting smoking, coping with stress, and regular exercise, through community resources.

- Making sure that the patient understands the importance of keeping an eye on his or her heart rate and blood pressure, as well as reporting any chest pain or shortness of breath.

- Making it easier for a patient to incorporate new information into their daily routines so that they are more likely to change his or her behavior.

- Verbalizing new knowledge or skills is an important part of learning for the patient.

- Ensuring patient comprehension, record patient education and evaluations of patient knowledge.

Evaluation

If the patient is free of pain, he or she will have a better understanding of atherosclerosis as well as CAD and their management, and says that he or she intends to alter risk factors for CAD, the intervention is considered a success (LeMone et al., 2014; Brunner & Suddarth, 2017; Ackley et al., 2019).

2.19. Quality of life

2.19.1.Theoretical overview Quality of life :

A quality-of-life (QOL) theory based on Abraham Maslow's human developmental perspective is described. It is stated that developed societies have members who are primarily concerned with meeting higher-order needs (social, esteem, and self-actualization), whereas less-developed societies have individuals who are primarily concerned with meeting lower-order needs (biological and safety related needs). QOL is characterized in terms of the degree to which the majority of a society's members satisfy their hierarchical needs (Alborz, 2017).

2.19.2. Henderson's 14 Components as Applied to Maslow's Hierarchy of Needs

Henderson's 14 components can be applied or compared to Abraham Maslow's Hierarchy of Needs due to the degree of similarity. Components 1 through 9 are classified according to Maslow's Physiological Needs, whereas component 9 is classified according to Maslow's Safety Needs. The tenth and eleventh components go under the category of Love and Belongingness, whereas the twelveth, thirteenth, and fourteenth

components fall under the category of Self-Esteem Needs. Virginia Henderson's Need Theory's 14 components demonstrate a holistic nursing strategy that addresses physiological, psychological, spiritual, and social needs (Ahtisham & Jacoline, 2015).

Physiological Components

1. Take a normal breath.

2. Consume sufficient food and fluids.

3. Eliminate of bodily wastes.

4. Move in a manner consistent with desired postures.

5.Sleep and rest.

6. Choose appropriate attire - dress and undress.

7. Maintain body temperature within normal range by adjusting clothing and modifying environment.

8. Maintain a clean and well-groomed body and safeguard the integument.

9. Avoid environmental hazards and injure others Communicating and Learning Psychological Aspects .

10. Communicate and Learning Psychological Aspects.

11. Religious worship based on one's faith Sociologically Oriented to Work and Recreation.

12. Work in such a way that a sense of accomplishment is generated.

13. Engage in or participate in a variety of recreational activities .

14. Develop, discover, or fulfill a natural interest that contributes to proper development and health, and make use of accessible health services. Spiritual as well as moral (George, 2010 ; Angelo Gonzalo, 2021).

Analysis of the Need Theory

One cannot assert that all individuals with identical needs as those listed in Virginia Henderson's 14 activities which require the same items for health and life. With the advancement of technology, there may be additional requirements that humans are entitled to have met by nurses. The 14 activities were not clearly prioritized, and it is unclear whether the first is a prerequisite for the second. Although Henderson was able to describe and classify some of the wants of persons in agreement with Abraham Maslow's hierarchy of needs, it was nonetheless amazing that he accomplished so (Smith & Parker, 2015).

Henderson's 14 Components as applied to Maslow's Hierarchy of Needs

Figure (2-11) Henderson's 14 Components as Applied to Maslow's Hierarchy of Needs (Angelo Gonzalo, 2021)

ESTEEM
12. Work at something providing a sense of accomplishment
13. Play or participate in various forms of recreation
14. Learn, discover, or satisfy the curiosity

LOVE & BELONGINGNESS
10. Communicate with others in expressing emotions, needs, fears, or opinions.
11. Worship according to one's faith

SAFETY NEEDS
9. Avoid dangers in the environment and avoid injuring others

PHYSIOLOGICAL NEEDS
1. Breathe Normally   2. Eat and Drink Adequately   3. Eliminate body wastes
4. Move and maintain desirable postures   5. Sleep and rest
6. Select suitable clothes – dress and undress
7. Maintain body temperature within normal range by adjusting clothing and modifying environment
8. Keep the body clean and well groomed and protect the integument

nurseslabs

2.19.3. Definition of Quality of life

The term "quality of life" refers to a broad multidimensional concept that encompasses evaluations of the both positive and negative aspects of life. What makes it difficult to quantify is that, while the term quality of life has its own meaning for almost everyone and across all academic disciplines, individuals and organizations define it differently. While health is a critical domain of overall quality of life, there are others as well—for example, employment, housing, education, and neighborhood. As important dimensions of total quality of life as are culture, values, and spirituality, the assessment of these aspects is made more difficult because of the complexities involved. Nonetheless, academics have created important methodologies that have aided in conceptualizing and quantifying these numerous domains and their interrelationships (Centers for Disease Control and Prevention, 2018 ; Britannica, 2021)

2.19.4. Quality-of-life measures

Quality-of-life measures are classified into several broad categories. These include generic measures, which are designed to evaluate health-related quality of life in any patient population (indeed, in any population sample); disease-specific measures, such as those designed to evaluate health-related quality of life in certain sickness groups; and individualized measures, which allow the inclusion of aspects of life that are thought to be essential by individual patients. The Beck Depression Inventory (BDI), the Sickness Impact Profile (SIP), and the 36-item Short Form Health Survey are examples of quality-of-life measurements (SF-36). These measurements address a wide range of areas of life that can be negatively impacted by illness, including physical functioning, mental well-being, and the ability to engage in employment and social activities (Jenkinson, 2020).

2.19.5. Factors affecting quality of life

Physical or emotional factors might have always an effect on the various life aspects of a person. These factors are essential for everybody, however care workers have an unique responsibility in ensuring that certain factors are present for the individuals under their supervision. These are some examples:

- Factors that affect the physical body include: Activity; Nutrition; Physical comfort;
- Emotional aspects: arousal, participation
- Privacy, dignity, authorization, psychological comfort and autonomy are all emotional aspects.
- Social aspects: contact with others, support from others. Physical well-being is influenced by a variety of factors. These are some examples:
- **Physical comfort**

A sense of well-being is defined as the provision of an environment that is suitable for an individual's needs, i.e. not too hot or too cold, comfortable beds/chairs, the appropriate level of stimulation, and not too noisy.

- **Diet**

Every person requires food to survive. The amount and type of food people consume can have an impact on their quality of life, much more so people with long-term health issues such as diabetes or high cholesterol. A balanced diet consisting of a variety of attractive foods can improve a person's quality of life by increasing his/ her health and well-being, as well as contributing significantly to his/ her cultural and social aspects.

- **Exercises**

    Exercising regularly has long-term benefits, as well as the majority of the people feel emotionally happier afterward. To maintain a high quality of life, different age groups involve different types of exercise: children need activity to aid in their advancement, while the elderly need exercise to maintain mobility. Exercise can be done in a variety of ways, from simple household chores to competitive sports.

- **Safety**

    Individuals may be at danger due to a variety of factors, including their own negligence, issues associated with age or handicap, improper use of equipment, or maltreatment by others. Preventing damage, harm, and infection can improve an individual's quality of life.

- **Hygiene**

    'Cleanliness' is a term referring to hygienic and the practising of taking precautionary measures to avoid infection and contracting sickness or illness. The term 'hygiene' refers to the cleanliness of care facilities, as well as personal hygiene and food safety regulations. Individuals who are clean and dressed appropriately feel better about themselves and may have a larger circle of friends.

- **Pain relief**

    'Pain alleviation' refers to the provision of a variety of methods for ensuring that folks are pain-free. Certain individuals endure pain on a consistent and often continuous basis, health issues including such arthritis as well as cancer are the most common causes. If this pain is not managed properly, it can have a detrimental influence on an individual's quality of life.

Intellectual life quality factors

- **Stimulation**

  Stimulation is the existence of an external stimulation that keeps the brain working hard and awake, so the avoidance of exhaustion and, frequently, depression produced by a lack of exciting activities. Stimulation enables people to find life more fascinating, driven, and challenging.

- **Engaging in activities**

  Active participation in activities necessitates a sense of purpose and the ability to pass the time. Whether it is a paid or volunteer position, or a hobby like crocheting or athletics, it is important to find something that you enjoy doing. A person's sense of well-being can be boosted by participating in certain hobbies, which also offer opportunities for social interaction and fitness and strength improvement.

Emotional life quality factors

- **Privacy**

  Everyone has the right to be left alone. This assumes that individuals should be able to go about their daily lives without being observed or bothered in any way. For example, they may be embarrassed while getting dressed or undressed (e.g. bathing), or they may just need some time alone. Alternatively, they may simply want some alone time. An individual's self-worth may be negatively affected by a lack of privacy.

- **Dignity**

  Dignity can be achieved by the treatment of others with respect. By avoiding any form of degrading an individual, we may ensure that their self-esteem remains high. Dignity can be delivered in any

environment of care. It is necessary to speak with specific individuals in the manner in which they like to be addressed.

- **Psychological security**

    Once person feels fearless or apprehensive as to any element of their lives, we use the term 'psychological security.' Individuals go through periods of anxiety and stress – including such concern regarding therapeutic cure, relatives or financial troubles – which can help them feel insecure. Confirmation and efficient communication can assist in allaying anxieties (Daengthern et al., 2020).

- **Autonomy.**

    Autonomy associated with the person's capacity to exert control on his/ her own lives & of the ability to make choices free of external coercion. Autonomy is difficult to obtain in many care environments due to the high level of care provided by others. When people are encouraged to assert themselves and build confidence, they might learn to be more self-sufficient.

Social life quality factors

- **Social contact**

    This includes opportunities to interact with others. Individuals who lack social contact may become isolated, which can result in depressant. The social interactions that are achieved by membership in a variety of different social members, according to the one's age, ability and interests.

- **Social support**

    Social support is more personal than social contact. Individuals obtain social assistance from those in whom they place their trust, which is typically family or friends. Individuals benefit from social support because

they may communicate issues and receive assistance in resolving them. They may require physical or psychological assistance (Khan & Tahir, 2014; AS Level Health & Social Care Digital Resources, 2018; Daengthern et al., 2020).
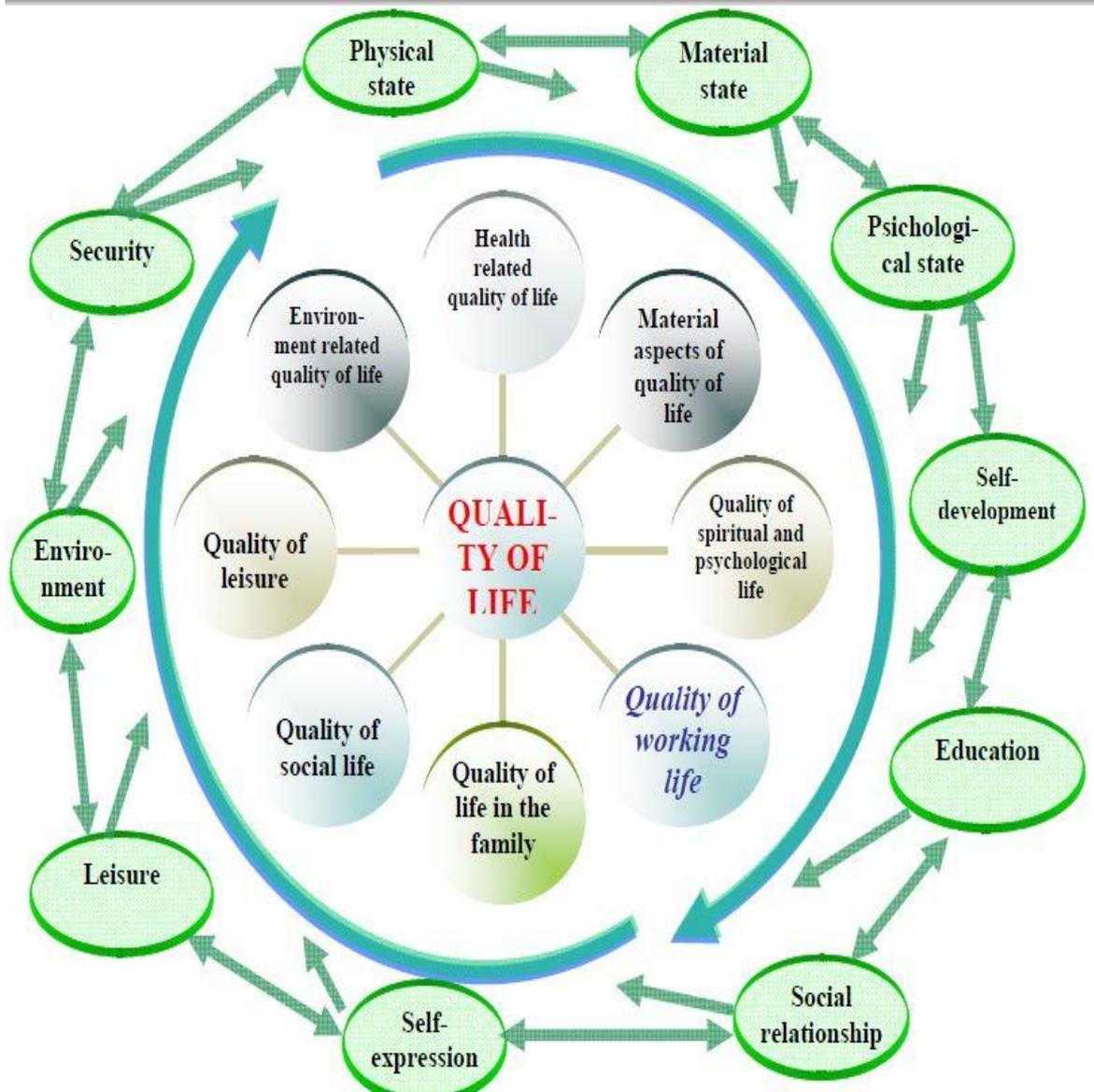
Figure (2-12)The quality of life model (Akranavičiūtė & Ruževičius, 2014)

2.20. Previous studies

2.20.1. First study:

Mei et al 2021 studied ((Health related quality of life and its related factors in coronary heart disease patients:

The purpose of the second study was to determine the probable factors that influence health-related quality of life (HRQoL) and domain-specific HRQoL scores in patients with coronary heart disease (CHD). This study enrolled 1247 individuals with CHD from the Henan Rural Cohort Study (n= 39,259). To assess HRQoL in patients with CHD, the Chinese version of the European Quality of Life Five Dimension Five Level Scale (EQ-5D-5L) and the Visual Analogue Scale (VAS) were employed. Tobit regression, generalized linear models, and binary logistic regression were used to identify potential confounding variables affecting the EQ-5D utility, as well as the VAS and each domain. CHD patients had lower actual monthly income per capita and greater incidences of diabetes mellitus, stroke, anxiety, and poor sleep quality, all of which resulted in significant declines in the EQ-5D and VAS ratings. Additionally, gender, advanced age, education, lack of a spouse, alcohol consumption, a high-fat diet, physical activity, hypertension, and depression all had an effect on the various domain-specific EQ-5D scores in CHD patients. Rural CHD patients have a lower HRQoL. Attention should be paid to the factors connected with the EQ-5D index, including each domain, and the VAS. Rural CHD patients must be managed systematically.

2.20.2. Second study :

Gomes et al 2021 ((Heart Disease, Now What? Improving Quality of Life through Education))

Abstract: A brief introduction: The management of chronic illness is becoming increasingly demanding in terms of long-term care and has

assumed a priority component in the health-care system. Given the critical nature of nursing care for patients with post-acute coronary syndrome, the purpose of this study is to determine the effect of an educational intervention program on patients' quality of life following acute coronary syndrome.

The study used a quasi-experimental design with two groups: an experimental group that received the educational intervention program and a control group that did not get the educational intervention program.

The results indicated that there were statistically significant differences between the two groups (p < 0.001). Although the educational intervention program was only valid for the subgroup of subjects investigated, it resulted in significant improvements in quality of life. Conclusions: The study's findings indicate that a structured and systematic educational program integrated into the care organization and based on transition processes is effective at developing self-care skills and improving the quality of life of patients who have undergone acute coronary syndrome.

2.20.3. Third study :

Bahall et al ., 2020. ((.Quality of life among patients complain from heart diseases: the impact of comorbid depression))

Background: Patients suffering from cardiac disease, whether or not they are depressed, may experience significant physical and mental problems. The objectives of this research is for examine with the comparison of the quality of life (Q.O.L) of individuals with and without heart illness who have depression and associated comorbidities.

Methods: A cross-sectional investigation was undertaken on 388 patients with heart illness from a convenience sample. Physical component scale (PCS) and mental component scale (MCS) QOL were assessed using the

12-item Short-Form (SF-12)-patient, while depression was assessed using the Patient Health Questionnaire (PHQ-9). The Charlson Comorbidity Indicator has been used to figure out how likely someone was to live for 10 years. The analysis used descriptive and inferential statistics, (A.N.C.O.V.A), chi_square tests, and multiple linear regression. 65.7 percent of people had mild to moderate depression [95 percent confidence interval (CI): (60.8, 70.4)], while 34.3 percent had moderate to severe depression [95 percent confidence interval (CI): (60.8, 70.4)]. (29.6, 39.2). There was no link between how much depression was measured by the P.H Q and age (p.=0.172), sexual identity (p.=0.079), or ethnicity (p.=0.407). Overall, the mean PCS QOL score was 32.5 [95 percent confidence interval (C I): (24.4, 40.64)] and the mean M.C.S Q O L score was 45.4 [95 percent confidence interval (C.I): (44.4, 46.4]; there was no significant link among both P C S and M C S [r (Pearson's) = 0.011; p = 0.830]. There were significant differences in Q O L between both the 5 P H Q classifications (P C.S: p = 0.028; MCS: p = 0.001), between both MCS and PCS going down as depression went up. ANCOVA showed that there was a significant interaction between age and ethnicity for PCS (p = 0.044) and MCS (p = 0.039). PCS was much lower in young Indo-Trinidadians than in Afro-Trinidadians, although MCS was significantly higher in young Indo-Trinidadians. Depressive symptoms, age, and the number of comorbidities were all found to be predictors of P.C S, while depressive symptoms, age, and sexual orientation were found to be predictors of MCS. Conclusions: As depression severity increased, both PCS and MCS QOL deteriorated. QOL was predicted by age and the severity of clinical depression, with the number of comorbidities predicting just PCS and the gender predicting only MCS. Efforts must be made to treat depression in people with heart illness of all ages.

2.20.4. Fourth study :

Komalasari et al., .2019. (Quality of Life of thePeople who complain from cardio_vascular diseases)

Cardiovascular. disease. (CVD) is the ninth main cause of mortality in the Indonesia, out of 22 types of diseases. A history of CVD can result in a variety of physical and mental symptoms such as fatigue, edema, and sleeping issues, which can limit physical and social activities, ultimately resulting in low quality of life for those who suffer from the condition. Because hospitalization and mortality have been related with decreased quality of life, patients with a history of CVD should be evaluated appropriately to ascertain the disease's influence on their everyday lives. The purpose of this study was to assess the quality of life of older adults with a history of heart disease. This study was conducted in a private hospital's outpatient department in Tangerang, Banten Province, Indonesia. 397 elder patients were included in this quantitative, descriptive study. Purposive sampling was used to acquire data. The study included older individuals with the previous history of CVD (cardiovascular disorders), about 60_74 old, who would converse and comprehend the Indonesian language & were not in a condition that precluded them from completing a questionnaire. The WHOQOL-BREF questionnaire was used to assess quality of life in 4 domains: physical health, Psychological well-being, social interactions, as well as environment. A descriptive analysis was used to analyze the data. 94 percent of respondents with a history of CVD reported having a good quality of life, with 85 percent reporting an adequate environmental aspect, 60.7 percent reporting active social relationships, 54.7 percent reporting good physical health, and 44.8 percent reporting a stable psychological condition. Despite a history of cardiovascular disease, the majority of respondents in this survey reported a high quality of life. However, the assessment instrument utilized in this

study assessed overall quality of life. Future study should include the use of a measure specifically designed to evaluate the quality.of.life of patients who complain heart illnesses.

2.20.5. Fifth study:

Bauersachs et al., 2019 ((Burden of Coronary Artery Disease and Peripheral Artery Disease: A Literature Review))

Background: Atherothrombotic disease, which includes coronary artery disease (CAD) and peripheral artery disease (PAD), can result in a variety of cardiovascular (CV) events, including myocardial infarction, stroke, limb ischemia, heart failure, and CV death. Aim: Through a complete study of the literature, determine the humanistic and economic impact of CAD and PAD, as well as social needs in the community. Methods. They searched for relevant phrases throughout online publishing databases. They included studies published between January 2010 and August 2017 that met the inclusion/exclusion criteria; they also included guidelines. Two rounds of screening were used to identify relevant studies. Results. Worldwide data indicated a prevalence of roughly 5–8% for CAD and 10–20% for PAD, depending on the study design, average age, gender, and geographic area. According to the REACH registry, 18–35 percent of patients with coronary artery disease and 46–68 percent of patients with peripheral arterial disease had disease in one or more vascular beds. The use of medicine to treat modifiable CV risk factors varied by nation (lower in France than in Canada); statins and aspirin were the most frequently utilized therapy in chronic CVD patients. While medical improvements have increased survival rates, there is an additional need to reduce the humanistic burden of disease (i.e., associated disability and quality of life). The economic burden of atherothrombotic disease is substantial and is predicted to increase as survival improves and the population ages.

Conclusion. CAD and PAD impose a significant humanistic and economic cost on the world, underscoring the urgent need for novel therapies to lower atherothrombotic disease incidence.

2.20.6. Sixth study

Wang et al .2019. (theCorrelation between theexercise, personal income level & health_related quality of life in thepatients who newly diagnosed stable angina))

Angina is one of the most common clinical signs of coronary heart disease (CAD) and is correlated with a lower quality.of life (H.R.Q.L). Stable angina patients newly identified with poor HRQL risk factors have been the subject of few investigations.

Methods: The 2nd Associated Hospital at Army Medical Faculty in Chongqing, China, conducted a cross-sectional study from October 2017 to January 2018 on 342 sequential outpatient clinics having recently diagnosed stable angina. Physiological performance, role limitation attributable to physical limitations, bodily pain, overall health and vitality, and social function were assessed using the survey to collect Short-Form Health Survey (SFHS). Calculations were made to determine the relative weights of the mental and physical components. Multiple multiple regression was utilized to identify the factors that influence HRQL. Patients who were older, female, did not exercise, had lower educational levels, lower monthly incomes, smoked or drank, and had diabetes, hypertension, or hyperlipemia had lower physical HRQL scores, whereas those who were older, had lower educational levels, and had lower monthly incomes had lower mental HRQL scores. Multiple stepwise regression analyses revealed a positive correlation between physical and mental HRQL and exercise and monthly income, but a negative correlation between age and physical and mental HRQL. Patients with a monthly income of 5000 Yuan or more

demonstrated significantly higher HRQL scores than those with the monthly income of 5000 Yuan or less. Sleep characteristics and alcohol use were found to be negatively linked with physical HRQL, but not with mental HRQL.

Exercise and personal income, both of which may be altered, were found to have a positive impact on H.R.Q.L. Clinical advice and strategies to improve the H.R.Q.L of people with stable angina may be affected by these findings, according to the researchers.

2.20.7. Seventh study

Santoso, Sujianto & Susilawati, 2017 (Factors Affecting Quality of Life in Patients with coronary artery disease))

The study's background and objectives are as follows: Coronary artery disease has an effect on the psychological, physical and the social aspects of a person's quality of life. The purpose of this study was to determine the characteristics that influence one's quality of life (QoL).

Methods: In this study, analytic correlation was used in conjunction with a cross-sectional design. One hundred and three respondents were recruited using a purposive sampling technique (88 male and 23 female). The data collection instrument was a QoL questionnaire (SF-36). Multivariate regression was used to analyze the data.

2.20.8. Eight Study

Chen et al 2017 ((Factors affecting the quality of life among Chinese rural general residents: a cross-sectional study))

Objectives: It is the goal of this study to examine the short version of the World Health Organization's Quality of Life Instrument (WHOQOL-BREF), which is extensively used to assess the subjective quality of life (QOL) of patients and specific populations. However,

because to a lack of significant studies in the general population, WHOQOL-BREF normative data remain scarce. To address this gap, the current study examined additional sociodemographic and health-related variables affecting QOL. Methods: The association between numerous variables and QOL was investigated using stepwise multiple linear regression. Conclusions: Socioeconomic status, including married status, has a strong correlation with quality of life. In the context of chronic conditions, stroke is a significant factor in determining QOL, and depressed symptoms have a strong negative correlation with QOL.

2.20.9. Nineth study

Ghasemi et al ., 2014 ((Quality of Life in Women with Coronary Artery Disease))

Background: Coronary artery disease (CAD) is a chronic condition that can have an impact on the physical, emotional, and social elements of one's health as well as one's impression of one's own well-being and happiness. The disease's advanced treatments place a premium on usefulness and quality of life (QOL).

Objectives: The purpose of this study was to examine the quality of life and the factors that influence it in women with coronary artery disease.

Subjects and Methods: 200 female with coronary artery disease have been sent to the Cardiac Facility at Tehran's Shahid Rajaei Cardio - vascular Center for this descriptive cross-sectional study. A practical sampling method was used to choose the people who would take part. The Persian version of the Ferrans and Powers quality of life index (Q.L.I) cardiac version was used to get the data, and descriptive statistics and statistical tests (independent t__test, analysis of variance ANOVA, and Scheffe's test) were used to analyze the data.

The overall quality of life score ranged from 7.17 to 27.63, with a mean of 16.913.54. The average scores for the subscales of the instrument were as follows: 15.48 4.32 for health and wellbeing, 16.18 3.65 for socially and economically, 18.04 4.36 for psychological /spiritual, and 20.12 4.57 for family. QOL was linked to being married (P = 0.004), schooling (P = 0.007), salary (P 0.001), and the length of time the disease had been present (P = 0.047). There has been, however, no strong link among both QOL and age, job, or other health problems.

The data show that the overall quality of life of the patients was about average. Several groups said that women with C.A.D need to have their lives made better. The results of this study show how important it is to come up with and use educational and support programs to make life better of women with C.A.D, especially those from low-income backgrounds.

2.20.10. Tenth study

Taghadosi et al 2014 (.Quality of life in patients who complain from ischemic heart disease)

Background and objectives**:** Ischemic heart diseases (I.H.D) are becoming the most prevalent and leading cause of heart disease and mortality around the world, adversely affecting patients' quality of life (Q.O.L). The purpose of this study was to ascertain the quality of life of patients with I.H.D referred to Kashan medical health facilities in 2007.

The present cross-sectional study included all patients (n.=500) referred to medical centers with a definitive diagnosis of Myocardial Infarction (M.I), coronary artery disease, and who underwent percutaneous transluminal coronary angioplasty (P.T.C.A) or coronary artery bypass graft (C.A.B.G) surgery. Method: The short form-36 (SF.-36.) and Seattle angina questionnaire (S.A.Q) tools were used to assess the clients' quality

of life, which was then classified as poor, medium, good, or very good based on the test scores. The questionnaire was also used to collect demographic data and the primary risk factors for cardiovascular disease. Result: Chi._square with the Fisher's exact tests, as well as Pearson's correlation coefficient and Kendall's rho, were used to examine the data. The SF-36 and SAQ criteria were used to assess QOL, with a mean of 112.524 and 59.89.14, respectively. Gender, advanced age, educational level, marital status, kid count, domicile area, and the presence of risk factors all had an effect on their life quality.

Conclusions: There had been a strong and positively link between the findings of the two tests, the SAQ and the SF-36, as well as a correlation between QOL levels. Patients undergoing PTCA procedures, the elderly, patients with other ailments, singles, villagers, the illiterate, and female patients are all given greater attention and education as a result of the study's findings.

2.20.11. Eleventh study

Durmaz et al 2009 (Factors affecting quality of life in patients with coronary heart disease))

Background: Cardiovascular illnesses are the leading cause of death worldwide, and they are linked to a considerable reduction in quality of life (QOL). The purpose of this study was to assess the quality of life (QOL) of patients with coronary heart disease (CHD) in our country and the factors that influence QOL in these individuals. Materials and Procedures: The study population consisted of 85 patients with stable coronary artery disease. The investigators obtained data using Eerrans and Powers' Cardiac Quality of Life Index Version IV and a query devised by them. Results: This study involved 85 individuals (29 females and 56 males; ages ranged from 38 to 72 years). Patients who were married or had

a higher income had higher QQL scores. Patients who experienced difficulties performing daily tasks as a result of heart issues had a poorer QQL. Interestingly, patients who had previously undergone coronary intervention or surgey had comparable QOL levels to those who had not. Patients who received emotional and social support scored better on the social/economic scale, while those who received tangible social support scored higher on the global QQL scale. The independent variables that influenced global QOL were marital and financial status, prior myocardial infarction (MI), and difficulty doing daily tasks. Conclusions: Marital and financial status, prior MI, and difficulty doing routine tasks are the primary predictors of QQL in individuals with CHD. Social assistance may enhance the efficiency of their rehabilitation and psychological activity, consequently improving their overall quality of life. Effective public health interventions should prioritize enhancing QOL, particularly among the most vulnerable populations.

Summary

Depending on the previous studies we summaries that there were many factors that affecting quality of life of patient with cardiac disease such as older age , gender , marital status , educational level , monthly income , duration and severity of disease and chronic disease. these factors may have negative or positive effect as an example: (the patient with older ages and with lower economic status had lower quality of life score)

Chapter three

(Methodology)

Chapter three

Methodology

This chapter's main goal is to provide a detailed overview about the research methodology that was followed systematically in order to achieve the objectives of this study, as well as the implementation of specific methods in order to acquire accurate and reliable data about the research question, hypotheses, or problem under examination. Methodological principles include the methodology of research which is a process that provides a full description of how the study is carried out in a methodical manner. The plans for this research are administrative and ethical procedures, the phases of performing the study, the study setting, study tools, the pilot study, examining validity and reliability, data analysis procedures, and research constraints are also all included in the following paragraphs.

3.1. Study design:

The descriptive study method was chosen in order to accomplish the research aims, which were to determine the factors that influence the quality of life of patients with coronary artery disease in the city of Al-Najaf Al-Ashraf. Also the assessment are included in this research of patient quality of life after coronary artery disease, identification of demographical and clinical factors that influence patient quality of life after coronary artery disease. The data gathering technique was carried out over a period of time that began on 16th June, 2021 and finished on 28nd August, 2021.

3.2. Setting of the Study:

The physiological, sociocultural, or exploratory configuration in which a study is conducted is referred to as the research setting. In a

research article, it is important to properly explain the research context since the results and their interpretation may be greatly influenced by it. The data collection for this study is being carried out in three government hospitals in the city of AL -Najaf AL -Ashraf, that are the subject of this study.   The Al-Najaf Al-Ashraf Health Directorate /Al-Sadder Medical City, Al-Najaf Center for Cardiac Surgery and Trans Catheter Therapy, and Al Hakeem general hospital were chosen to conduct the study.

First, Al Najaf Center for Cardiac Surgery and Trans Catheter Therapy, this Center was established in 2014 and was a section of Al-Sadr medical Hospital, then it became a separate and independent center after the development and multiplicity of health services it provides. It contains consultant clinics for adults and children, cardiac care unit (CCU) and intensive care unit (ICU), and four surgical and operating rooms in addition to electro catheter room. The center provides services to patients with myocardial infarction, congenital heart disease, coronary artery disease and valvular disorders.

Second, the oldest and largest governmental hospital that called AL-Sadder Medical City which consists of several operating rooms (ORs), medical and surgical wards , emergency department , Intensive Care Unit (ICU), Respiratory Care Unit (RCU), Cardiac Care Unit (CCU) and other different medical centers. In addition to that , AL-Sadder medical city hospital also provides primary, secondary and tertiary healthcare services. AL-Hakeem General Hospital is the third hospital that consists of many medical and surgical departments that provide primary, secondary and tertiary healthcare services. Also, this hospital has several units CCU, ICU, RCU, ER, and OR.

3.3. The study duration :

The research was carried out between the first of December 2020 and the second of April 2022 was completed.

3.4. Administrative Agreements:

Initially, the researcher collaborated with her academic advisor in order to choose a study topic for the dissertation. After the dissertation proposal reviewed by the Scientific Postgraduate Committee at University of Babylon/ Faculty of Nursing Council, the research proposal was approved, and there was no major modification suggested to proceed. The researcher gets a consent from the Adult Nursing department in the Faculty of Nursing / University of Babylon. Additional consent is attained from "Al-.Najaf Al-.Ashraf Health Directorate/ Al-.Sadder Medical City" ,"Al.Najaf Center for Cardiac Surgery and Trans Catheter Therapy" and Al Hakeem general hospital (Appendix-C) in attempt to conducting interviews for every subject. The permission had made it simple to start arriving the organizations and encounter the patients for such required information since taking his\her agreement for participation in the present research has been decided to seek after describing to them that the goal of the research and notify them that all the data obtained would be kept secure and that they were only for research goals, finally begun taking the permission from them and then participation in the research.

3.5. Sample of the study:

For this study, a non-probability (purposeful sampling) total of 120 sample populations was chosen who complain from coronary artery disease, and their factors affecting quality of life were assessed. who were admitted to hospitals with the following criteria:

1) Accept the study's invitation to participation

2) Had already been admitted to the hospital for diagnostic procedures, surgical or treatment of CAD.

3) Ability to verbal communication is required for orientation.

4) Both gender with the age older than 20 years old are included.

5) Had medically diagnosed for CAD about at least one year ago.

Exclusion criteria :

1) Patients who were newly diagnosed for coronary artery disease that are less than 6 months.

2) Patients who were selected for Pilot Study.

3) Patients who were not available during the period of data collection.

3.6. Ethical consideration:

The member's dignity and principles must be respected before any information can be gathered. The ethical council at the Faculty of Nursing / University of Babylon can grant this permission to the researcher (Appendix_B). Each member was provided a written explanation of the study's purpose, and the researcher vowed to protect their privacy and only use their data for this purpose. To that end, the researcher obtained oral consent from each participant and explained that this was an imposed task and that the participant could leave at any time, even if the interview was still in progress.

3.7. The Study Instrument:

After an extensive review of relevant literature, a questionnaire has been modified by the researcher to measure the quality of life of patients with coronary artery disease. Corporation of Research and Development (RAND) advanced the 36_element short form of a survey of people's health (SF-36) since it include a component Medical Outcomes Study (MOS), a multi-location and multi.-.year study aimed at elucidating

variation in patient outcomes. In order to provide assistance to populations throughout the world remain healthier and better, healthier and more prosperous, the RAND. Research corporation conducts research on public policy issues. The Short Form-3 6 (SF-3 6) is a collection of formulaic, consistent, and readily provided (QOL.) measures for adults. This set of actions, that are based on self-reported by patients, were already widely adopted through the accountable care organizations as well as Medicaid besides annual assessment and monitoring of subjects consequences care.

The RAND 36 - Item Health Survey (Version 1.0) dials eight wellness principles: physical functioning (10 item), bodily pain (2 item), role limitations related to physical health problems (4 item), role limitations associated with emotional problems (3 item), emotional well - being (5 item), social functioning (2 item), energy / fatigue (4 item), and general health perceptions (5 item). And it has a specific item (1 item) that shows a change in how people feel about their health. The MOS. "SF-36" described by Ware and Sherbourne is the basis for these 36 items shown here (1992). They have been developed from broader questionnaire completed by respondents involved in the Medical Outcomes Study (MOS), an observational investigation of variations in treatment and medication patterns and clinical outcomes in various systems of healthcare provision (Hays & Shapiro, 1992; Stewart, Sherbourne, Hays et al., 1992).

The study instrument comprises of the following three components (Appendix –G):

3.7.1. Part.1: the demographical information:

The demographical information page composed of (7) categories that included, sex, aged, educational qualifications, economic status of the family, marital status, Household monthly, and residency.

3.7.2. Part 2: Clinical Data:

Second part includes clinical information about patient that consists of (6) items smoking status, chronic disease (Hypertension, Diabetes Mellitus, cardiac disease, Renal disease, Respiratory disease, Endocrine disease and hyperlipidemia). Body mass index, duration of disease, number of blocked artery and type of catheterizations.

3.7.3. Part 3: Short form (36) quality of life scale:

This section is intended to look at the comfort and well-being of patients who complain from coronary artery disease that consists of (8) domains with (36) items distributed as (physiological functions, bodily pain, position restrictions caused by physical health issues, role restrictions because of or psychological issues, feelings health, psychosocial adjustment, power, and overall health perspectives. There is also a small element which indicates whether or not people think their health is getting better.).

3.8. Rating and Scoring:

According to the following patterns, the items were appraised and scored:

The short form 36 - Item Health Survey was scored in couple steps, which are described below. For starters, pre-coded numeric values are recoded in accordance with the scoring key provided in Table 1. Take note that all elements were assessed in such a way that the higher score indicates a better state of affairs of health. Additionally, every element is graded from the 0 to the 100 scale, with 0 being the lowest possible score and 100 being the highest possible score. Scores are expressed as a percentage of the maximum achievable score. In step 2, the eight scale scores were calculated by averaging the elements on the same scale. Table.2 shows the elements that were scored in order to produce all scales

at once. Index values were not affected by components which were left blank due to the absence of data. Thus, scores obtained are an average of the scores of the respondent's responses to all items on the scale.

3.8.1. Table (3-1a) Step 1: Recoding Items

Item numbers	Change original response category *	To recoded value of:
1, 2, 20, 22, 34, 36	1 →	100
	2 →	75
	3 →	50
	4 →	25
	5 →	0
3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1 →	0
	2 →	50
	3 →	100
13, 14, 15, 16, 17, 18, 19	1 →	0
	2 →	100
21, 23, 26, 27, 30	1 →	100
	2 →	80
	3 →	60
	4 →	40
	5 →	20
	6 →	0
24, 25, 28, 29, 31	1 →	0
	2 →	20
	3 →	40
	4 →	60
	5 →	80
	6 →	100
32, 33, 35	1 →	0
	2 →	25
	3 →	50
	4 →	75
	5 →	100

3.8.2. Table(3-1b)Step2:Averaging Items to Form Scales

Scale	Number of items	After recoding per step1, average the following items
Physical functioning	10	3 4 5 6 7 8 9 10 11 12
Role limitations due to physical health	4	13 14 15 16
Role limitations due to emotional problems	3	17 18 19
Energy/fatigue	4	23 27 29 31
Emotional well-being	5	24 25 26 28 30
Social functioning	2	20 32
Pain	2	21 22
General health	5	1 33 34 35 36

3.8.3. Table (3-1c)step 3: Reliability, Central Tendency, and Variability of Scales in the Medical Outcomes Study

Scale	Items	Alpha	Mean	SD
Physical functioning	10	0.93	70.61	27.42
Role functioning/physical	4	0.84	52.97	40.78
Role functioning/emotional	3	0.83	65.78	40.71
Energy/fatigue	4	0.86	52.15	22.39
Emotional well-being	5	0.90	70.38	21.97
Social functioning	2	0.85	78.77	25.43
Pain	2	0.78	70.77	25.46
General health	5	0.78	56.99	21.11
Health change	1	-------	--------	-------

Mean <=50: Poor, Mean >50: Good

3.9. Validity of the Study Instrument:

A method is considered valid if it accomplishes what it was designed to accomplish. Actual characteristics, properties, as well as variations must be taken into account in order to be considered credible for the researcher. One way to tell if a measurement is reliable is to look for high levels of reliability. You cannot trust a method if you cannot trust the results. In order to ensure the validity of the interview questions, (14) experts from various professions, with at least teen years of experience, were consulted to examine the questionnaire's clarity, relevance, and adequacy. All of their suggestions were taken into account. (14) experts were shown a draft of the questionnaire. The feedback they provided helped shape the final version.

They were (8) members of the faculties at faculty of nursing university of kufa, (1) faculty member from faculty of Nursing, University of Babylon, (1) faculty member/ university of Muthana faculty of nursing , (2) members University of Kufa faculty of Medicin and (cardiologist) from "Al Najaf Center for Cardiac Surgery and Trans Catheter Therapy in Al- Najaf Al- Ashraf City" were asked to review the designed questionnaire (Appendix- D).

Barton and Peat (2014) indicate when the survey form is complicated, a larger number of experts could be advantageous for the expert panel, which is typically composed of no fewer than three experts.

3.10. Pilot study:

As a precaution against wasting resources and time on a poorly thought-out project, small-scale experiments are frequently conducted before larger, more comprehensive studies are undertaken. Members of the target population are typically used in a pilot study. Patients who visited

"Al-Sadder medical city, Al-Najaf center for cardiac surgery and trans catheter therapy, and Al Hakeem General Hospital in Al-Najaf Al-Ashraf City" between June 16th and June 28th, 2021 were used in the pilot study. The study's original sample did not include the pilot study's participants. In doing this preliminary research, we aimed to:

1- A pilot study is used to formulate the design of the full-scale experiment which then can be adjusted.

2- Recognize the obstacles that can be faced throughout the collection of data procedure.

3- Determine the duration and the amount of time needed to gather data.

4- Determine the best way to get the patient on board with the researcher as well as to identify the challenges that can be overcome.

5- Make sure the survey form which is easy to fill out and contains enough information.

6- Determine the reliability of the survey questions.

The outcome of the pilot study:

1- The questionnaire's questions and answers were simple and straightforward for the patients to understand.

2- The period of interview was estimated to be (10-15) minutes for every patient.

Nieswidomy (2002) describes the use of pilot testing to assess and evaluate a development device or tools. It can also be used to estimate the time required to complete a task and gather information, and how the patients will behave to the method for data collection.

3.11. Reliability of Study Instrument:
Questionnaire reliability:

An instrument's reliability is one of the most significant factors in determining its quality and appropriateness. The consistency to which an instrument measures the desired attribute determines the instrument's reliability. The questionnaire reliability is concerned with the consistency of the research tools used in the measurement of the variables. The study's survey questions reliability is determined by the study's internal consistency reliability (Alpha Cronbach's) (table.3.1) (Barton and Peat, 2014) As shown in the formula below, reliability was achieved.

$$r = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2]}}$$

r= the correlation coefficient of the variables x & y.
n= number of cases.
x= an individual's score of variable X.
y= an individual's score of variable Y.
Σ= the summation of .

Table (3-2) coefficients reliability of the research Instrument

Reliability Coefficients	Standard lower bound	Actual values	Assessment
Alpha (Cronbach)	0.70	0.84	Pass

Using the (Alpha Cronbach) formula, this table demonstrates that the instrument items have a high degree of dependability and consistency. Therefore, the questionnaire that was modified for the study of this phenomenon could be used at any time on a similar population.

Correlational methods are frequently employed to determine reliability. The (from-1.00 to the+1.00) range of reliability coefficients is commonly used; the (0.84) the reliability coefficient is shown in the table above which is considered appropriate.

3.12. Data collection methods

For the most part, the process of gathering data for quantitative studies follows a predetermined blueprint. It is common for a researcher's plan to include procedures for gathering data (such as where and then when data will be collected), communicating with respondents, and documenting findings (all of which are typically included). In addition keeping the privacy between the patients and the researcher during data collections, the patients with coronary heart disease who attended for consultation by direct face-to-face interview were interviewed between 16th June and 25th August 2021, and the data were collected in both the inpatient and outpatient departments. Each patient needed about ten to fifteen minutes to complete the questionnaire and answer all of the questions. Arabic version only used for the participants ,the same time in the pilot study was spent for each individual participant.

3.13. Data Analysis

The information obtained from the data did not provide answers to the study questions. It is common for studies to acquire a large amount of data; in most cases, research issues cannot be solved by simply looking at numerical data alone. An ordered and systematic approach must be taken

to the processing and analyzing of the data. Statistical processes are typically used to analyze quantitative information. Analyses of the personal information were conducted using descriptive statistical methods:

3.13.1.   Methods of statistics

In this research, the data were analyzed by using of (SPSS) program V 19 (Statistical Package for Science Service), and the Microsoft office package (Excel and word, 2013).   Below is the statistical data analysis methods to evaluate the study result:

3.13.2.   Descriptive statistics

Percentages%

Percentage is a common metric for expressing statistical data. To express percentages, use the percent symbol. Percent merely means "per hundred." To calculate one percent, simply divide or whole number by 100 and   multiply   the   result   by   one   hundred. Percentage formula = (Value/Total value)×100 (statcan.gc.ca, 2015).

Frequency

The frequency (or frequency of occurrence) on the occasion of a happening in statistics represents the number of recurrence an event occurred during an experiment or research (Lindstrom, 2010).

Mean

It is the average of the specified values: the estimated central value of a collection of numbers. The mean $\bar{x}$ of a data set is approximate to the total of all the data multiplied by the quantity of observations (n) (Everitt & Skrondal, 2010).

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

The Bar Graph

When plotting data, a bar graph uses rectangular bars as well as sections (also known as bins) to represent the overall number of data points for each category.

Standard deviation

The standard deviation specifies how much of variability in a data set on an average basis. It indicates the average deviation of each result from the mean. When the (SD) is big, it suggests that the data is typically distributed from of the mean, whereas when the (SD) is low, it suggests that the data is typically clustered around the mean (Bhandari , 2020).

$$\text{Standard Deviation} = \sqrt{\frac{\sum_{i=1}^{n} \left(x_i - \bar{x}\right)^2}{n - 1}}$$

where:

x_i = Value of the ith point in the data set

$\bar{x}$ = The mean value of the data set

n = The number of data points in the data set

3.13.3.   Inferential statistics:

The Chi -Square

The Chi-Square test (X^2) is employed to determine the independence of observed frequencies and to determine the relationship between study variables according to their type (Everitt & Skrondal, 2010).

$$X^2 = \Sigma \frac{(O-E)^2}{E}$$

E= Expected

O= Observed

Analysis of variance (ANOVA):

Analysis of variance (ANOVA) is a statistical method for examining differences in means. It consists of a number of statistical models and the accompanying estimating techniques (such as the "variation" within and between groups.

3.14. Shortcuts for measuring important compared to the level were used as follows :-

S: Significance level: The probability at which the null hypothesis is considered to be rejected at p value(≤ 0.05).

NS: Statistically insignificant: There is no statistical significance in the null hypothesis being strongly supported by a p-value equal to or more to 0.05 (> 0.05).

HS: Significantly high p value ≤ 0.01

3.15. Study limitations:

The researcher encountered a number of difficulties during the course of the current study, including:

1- There was a decrease in the total number of subjects due to the fact that the some of them refused to be as a sample in the study.

2- There was a lack of time, which had a significant impact on the study, such as the amount of time needed for data collection.

3- CORONA- outbreak that had a great impact on the data collection methods and limit the number of sample.

Chapter Four

(Result of study)

Chapter Four

Results of the study

This chapter focuses on the presentation of the findings of the study, which were carried out in a systematic manner in order to achieve the objectives of the research, and which are shown as a table and figures. A total of 120 patients with coronary artery disease from three designated public governmental hospitals in AL-Najaf AL-Ashraf City were included in this study.

Table (4.1): Distribution of the studied sample according to their demographic data.

Demographic variables		Freq.	%
Age (Years)	<= 34	6	5.00
	35 - 44	14	11.66
	45 - 54	26	21.67
	55 Up	74	61.67
	Mean ± SD	55.4 ± 10.7	
Gender	Males	77	64.17
	Females	43	35.83
Education level	Illiterate	25	20.83
	Read and write	26	21.67
	Primary school graduate	32	26.67
	Intermediate school graduate	14	11.67
	Secondary school graduate	8	6.66
	Institute and college graduate	15	12.50

occupation	Student	2	1.67
	Employee	16	13.33
	Retired	28	23.33
	Self-employee	35	29.17
	House wife	39	32.50
Marital status	Single	2	1.67
	Married	115	95.83
	Divorce	1	.83
	Widowed	2	1.67
Monthly income	Insufficient	75	62.5
	Barely sufficient	38	31.67
	Sufficient	7	5.83
Residency	Urban	64	53.33
	Rural	56	46.67
Total		120	100%

freq: Frequency, %: Percent

The results of the demographical characteristics represent that the highest percentage for age categories were showed as 61.67% ($n = 74$) up to 55 year old, 21.67% ($n = 26$) between 45 – 54 year old, 11.67% ($n = 14$) were 35 _ 44 years old, 5.00% ($n = 6$) were at 34 years old and less. The findings reveal that male patients were more than female with a percentage of 64.17%   ($n = 77$) while the remaining 35.83% ($n = 43$) were females patient. The results of participants' educational levels indicated that the highest percentage 26.67% ($n = 32$) were primary school graduate, were 21.67 % ($n = 26$) able to read and write, 20.83 % ($n = 25$) were illiterate,

while about 12.50 % ($n = 15$) Institute and college graduate, 6.67 % ($n =$ 8) were secondary school graduate while only 12.50 % ($n = 15$) were institute and college graduate. However, in regard to their occupational status, the majority of participants 32.50 % ($n = 39$) were a house wife, 23.33 % ($n = 28$) were retired , 29.17% ($n = 35$) were self-employee, 13.33 % ($n = 16$) were employee, and only 1.67 % (n = 2) were students. Moreover, the results of marital status categories showed that most of the participants exhibited as "married" 95.83 % ($n = 115$), were 1.67 % ($n = 2$) single and widowed only 0.83 % ($n = 1$).

In addition, in regard to their monthly income, the majority of study sample 62.5 % ($n = 75$) had insufficient while only 5.83% (n = 7) had sufficient. The results of study sample residency indicated that 53.33% (n = 64) lived in urban areas and the remaining 46.67% (n = 56) were rural.

Table (4.2): Distribution of the studied sample according to their clinical data.

Clinical variables		Freq.	%
Smoking status	None	66	55
	Passive	2	1.67
	Previous	15	12.50
	Active Smoker	37	30.83
Duration of smoking (Years)	<= 10	5	9.62
	11 - 20	26	50.00
	21 Up	21	40.38
	Mean ± SD	24.9 ± 10.8	
Chronic disease	None	7	5.83

	Hypertension and Hyperlipidemia	52	43.34
	Diabetes Mellitus	6	5.00
	Cardiac Disease	9	7.5
	Hypertension, Diabetes Mellitus and Hyperlipidemia	46	38.33
BMI	Underweight	0	.00
	Normal weight	26	21.66
	Overweight	53	44.17
	Obese	41	34.17
Duration of disease (Years)	<= 5	90	75.00
	6 - 10	23	19.17
	11 Up	7	5.83
	Mean ± SD	4.3 ± 0.42	
Number of blocked artery	One artery	38	31.67
	Two artery	57	47.50
	Three or more artery	25	20.83
Type of cardiac catheterization	None	16	13.34
	Diagnostic	16	13.33
	Treatment	27	22.50
	Diagnostic and Treatment	61	50.83
Total		120	100%

freq: Frequency, %: Percent

The above table represents the clinical information about the study sample, so the highest percentage of smoking status 55.00 % ($n = 66$) were non-smoking and only 1.67 % ($n = 2$) were passive smoking. About the

duration of smoking per years 50.00 % ($n = 26$) were between the (11 – 20) years while only 9.62 % ($n = 5$) equal and less than 10 years. In regarding to chronic diseases the highest percentage 43.34% ($n = 52$) indicated (Hypertension and Hyperlipidemia) and only 5.83 % ($n = 7$) had no chronic disease. Furthermore, in regard to the study subjects BMI, majority of study sample 44.17 % ($n = 53$) had overweight while none of them had (underweight). Concerning the duration of disease (years), about 75 % ($n = 90$) were equal and less than 5 years , 19.17 % ($n = 23$) were between (6 – 10) years and the remaining 5.83 % ($n = 7$) were equal and up to 11 years. In addition, the table shows that the high percentages of participant 47.50 % ($n = 57$) had two blocked arteries. In related to the type of cardiac catheterization, majority 50.83 % ($n = 61$) of study subjects had both diagnostic and treatment catheterization, and just 13.33 % ($n = 16$) did not have cardiac catheterization.

Table (4.3): Distribution of Quality of Life Items about General health perception.

General health perception-Items		Freq.	%	Mean ± SD	Assess.
1 - In general, would you say your health is:	Poor	8	6.67	34.37 ± 15.2	Poor
	Fair	59	49.17		
	Good	53	44.17		
	Very Good	0	.00		
	Excellent	0	.00		
2 – In comparison to a year ago, how would you evaluate your general health now?	Much worse than one year ago	10	8.33	28.96 ± 15.8	Poor
	Somewhat worse now than one year ago	86	71.67		
	About the same	20	16.67		
	Somewhat better now than one year ago	3	2.50		

	Much better now than one year ago	1	.83		
33 - I've noticed that I'm more susceptible to illness than most others.	Definitely true	2	1.66	47.08 ± 24.7	Poor
	Mostly true	58	48.33		
	Don't know	14	11.67		
	Mostly false	44	36.67		
	Definitely false	2	1.67		
34 - I'm in better shape than anyone I know!	Definitely false	2	1.66	31.46 ± 13.9	Poor
	Mostly false	90	75.00		
	Don't know	23	19.17		
	Mostly true	5	4.17		
	Definitely true	0	.00		
35 - Inevitably, my wellbeing will deteriorate.	Definitely true	4	3.33	39.58 ± 18.5	Poor
	Mostly true	56	46.67		
	Don't know	46	38.33		
	Mostly false	14	11.67		
	Definitely false	0	.00		
36 - Health-wise, I'm doing great!	Definitely false	13	10.83	25 ± 12.5	Poor
	Mostly false	96	80.00		
	Don't know	9	7.50		
	Mostly true	2	1.67		
	Definitely true	0	.00		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

The above table (4.3) shows that the general health perception domain of quality of life for most study sample for all items ($n = 6$) were poor with the mean of (Mean <=50: Poor, Mean >50: Good) .

Table (4.4): distribution of Quality of Life Items about Physical functioning.

Physical functioning-Items		Freq.	%	Mean ± SD	Assess.
3 - Engaging in rigorous sports, which including having to run as well as carrying heavy weights.	Yes Limited a lot	92	76.67	12.1 ±22.4	Poor
	Yes limited a Little	27	22.50		
	No Not Limited at all	1	.83		
4 - Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	Yes, Limited a lot	85	70.83	15.8 ± 25.9	Poor
	Yes, Limited a Little	32	26.67		
	No, Not Limited at all	3	2.50		
5 - In the case of grocery shopping, raising or holding them	Yes Limited a lot	9	7.50	68.7 ± 31.1	Good
	Yes Limited a Little	57	47.50		
	No Not Limited at all	54	45.00		
6 - Having to climb numerous floors	Yes Limited a lot	95	79.17	10.8 ± 21.7	Poor
	Yes Limited a Little	24	20.00		
	No Not Limited at all	1	.83		
7 - Taking the first step up a set of stairs	Yes Limited a lot	7	5.83	75.8 ±30.4	Good
	Yes Limited a Little	44	36.67		
	No Not Limited at all	69	57.50		
8 - Squatting, taking a knee, or bending down	Yes, Limited a lot	9	7.50	62.1 ± 29.1	Good
	Yes, Limited a Little	73	60.83		
	No, Not Limited at all	38	31.67		

				Mean ± SD	Assess.
9 - Doing more than one mile of walking	Yes Limited a lot	94	78.33	**11.7 ± 23.1**	**Poor**
	Yes Limited a Little	24	20.00		
	No Not Limited at all	2	1.67		
10 - Walking a few slabs at a time	Yes Limited a lot	13	10.83	**63.3 ± 32.2**	**Good**
	Yes Limited a Little	62	51.67		
	No Not Limited at all	45	37.50		
11 - Just one block away	Yes Limited a lot	98	81.67	**9.6 ± 20.8**	**Poor**
	Yes Limited a Little	21	17.50		
	No Not Limited at all	1	.83		
12 - Taking a shower or putting on your clothes	Yes Limited a lot	5	4.17	**78.3 ± 28.8**	**Good**
	Yes Limited a Little	42	35.00		
	No Not Limited at all	73	60.83		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

The results in table (4.4) shows that the sample responses of physical functioning domain ($n = 5$) were poor , and the remainder half ($n = 5$) of participant responses were good.

Table (4.5): distribution of Quality of Life Items about Role-physical functioning.

Role-physical - Items		Freq.	%	Mean ± SD	Assess.
13 - Cut down the amount of time you used up during the course of your day at work or elsewhere	Yes	88	73.33	**26.7 ± 44.4**	**Poor**
	No.	32	26.67		
14 - Accomplished less than you	Yes	88	73.33	**26.7 ± 44.4**	**Poor**

				Mean ± SD	Assess.
would like	No	32	26.67		
15 - Occupational options and extracurricular pursuits were severely constrained.	Yes.	88	73.33	26.7 ± 44.4	Poor
	No.	32	26.67		
16 - Had difficulty performing the a job or other activity that requires additional effort)	Yes	88	73.33	26.7 ± 44.4	Poor
	No.	32	26.67		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

The above table (4.5) of results represents the Role-physical domain (n = 4), the mean of all items in role – physical functioning domain were poor.

Table (4.6): distribution of Quality of Life Items about Role-emotional functioning.

Role-emotional - Items		Freq.	%	Mean ± SD	Assess.
17 - Cut down the amount of time you used up during the course of your day at work or elsewhere	Yes	88	73.33	26.7 ± 44.4	Poor
	No	32	26.67		
18 - Accomplished less than you would like	Yes	88	73.33	26.7 ± 44.4	Poor
	No	32	26.67		
19 - Wasn't as careful with my work or other duties as usual.	.Yes	88	73.33	26.7 ± 44.4	Poor
	.No	32	26.67		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

The above table (4.6) of results represents the Role-emotional domain (n = 3), the mean of all items in role – emotional functioning domain were poor.

Table (4.7): distribution of Quality of Life Items about social functioning.

Social functioning-Items		Freq.	%	Mean ± SD	Assess.
20 - Emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?	Very Severe	0	.00	50.4 ± 16.8	Good
	Severe	26	21.67		
	Moderately	66	55.00		
	Slightly	28	23.33		
	Not at all	0	.00		
32 - During the past 4 weeks, how much of the time has your physical health or psychological issues had a negative impact on your social life (such as going out with friends and family)?	All of the time	12	10.00	33.3 ± 18.1	Poor
	Most of the time	62	51.67		
	Some of the time	40	33.33		
	A little bit of the time	6	5.00		
	None of the Time	0	.00		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

According to the above table (4.7) which concerns the social functioning items it indicates that the study sample responses, the mean of one of the items is good, and the second one is poor, at mean of (Mean <=50: Poor, Mean >50: Good)

Table (4.8): distribution of Quality of Life Items about Bodily pain.

Bodily pain-Items		Freq.	%	Mean ± SD	Assess.
21 - That however much discomfort have you experienced in your body over the last four weeks?	Very.severe	5	4.17	35.3 ± 19.7	Poor
	Severe	53	44.17		
	Moderate	34	28.33		
	Mild	21	17.50		
	Very mild	7	5.83		
22 - During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?	Extremely	8	6.67	39.4 ± 20.4	Poor
	Quite a bit	52	43.33		
	Moderately	43	35.83		
	A little bit	17	14.17		
	Not at all	0	.00		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

The table (4.8) which concerns the bodily pain items responses, the mean of all items is poor at (Mean <=50: Poor, Mean >50: Good)

Table (4.9): distribution of Quality of Life Items about Vitality.

Vitality-Items		Freq.	%	Mean ± SD	Assess.
23 - Really do you have a lot of energy?	None of the Time	5	4.17	33.5 ± 17.2	Poor
	A little bit of.the.time	51	42.50		
	Some of.the.time	46	38.33		
	A.good.Bit.of.the.Time	14	11.67		
	Most.of.the.time	4	3.33		

	All of the time	0	.00		
27 - You had a lot of strength.	None of the Time	8	6.67	27 ± 14.6	Poor
	A little bit of the time	71	59.17		
	Some of the time	33	27.50		
	A good Bit of the Time	7	5.83		
	Most of the time	1	.83		
	All of the time	0	.00		
29 - Do you feel exhausted?	All of the time	0	.00	53.7 ± 13.7	Good
	Most of the time	3	2.50		
	A good Bit of the Time	44	36.67		
	Some of the time	61	50.83		
	A little bit of the time	12	10.00		
	None of the Time	0	.00		
31 - Did you have a feeling of tiredness?	All of the time	0	.00	44.3 ± 18.4	Poor
	Most of the time	30	25.00		
	Agood Bit oftheTime	44	36.67		
	Some of the time	36	30.00		
	Alittle bit of the time	10	8.33		
	None of theTime	0	.00		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

Related to the above table (4.9) that is associated to vitality items responses, the majority of participants responses is poor, and the remainder one is good, at mean of (Mean <=50: Poor, Mean >50: Good).

Table (4.10): distribution of Quality of Life Items about Mental health.

Mental health -Items		Freq.	%	Mean ± SD	Assess.
24 - Have you been a very nervous person?	All of the time	12	10.00	29.3 ± 18.9	Poor
	Most of the time	63	52.50		
	A good Bit of the Time	25	20.83		
	Some of the time	17	14.17		
	A little bit of the time	3	2.50		
	None of the time	0	.00		
25 - Have you felt so down in the dumps that nothing could cheer you up?	All of the time	0	.00	50.8 ± 18.1	Good
	Most of the time	13	10.83		
	A good Bit of the Time	50	41.67		
	Some of the time	36	30.00		
	A little bit of the time	21	17.50		
	None of the Time	0	.00		
26 – do you have feling of calm or peaceful?	None of the Time	0	.00	46.3 ±16	Poor
	A little bit of the time	22	18.33		
	Some of the time	41	34.17		
	A good Bit of the Time	54	45.00		
	Most of the time	3	2.50		
	All of the time	0	.00		
28 - How many you have been down and depressed?	All of the time	0	.00	55 ± 13.3	Good
	Most of the time	1	.83		
	A good Bit of theTime	41	34.17		
	Some of.the.time	65	54.17		
	Alittle bit of the time	13	10.83		

	None of theTime	0	.00		
30 - How long are you still pleased?	None of theTime	0	.00	45.5 ± 17.6	Poor
	Alittle bit of the time	27	22.50		
	Some of thetime	40	33.33		
	Agood Bit of theTime	46	38.33		
	Mostof the time	7	5.83		
	All of the time	0	.00		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

Table (4.10) reveals the sample responses of mental health domain, the most of study subjects responses were poor at mean equal and less than 50, and the remainder responses were good at mean more than 50.

Table (4.11): distribution of Quality of Life Domains.

Quality of Life Domains		Freq.	%	Mean ± SD	Assess.
1- General health perception	Poor	113	94.17	34.4 ±10.6	Poor
	Good	7	5.83		
2- Physical functioning	Poor	92	76.67	40.9 ±19.9	Poor
	Good	28	23.33		
3- Role-physical	Poor	88	73.33	26.7 ± 44.4	Poor
	Good	32	26.67		
4- Role-emotional	Poor	88	73.33	26.7 ± 44.4	Poor
	Good	32	26.67		
5- Social functioning	Poor	104	86.67	41.9 ± 14.4	Poor
	Good	16	13.33		
6- Bodily pain	Poor	91	75.83	37.3 ± 19.3	Poor
	Good	29	24.17		

7- Vitality	Poor	106	88.33	39.6 ± 12.1	Poor
	Good	14	11.67		
8- Mental health	Poor	82	68.33	45.4 ± 10.4	Poor
	Good	38	31.67		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

According to the table (4.11) that shows evaluation of quality of life domains items , it represents all of the study subject's responses were poor at mean less than 50, so no one of domain evaluation was good.

Table (4.12): Distribution of Overall Quality of Life Domains.

Overall Quality of Life domains		Freq.	%	Mean ± SD	Assess.
Overall Quality of Life	Poor	88	73.33	36.6 ± 17.6	Poor
	Good	32	26.67		
Total		120	100%		

Mean <=50: Poor, Mean >50: Good

The above table (4.12) that is concerned to overall assessment of the quality of life, so the results show the overall quality of life was poor, with a mean value of less than 50.

Figure (1): Distribution of Overall Quality of Life Domains.
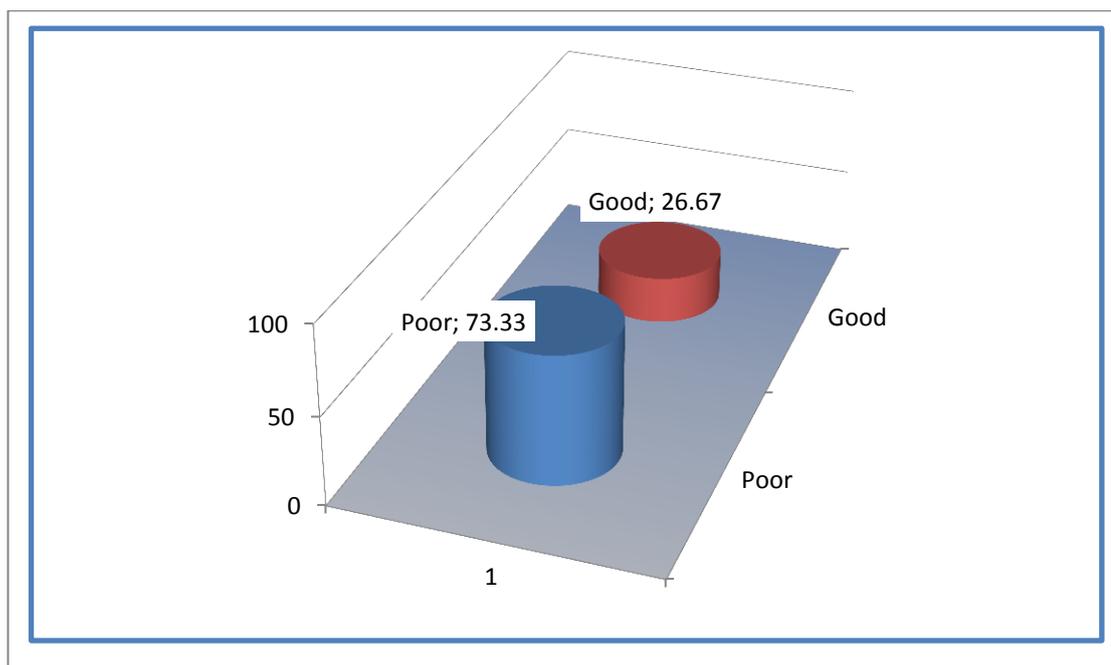
Table (4.13): Relationship between General health perception and their demographic data.

Demographic data	Chi-square (X^2)	df	P-value (Sig.)
Age (Years)	11.98	3	0.007 (HS)
Gender	1.5	1	0.221 (NS)
Education level	8.7	5	0.12 (NS)
Occupation	8.6	5	0.123 (NS)
Marital status	7.36	3	0.061 (NS)
Monthly income	18.8	5	0.002 (HS)
Residency	6.5	1	0.011 (S)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

The table (4.13) represents the relationships between the general health perception and the demographical characteristics, there were high significant relationships between general health perception and the demographical items of (Age , monthly income and residency) at pvalue

lower than 0.05 , and at the time, non - significant relationships related to remainder items (gender, educational level , occupation and marital status) at pvalue greater of the 0.05.

Table(4.14): Relationship between General health perception with the Clinical variabeles

Clinical variables	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	2.32	3	0.508 (NS)
Duration of smoking (Years)	3.32	2	0.190 (NS)
Chronic disease	13.15	12	0.358 (NS)
BMI	2.58	3	0.46 (NS)
Duration of disease (Years)	2.47	2	0.290 (NS)
Number of blocked artery	5.821	2	0.054 (NS)
Type of cardiac catheterization	9.17	3	0.027 (S)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

Concerning the table (4.14) that shows the relationships between the general health perception and the clinical characteristics, there were non-significant relationships between general health perception and the all items of clinical variabeles at p value greater than 0.05 , but apart from one item there were high significant relationships with the (the kind of cardiac catheterization) with the quality of life variables at p value lower than 0.05.

Table (4.15): Relationship between Physical functioning and their demographic data.

Demographical variables	Chi-square (X^2)	df	P-value (Sig.)
Age (Years)	0.672	3	0.88 (NS)
Gender	0.216	1	0.642 (NS)
Education level	8.44	5	0.124 (NS)
Occupation	11.533	5	0.042 (S)
Marital status	7.83	3	0.05 (NS)
Monthly income	18.95	5	0.002 (HS)
Residency	0.799	1	0.371 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

Regarding to above table (4.15) that represents the relationships between sub domains of quality of life and the demographical characteristics, there is no correlation between both all items and physiologically functioning except at two item (occupation and household monthly) there is high meaningful relationship at pvalue lower than 0.05.

Table (4.16): Relationship between Physical functioning and their Clinical data

Clinical variables	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	1.15	3	0.765 (NS)
Duration of smoking (Years)	2.23	2	0.327 (NS)
Chronic disease	7.89	12	0.794 (NS)
BMI	1.309	3	0.727 (NS)
Duration of disease (Years)	2.24	2	0.326 (NS)

Number of blocked artery	9.338	2	**0.009 (HS)**
Type of cardiac catheterization	2.54	3	0.468 (NS)

(X^2)**:Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5**

The above table (4.16) shows the relationships among both quality of life different domains and the clinical characteristics, there is non - significant correlation among both of the all items of clinical characteristic and physical functioning except in one item (number of blocked artery) there are strong relationship at pvalue lower than 0.05.

Table (4.17): Relationship between Role- physical functioning and their demographic data.

Demographical variables	Chi-square (X^2)	df	P-value (Sig.)
Age (Years)	3.22	3	0.358 (NS)
Gender	0.39	1	0.528 (NS)
Education level	9.57	5	0.08 (NS)
Occupation	10.35	5	0.06 (NS)
Marital status	6.54	3	0.088 (NS)
Monthly income	16.1	5	**0.007 (HS)**
Residency	1.47	1	0.225 (NS)

(X^2)**:Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5**

Concerning the table (4.17) that represents the relationships between the sub domains of quality of life and the demographical characteristics, there is non-significant relationships between the all items and role- physical except in one item (monthly income) there is high significant relationship at pvalue lower than 0.05.

Table (4.18): Relationship between Role- physical functioning and their Clinical data

Clinical variable	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	0.93	3	0.818 (NS)
Duration of smoking (Years)	0.93	2	0.628 (NS)
Chronic disease	8.75	12	0. 723 (NS)
BMI	1.07	3	0.783 (NS)
Duration of disease (Years)	3.64	2	0.162 (NS)
Number of blocked artery	11.20	2	0.004 (HS)
Type of cardiac catheterization	3.42	3	0.33 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

The table (4.18) representes the relationships between the participants clinical characteristics and their quality of life sub domains, the results show that there is no meaningful relationship among both of all items of clinical data and role physical, except in one item (number of blocked artery) there is high significant relationship at pvalue lower than 0.05.

Table(4.19):   Role-emotional   functioning   with   the demographical variables.

Demographical variables	Chi-square (X^2)	df	P-value (Sig.)
Age (Years)	3.22	3	0.358 (NS)
Gender	0.39	1	0.528 (NS)
Education level	9.57	5	0.08 (NS)

Occupation	10.35	5	0.06 (NS)
Marital status	6.54	3	0.088 (NS)
Monthly income	16.1	5	0.007 (HS)
Residency	1.47	1	0.225 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <0.05

According to table (4.19) that represents the relationships between the sample demographical characteristics and their quality of life domain, there is non-significant relationship between the all items with the role emotional except in one item (monthly income) there are strong relationship at pvalue lower than 0.05.

Table(4.20): Role- emotional functioning with the Clinical variables

Clinical variables	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	0.93	3	0.818 (NS)
Duration of smoking (Years)	0.93	2	0.628 (NS)
Chronic disease	8.75	12	0. 723 (NS)
BMI	1.07	3	0.783 (NS)
Duration of disease (Years)	3.64	2	0.162 (NS)
Number of blocked artery	11.20	2	0.004 (HS)
Type of cardiac catheterization	3.42	3	0.33 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <0.05

Related to above table (4.20) that represents there is non-significant relationship between the all items of participant clinical data with the role emotional except in one item (Number of blocked artery) there are strong relationship at pvalue lower than 0.05.

Table (4.21): Social role functioning with demographical variables.

Demographical variables	Chi.square.(X^2)	d.f	Pvalue (Sig.)
Age.	23.21	3	0.0001 (HS)
Gender	0.16	1	0.681 (NS)
Education level	9.47	5	0.092 (NS)
Occupation	19.68	5	0.001 (HS)
Marital status	13.59	3	0.004 (HS)
Monthly income	6.91	5	0.227 (NS)
Residency	3.48	1	0.062 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

Concerning the table (4.21) , the results show that there is high significant relationship between three items (age, occupation and marital status) of participant demographical data with the social domain of quality of life, but the remainder items indicated that there are non significant relationship at pvalue more than 0.05.

Table (4.22): Social role functioning with Clinical variables

clinical variables	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	1.15	3	0.764 (NS)
Duration of smoking (Years)	0.54	2	0.761 (NS)
Chronic disease	24.07	12	0.020 (S)
BMI	6.70	3	0.08 (NS)
Duration of disease (Years)	1.99	2	0.368 (NS)
Number of blocked artery	2.96	2	0.227 (NS)

| Type of cardiac catheterization | 10.11 | 3 | 0.018 (S) |

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

The above table (4.22) represents that there is non-significant relationship between all items of subject clinical characteristic's and their social domain responses, except in two items (chronic disease and type of cardiac catheterization) which indicate that there are meaningful relationship at pvalue lower than 0.05.

Table(4.23): Bodily pain with demographic variables.

Demographical variables	Chi.square	d.f	P.value
Age.	4.90	3	0.179 (NS)
Gender	0.03	1	0.862 (NS)
Education level	19.1	5	0.002 (HS)
Occupation	9.08	5	0.106 (NS)
Marital status	7.26	3	0.64 (NS)
Monthly income	14.31	5	0.015 (S)
Residency	0.05	1	0.820 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

According to table (4.23) which indicates the relationships between the sample demographical characteristic's and bodily pain, there is non-significant relationship between the all items except in (education level and monthly income) at pvalue lower than 0.05.

Table.24): Bodily pain with Clinical variables

Clinical variables	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	2.91	3	0.405 (NS)
Duration of smoking (Years)	1.78	2	0.410 (NS)

Chronic disease	17.88	12	0.119 (NS)
BMI	2.51	3	0.473 (NS)
Duration of disease (Years)	4.47	2	0.107 (NS)
Number of blocked artery	6.95	2	0.031 (S)
Type of cardiac catheterization	4.41	3	0.22 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

Related to above table (4.24), the results show that there is non-significant relationships between the sample demographical data and their bodily pain responses, except in one item (Number of blocked artery) at pvalue lower than 0.05.

Table (4.25): Vitality with demographical variables.

Demographical variables	Chi-square (X^2)	df	P-value (Sig.)
Age (Years)	22.53	3	0.0001 (HS)
Gender	0.36	1	0.547 (NS)
Education level	9.28	5	0.098 (NS)
Occupation	20.24	5	0.001 (HS)
Marital status	15.70	3	0.001 (HS)
Monthly income	21.02	5	0.001 (HS)
Residency	0.76	1	0.382 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

The table (4.25) shows that there were high significant relationship between four items of sample demographical characteristics with the vitality domain of quality of life, but the remainder items (gender, education level and residency) show that there are non significant relationship at pvalue more than 0.05.

Table(4.26): Vitality with Clinical variables

clinical variables	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	1.86	3	0.602 (NS)
Duration of smoking (Years)	1.32	2	0.517 (NS)
Chronic disease	27.29	12	0.007 (HS)
BMI	8.37	3	0.039 (S)
Duration of disease (Years)	0.027	2	0.873 (NS)
Number of blocked artery	2.07	2	0.355 (NS)
Type of cardiac catheterization	6.49	3	0.09 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

Concerning above table (4.26) that revealed there were non-significant relationship between all items of sample clinical data with the vitality, except in two items (chronic disease and BMI) at pvalue lower than 0.05.

Table(4.27): Mental with demographical variables.

Demographical variables	Chi.square	d.f	Pvalue
Age.	11.43	3	0.01 (S)
Gender	1.14	1	0.28 (NS)
Education level	11.01	5	0.051 (NS)
Occupation	15.35	5	0.009 (HS)
Marital status	5.71	3	0.126 (NS)
Monthly income	15.34	5	0.009 (HS)
Residency	1.15	1	0.282 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

The above table (4.27) reveales that there were non-significant relationship between four items of sample demographical characteristics with the mental health, and the remainder items (age, occupation and monthly income) the results show that there were significant relationship at pvalue lower than 0.05.

Table(4.28): Mental with Clinical variables

clinical variables	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	4.18	3	0.242 (NS)
Duration of smoking (Years)	1.03	2	0.598 (NS)
Chronic disease	21.00	12	0.05 (NS)
BMI	8.84	3	0.03 (S)
Duration of disease (Years)	4.75	2	0.09 (NS)
Number of blocked artery	3.97	2	0.137 (NS)
Type of cardiac catheterization	0.49	3	0.92 (NS)

(X^2):Chi-square ; df: degree of freedom ; Sig: significant p value <o.o5

Concerning the above table (4. 28) the result shows that there were non-significant relationships between all items of sample clinical characteristics and their mental health domain, except in one item (BMI) at pvalue lower than 0.05.

Table(4.29): Overall Quality of Life with demographical variables.

Demographical variables	Chi.square	d.f	Pvalue
Age.	3.233	3	0.358 (NS)
Gender	0.399	1	0.528 (NS)

Education level	**9.57**	**5**	**0.08 (NS)**
Occupation	**10.35**	**5**	**0.06 (NS)**
Marital status	**6.5**	**3**	**0.088 (NS)**
Monthly income	**16.1**	**5**	**0.007 (HS)**
Residency	**1.47**	**1**	**0.225 (NS)**

(X^2)**:Chi-square ; df: degree of freedom ; NS: Non-Significant at P>0.05; S: Significant at P<0.05; HS: High Significant at P<0.01**

Regarding to above table (4.29) which represents that there were non-significant relationship between all items of sample demographical characteristics and the overall assessment of (QOL.), except in the one item (monthly income) the result declared high meaningful relationship with the overall (QOL.) at pvalue lower than.0.05.

Table(4.30): Overall Quality of Life with their Clinical variables

Clinical variables	Chi-square (X^2)	df	P-value (Sig.)
Smoking status	0.933	3	0.818 (NS)
Duration of smoking (Years)	0.931	2	0.628 (NS)
Chronic disease	8.75	12	0.723 (NS)
BMI	1.07	3	0.78 (NS)
Duration of disease (Years)	3.64	2	0.162 (NS)
Number of blocked artery	11.20	2	0.004 (HS)
Type of cardiac catheterization	3.42	3	0.33 (NS)

(X^2)**:Chi-square ; df: degree of freedom ; NS: Non-Significant at P>0.05; S: Significant at P<0.05; HS: High Significant at P<0.01**

In related to the table (4.30), the results show that there were non-significant relationship between all items of sample clinical data and the overall assessment of (QOL), except of the one item (number of blocked artery), the results declare the strong relationship with the overall (QOL) at pvalue lower than 0.05.

Table(4.31): Correlation of overall quality of Life with different studied domains using Pearson correlation statistical Test.

		D1	D2	D3	D4	D5	D6	D7	D8
General health perception	**Pearson Correlation**		.426**	.378**	.378**	.554**	.387**	.699**	.472**
	P-value		.000	.000	.000	.000	.000	.000	.000
Physical functioning	**Pearson Correlation**	.426**		.781**	.781**	.427**	.522**	.479**	.341**
	P-value	.000		.000	.000	.000	.000	.000	.000
Role-physical	**Pearson Correlation**	.378**	.781**		1.000**	.372**	.481**	.413**	.259**
	P-value	.000	.000		.000	.000	.000	.000	.004
Role-emotional	**Pearson Correlation**	.378**	.781**	1.000**		.372**	.481**	.413**	.259**
	P-value	.000	.000	.000		.000	.000	.000	.004
Social functioning	**Pearson Correlation**	.554**	.427**	.372**	.372**		.524**	.607**	.648**
	P-value	.000	.000	.000	.000		.000	.000	.000

Bodily pain	Pearson Correlation	.387**	.522**	.481**	.481**	.524**		.522**	.409**
	P-value	.000	.000	.000	.000	.000		.000	.000
Vitality	Pearson Correlation	.699**	.479**	.413**	.413**	.607**	.522**		.615**
	P-value	.000	.000	.000	.000	.000	.000		.000
Mental health	Pearson Correlation	.472**	.341**	.259**	.259**	.648**	.409**	.615**	
	P-value	.000	.000	.004	.004	.000	.000	.000	
Overall QOL	Pearson Correlation	.580**	.850**	.930**	.930**	.612**	.673**	.647**	.498**
	P-value	.000	.000	.000	.000	.000	.000	.000	.000
	n	120	120	120	120	120	120	120	120

**= Correlation is significant at the 0.01 level

D= DOMAIN

In the above table the findings shows that there is positive correlation (0-1) between the different study domains at p value less than 0.01.

Chapter Five

(Discussion)

Chapter Five

Discussion of the Study Results

The findings of this study will be discussed in this chapter, along with the factors affecting the quality of life of patients who complain from coronary artery disease who visit three selected public governmental hospitals in AL-Najaf AL-Ashraf City, using an organized and scientific approach supported by relevant and available articles. This study comprised a total of 120 subjects who had been diagnosed with coronary artery disease.

5.1. Socio-demographic characteristics

In this study, the demographic characteristics discussed are included gender, age, level of education, occupational status, marital status, household monthly and residency.

In regard to the study findings the greater percentage of study subjects between the age group of (equal to 55 and more) years old, however the study reveals that the majority of study subjects were males, this may be the older age are at higher risk for ischemic heart disease, this study is matched with the finding of the Santoso et al. (2017). who conducted article related to the Factors Affecting Quality of Life in Patients with Coronary Artery Disease, which revealed that the majority of study results were male between the age group of (48-57) years old.

Concerning the educational level, most of the subjects were primary school graduated. Depend on the our opinion that the low education can lead to decrease in the understanding of the risk factors and disease process. This finding is in agreement with the Tillmann et al. (2017) who represent that low educational level is a causal risk factor of coronary heart disease.

According to subjects occupation the researcher reported that the majority of study subjects occupation were housewife, this finding supported with the Rashid et al (2019) article that represent the highest percentage of study sample were a house wife that exposed to high risk for ischemic heart disease.

Related to the marital status, the results show that the most subjects of the study were married, this is related to the age criteria that selected by the researcher. The researchers Schultz et al ., (2017) and Dhindsa et al ., (2020) had the opposite of this finding by their articles, that detected the married people at lower risk for disease outcomes than unmarried, widowed, divorced and separated.

However the results of the study reveal that the majority of study subject economic status were insufficient and this finding is highly agree with Schultz et al., (2018) whom reported that the low income people were at higher risk for coronary artery disease, therefore low monthly income had significant effect on cardiovascular health status of people because of their inability to meet daily needs in addition it may lead to adverse effect on their emotional status that considers the major risk factor for IHD.

Regarding to the residency the study results showed that more than half of study subjects were lived in an urban area. This is in an agreement with the study carried out by Khan et al., (2021) who reported that the mortality rates with coronary artery disease are higher in urban areas than rural ones.

5. 2. Clinical characteristics

Concerning the distribution of frequency and percentage of clinical variables of patients with coronary artery disease that may or may

not consider as factors affecting their quality of life, that are : smoking status, Duration of smoking (years), chronic disease, BMI, duration of disease (years), Number of blocked artery and type of cardiac catheterization.

Furthermore, the results of this study demonstrated that the majority of study sample were non- smoking. This finding disagreement by the Oshunbade et al., (2021) study which demonstrated current smoker had highest incidence of coronary artery disease. Tobacco smoking (both active , previous and passive smoking) exposures to peripheral artery and coronary artery disease through several mechanisms, including inflammation, vasoconstriction, clot formation and reduced oxygen supply to the heart, as well as directly damaging coronary arteries of the heart. While, concerning to the duration of smoking, the result shows that nearly half of the study subjects periods of smoking were (11- 20) years. This is in an agreement with Ding et al., (2019) who found that the prolonged current and previous smoking period have significantly effect on coronary artery disease.

Regarding to the chronic disease of the clinical characteristics result , the study findings represent that the highest percentage of study subjects complain of hypertension and hyperlipidemia. This finding may be related to the hypertension and hyperlipidemia which were one of the most modifiable risk factors of ischemic heart disease. This congruent with two previous research studies which demonstrated that the hypertension and hyperlipidemia are the major risk factors for coronary artery disease Weber et al., (2016) and   Yao et al. (2020).

According to the body mass index, the study findings indicated that the majority of study subjects were overweight. Obesity was considered to be as an independent and most modifiable risk factor for the

early incidence of CAD. These results also matching the same articles by Gregory et al ., (2017) and Formentini et al., (2019) also find that the same category of majority of study sample are overweight.

Related to the duration of disease, the study finding shows that most of study subjects were between the period of 5 years and more, this may be indicated that the higher mortality rate due to coronary artery disease. Nevertheless the study results find that the higher percentage of study sample had two blocked coronary artery.

Furthermore, concerning the type of cardiac catheterization, the majority of study subjects were underwent the diagnostic and treatment cardiac catheterization. According to the our information this finding maybe resulted from that the highest number of study subject had two blocked coronary artery and with the period of 5 years, therefore they were required for cardiac interventions procedure to enhancing the cardiac perfusion and decrease further complications.

5.3. Discussion of quality of life domains

Concerning the study sample quality of life domains , results of the study represent that the overall assessment of study subject general health perceptions were poor. This may be related to their poor health status related to prolonged chronic disease and coronary artery disease. In relation to the physical functioning domain , the overall assessment of study subjects were poor, it is almost associated with the decrease in myocardial perfusion that caused by blocked coronary arteries. Regarding to role – physical functioning the study finding reveals that the overall assessment of subjects were poor. Also in related to role – emotional functioning the results of study indicated that the overall assessment of sample were poor. Furthermore, the study results demonstrated that the overall assessment of study sample role – social functioning domain were

poor, this is closely related to the pain and limited activities that aggravated by physical and emotional stress. However, this study indicated that the overall evaluation of study subjects about bodily pain were poor, in addition the study sample vitality, the overall mean were poor. Moreover the mental health status, the results of research demonstrated that the overall evaluation of study subjects were poor.

5.4. Overall assessment of quality of life

According to study findings, the overall assessment of research sample quality of life were poor, it comes from that the patients with coronary artery disease have low physical activity and social relationship related to decrease in myocardial perfusion that causes chest pain and shortness of breathing that need for more rest and relaxation, and in general poor living conditions in Iraq and the poor economic status for most of study subjects , it will negatively affect the quality of life for these clients who suffer from the complications of the disease and the difficulty in obtaining the appropriate treatment and nutrition, due to the recent high prices. This in agreement with previous study Sajobi et al ., (2018) demonstrated that the patients with coronary artery disease have lower score of quality of life.

5.5. Relationship between the demographical factors and overall quality of life.

Concerning the relationship between the demographical variables of all 120 patients with coronary artery disease that included in the study and their quality of life who visited the three governmental hospitals , the researcher found that there were non-significant relationship between the subjects demographical characteristic's with their overall assessment of quality of life except in one item (monthly income). Previous studies Chu et al ., (2014) and Sajobi et al ., (2018) revealed that several factors

including the sex , age, socioeconomic status and chronic disease were affecting quality of life of study subjects. Regarding the personal income, the results of study indicated that there were strong relationship between the study subjects overall assessment of quality of life with their monthly income and occupation at p value lower than 0.05. This maybe come from that the low economic status also had direct effect on their fulfill daily living requirement. Low socio-economic status may put individuals at risk with poorer health than the individual with good economic status for various reasons, such as less access to healthcare facilities, poorer living conditions, less knowledge about the complication of disease and its negative effect on psychological status. This finding are is in an agreement with Keyvanara et al ., (2015), study they demonstrated that there are positive and high meaningful relationship with the patient socioeconomic status and their quality of life, so the patients with low economic status were poorer quality of life than the individuals with good economic status. Morgan et al., (2017) demonstrated that there were high significant relationship between (monthly income and educational level) of study subject and their quality of life, this result

5.6. Relationship between the clinical factors and overall quality of life assessment.

The clinical characteristics that associated with the subject health status were included: smoking status , duration of smoking, chronic disease, body mass index, duration of coronary artery disease from the onset till now, number of blocked artery and type of cardiac catheterization procedure.

According to the relationship between the study subjects quality of life and their clinical characteristic's, the result of this study demonstrated that there had been non- significant relationship between the

study subject quality of life and their clinical variables except at one item (number of blocked arteries), this finding means that this factor has an effect on the subjects quality of life, it may be related to the prolonged period of disease and severity of signs and symptom because of the blocked artery can lead to the decrease in myocardial perfusion which leads to the ischemia and then chest pain and shortness of breathing that have interfering with the physical activity , responsibilities restriction and social relationships. This interpretation is matched with the study finding of Stewart et al ., (2013) who estimated that the severity of coronary artery disease symptoms like dyspnea, chest pain and fatigue have an direct effect on physical.

5.7. Relationship between general health perception domain and their demographical and clinical characteristics.

Concerning the relationships between the general health perception domain and the subjects demographical characteristics, the study findings indicated that, there were high significant relationships between general health perception and three items (Age , monthly income and residency) of demographical characteristics at p value lower than 0.05 , and there were relationship that is not significant in related to remainder items (gender, educational level , occupation and marital status). In addition to that, the study results showed that there were non-significant relationships between the General health perception and the study subjects clinical characteristics , except in one item (type of cardiac catheterization) there were strong relationship at p value lower than 0.05. This result supported by the Limm et al., (2012) findings who reported that there were many factors (age, gender, economic status and chronic disease) have an effect on the individual health perception. This may related to the physiological and psychological effect on the general health perceptions that come from developed age and poor income, while another study by

Yiğitbaş & Deveci (2019) they found opposite this finding they declared that there were non-significant relationship between general health perception with the subjects demographic and clinical characteristic's.

5.8. Relationship between physical functioning with their demographical and clinical characteristics.

The study results represent that there were non-significant relationship between the all items of demographical variables and physical functioning except at two item (occupation and monthly income) there were a high significant relationship at p value lower than.0.05. Korda et al., (2014) reported that, there were high score in relation to monthly income and severity of physical functioning limitations. In addition they reported that there were non-significant relationship between the clinical characteristic's and physical functioning except in one item (number of blocked artery), there was a high significant relationship between the number of blocked artery and physical functioning at p value less than 0.05. This may come from that the severity of the coronary artery disease are considered a main cause of disability because of the symptoms such as angina chest pain, dyspnea, and fatigue during activities that would be lead to less engaged in exercise, also the psychological consequences of CAD affect the usual levels of physical activity. Stewart et al., (2013) also stated that the severity of symptoms of CAD had significantly effect on low physical functioning.

5.9. Relationship between role - physical functioning with the demographic and clinical characteristics.

The results of the study indicated that there were non-significant relationships between the study subjects demographical characteristic's and their role- physical functioning domain except in one item (monthly income) there are a strong relationship at p value lower than 0.05. However

the relationship was not significant between the all items of the study subjects clinical characteristic's and their role physical functioning, except in one item (number of blocked artery) at p value less than 0.05. According to the researcher opinion, the samples had difficulty in performing and cut down the amount of time used up during the course of day at work or elsewhere, related to extra effort aggravates the symptom of dyspnea and chest pain.

5.10. Relationship between role-emotional functioning with their demographic and clinical variables.

According to study results, there were non-significant relationship between the demographical characteristic's with the role emotional function except in one item (monthly income) at p value less than 0.05. Low monthly income had negatively effect on people emotional status because of difficulty in meeting their daily needs and requirements. Qi & Wu (2020) study results represent the same finding that the family income had an effect on the individual emotional wellbeing. In contrast there were non-significant relationship between all items of study subjects clinical characteristics with their role emotional functioning domain except in one item (Number of blocked artery) there were high significant relationship between the two elements at p value lower than 0.05. This finding is also supported by the Kharamin et al., (2018) study result who demonstrated that the ischemic heart disease had an effect on individual emotional status, that leads to interfere with their activity of daily living.

5.11. Relationship between social role functioning with the demographical and clinical variables.

According the study results, there were high significant relationship between three items (Age, Occupation and marital status) of study subject demographical variables with their social role functioning

sub domain of quality of life. Many results had poor related articles so further studies and research are need to be done , but in concerning the researchers opinion the older age and retired patients with ischemic heart disease that had lack in the social relationships with the others. Concerning the relationship between the clinical characteristics of study subjects and their social role functioning, there were significant relationship between two items (Chronic disease and Type of cardiac catheterization) with the social role functioning domain of quality of life. It may be come from the fact that the chronic disease and its complications may interfere with the patients social relationships. On the other hand Chang et al., (2017) found that there were significant relationship between the decreased in individual social relationship with the increasing the incidence of coronary heart disease and higher mortality rate.

5.12. Relationship between bodily pain and the study subjects demographical and clinical data.

The study findings declared that there were significant relationship between the two item (Education level and monthly income) of patients with CAD with their bodily pain domain of quality of life. In relation to the clinical characteristics, there were significant relationship between bodily pain domain and number of blocked artery. This result may be related to blocked coronary artery that leads to increase in the chest pain and anxiety because of the ischemia. Angina come from narrowing or blocked coronary arteries, Rieckmann et al., (2020) also demonstrated that the angina chest pain had worsen the physical functioning and anxiety in the client with diagnosed CAD than the individual with non-angina chest pain.

5.13. Relationship between vitality of study subjects and their demographic and clinical variables.

The study's findings reported that there were a high significant relationship between the vitality domain of study subjects with their demographical characteristic's except in three items (gender, education level and residency), Masciocchi et al., (2020) reported that individual vitality was highly effected and lowered by advancing age. Concerning study subjects of clinical characteristics, there were significant relationship between study subjects chronic disease and BMI with vitality domain of their quality of life. The finding of Park et al., (2019) research were reported that there were significant associated between the vitality and the study subjects socio-demographical characteristics, furthermore in relation to chronic disease and increased in Body Mass Index it also had an effect on individual vitality and this is supported by the articles of Symonds, (2010) who illustrated the influence of overweight on individual vitality.

5.14. Relationship between mental health of study subjects and their demographical and clinical variables.

The study findings revealed that there were significant relationship between three (age, occupation and monthly income) items of study subjects demographical characteristic's with their mental health at p value less than 0.05. This finding supported by the Hubbard et al., (2021) article that represented highly association between the mental health and the individual socio-demographic characteristics. The disease may require treatment and hospitalization therefore this needs cost, the low economic status had an negative effect on patients psychological status that leads to worsen the anxiety and blue mode. Concerning to the samples clinical characteristic's, there were significant relationship between mental health domain and their Body Mass Index.

5.15. Correlation between overall quality of Life and different studied domains using Pearson correlation statistical Test.

The quality of life consists of eight domains (General health perception, Physical functioning, Role physical functioning, role emotional functioning, Social functioning, Bodily pain, the Vitality and mental health) therefore ,this study intended to find the relationships between the overall quality of life with different study domains. By using Pearson correlation, the study findings indicated that there were strong and positive relationship in between aspects of (QoL.) of patients with coronary artery disease and their overall quality of life at p value lower than.0.05, this finding means that each one of the quality of life domain had a strong and positive effect on the overall quality of life by changing its to good or poor direction.

Chapter six

(Conclusion & Recommendations)

Chapter Six

Conclusions and recommendations

6.1. Conclusions

The study conclusions generated from the findings of this study on the factors impacting quality of life of patients who complain from coronary artery disease are described in this chapter. The conclusions were drawn in light of the study's goal, research questions, and findings. Additionally, the ramifications of the study's findings and the recommendations that emerged from it will be discussed in more detail. The outcomes of the study, as well as the study's objective, guided the development of the recommendations. Depending on the study's findings and discussion, the research concludes both a broad and specific conclusion that explains the research's primary and significant point:

- The quality of life is based on the individual perceptions to their various life aspect. The study declared that there were many independent variables that may have an effect on the individual quality of life, like demographic and clinical factors.
- The study concluded that the overall assessment of quality of life of study subjects were poor.
- Based on different aspects of quality of life, all of the study subjects had poor in general health perception, physical functioning, role physical, role emotional, social functioning, bodily pain, the vitality and mental health .
- There were many independent factors that have influences on the quality of life of patient with coronary artery disease in the present study include: (monthly income and number of blocked arteries). And there were high significant relationship between different studied

domain with the overall quality of life, when the one domain change it has a direct effect on the other ones and then lead to change in the overall quality of life assessment.

6.2. Recommendations

It is important to ascertain the factors that affect quality of life. This will assist healthcare providers (nurses) in determining the appropriate interventions that needed, improving health, and ensuring that patients' quality of life are maintained or enhanced, which is important for patients with coronary artery disease management.

A center with professional nurse is required in order to identify patients who require assistance and to provide appropriate instructions and counseling, as well as referrals if necessary, to such patients.

Guidelines should be developed to educate newly diagnosed coronary artery disease coronary artery disease patients about the most important factors that have a direct impact on their quality of life and overall health.

Additional research of factors that have not previously been investigated, as well as further research to determine other variables that may have a greater effect on life satisfaction, are also should be study.

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Appendix–A

الى / دائرة صحة النجف – مركز التدريب والتنمية البشرية

م/ تسهيل مهمة

تحية طيبة :

يطيب لنا حسن التواصل معكم ويرجى تفضلكم بتسهيل مهمة طالبة الدكتوراه
(ايمان قاسم كطيو زغير) لغرض جمع عينة دراسة الدكتوراه والخاصة بالبحث
الموسوم :

العوامل المؤثرة على نوعية حياة مرضى الشرايين التاجية

Factors Affecting Quality of Life Among Patients with Coronary artery
Disease.

مع الاحترام ...

المرافقات //
- بروتوكول .
- استبانة .

أ.م.د. حسام عباس داود
معاون العميد للشؤون العلمية والدراسات العليا
٢٠٢١ / ٦ / ٥

صورة عنه الى //
- مكتب السيد العميد للتفضل بالاطلاع مع الاحترام .
- لجنة الدراسات العليا
- الملفة الشخصية .
- الصادرة .

Appendix–B

University of Babylon

College of Nursing

Research Ethics Committee

Issue No: 63

Date: 8 / 6 /2021

جـامعة بـابـل

كـلية التمـريـض

لجنة اخلاقيات البحث العلمي

Approval Letter

To,

IMAN QASIM RTEO

The Research Ethics committee at the University of Babylon, College of Nursing has reviewed and discussed your application to conduct the research study entitled "Factors Affecting Quality of Life among Patients with Coronary Artery Disease."

The following documents have been reviewed and approved.

1. Research protocol
2. Research instrument/s
3. Participant informed consent

Committee Decision.

The committee approves the study to be conducted in the presented form. The Research Ethics committee expects to be informed about any changes occurring during the study, any revision in the protocol and participant informed consent.
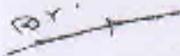
Prof. Dr. Salima K. Jehad

Chair Committee

College of Nursing

Research Ethical Committee

7 / 6 /2021

Appendix–C

جمهورية العراق

محافظة النجف الأشرف

دائرة صحة النجف

مركز التدريب و التنمية البشرية

العدد: C.٤٩٦١

التاريخ: / / ٢٠٢١

إلى/ جامعة بابل / كلية التمريض

م / تسهيل مهمة

تحية طيبة ...

إشارة إلى كتابكم ذي العدد ١٩١٨ في ١٥/٦/٢٠٢١ بخصوص تسهيل مهمة الباحثة طالبة الدراسات العليا/ دكتوراه (ايمان قاسم كاظم زغير) للحصول على الموافقة الاخلاقية لإجراء البحث الموسوم:

Factors Affecting Quality of Life among Patients with

Coronary Artery Disease

حصلت موافقة اللجنة العلمية للبحوث في مركز دائرتنا على إجراء البحث في (مدينة الصدر الطبية، مركز النجف لجراحة القلب والتداخل القسطاري و مستشفى الحكيم العام) في دائرتنا مع التأكيد على الالتزام الكامل بتعليمات السلامة الحيوية والضوابط الاخلاقية والحصول على موافقة المشاركين قبل الشروع بالبحث والحفاظ على خصوصيتهم وعدم افشاء البيانات او استخدام العينات لغير اغراض البحث العلمي ... على أن لا تتحمل دائرتنا أية تبعات مادية .. مع الاحترام.

ملاحظة :

تم استيفاء أجور جباية البحوث والبالغة (١٠٠٠٠) عشرة الاف دينار بموجب الوصل المرقم (٦٩٥٢١١) في ٢٠٢١/٦/٢٧

لـ الدكتور

رضوان كامل الحكيدي

المدير العام

٢٩ / ٦ / ٢٠٢١

Appendix–D

خبراء الاستبانة

ت	اسم الخبير	اللقب العلمي	سنوات الخدمة	الاختصاص	مكان العمل
1	الدكتورة راجحة عبد الحسن حمزة	أستاذ	36	تمريض بالغين	كلية التمريض/ جامعة الكوفة
2	الدكتورة فاطمة وناس خضير	استاذ	30	تمريض صحة مجتمع	كلية التمريض/ جامعة الكوفة
3	الدكتور ضرغام مجيد حميد	استاذ	24	تمريض البالغين	كلية التمريض / جامعة المثنى
4	الدكتور وضاح محبوبة	استاذ	23	جراح اوعية دموية وقلب	كلية الطب / جامعة الكوفة / مركز القلب للمنظار للجراحة القسطارية
5	الدكتور محمد نوري الدجيلي	استاذ	21	اختصاص باطنية	كلية الطب / جامعة الكوفة / استشارية مستشفى الصدر التعليمي
6	الدكتور ابراهيم علوان كاظم	استاذ مساعد	16	تمريض البالغين	كلية التمريض/ جامعة الكوفة
7	الدكتور محمد عبدالكريم مصطفى	استاذ مساعد	15	تمريض البالغين	كلية التمريض/ جامعة الكوفة
8	الدكتور جهاد جواد كاظم	استاذ مساعد	15	تمريض البالغين	كلية التمريض/ جامعة الكوفة
9	الدكتور مرتضى غانم	استاذ مساعد	15	تمريض صحة مجتمع	كلية التمريض/ جامعة وارث
10	الدكتور محمد باقر	استاذ مساعد	15	تمريض اطفال	كلية التمريض /جامعة الكوفة
11	الدكتور حيدر حمزة علي	استاذ مساعد	13	تمريض صحة نفسية	كلية التمريض/ جامعة بابل
12	الدكتور ضياء كريم عبد علي	استاذ مساعد	16	تمريض بالغين	كلية التمريض/ جامعة العميد

Appendix–E

Factors affecting quality of life among patients with coronary artery disease

Part 1 : demographical data

1	Gender	
	Male	
	Female	
2	**Age**	
	< = 34	
	35 - 44	
	45 - 54	
	55 and Up	
3	**Education level**	
	Illiterate	
	Read and to write	
	Primary school graduate	
	Intermediate school graduate	
	Secondary school graduate	
	Institute and college graduate	
4	**Occupation**	
	Student	
	employee	
	Retired	
	Self-employee	
	House wife	
5	**Marital status**	
	Single	
	married	
	Divorce	
	Widowed	
6	**Monthly income**	
	Insufficient	

	Barely sufficient		
	Sufficient		
7	**Residency**		
	Urban		
	Rural		

Part 11: Clinical data

2.1	**Smoking status**		
	None		
	Passive		
	Previous		
	Active Smoker:	Duration	
2.2	**Alcohol status**		
	Yes		
	No		

2.3	**Chronic disease**	Yes:	NO
	Hypertension		
	Diabetes Mellitus		
	Cardiac disease		
	Renal disease		
	Respiratory disease		
	Endocrine disease		
	Hyperlipidemia		
	Others		
2.4	**Body Mass Index**		
	Height		
	Weight		
	total		
2.5	*Duration of disease (years)*		
2.6	*Number of blockaded arteries*		
	One artery		
	Two artery		
	Three or more		
2.7	*Type of cardiac catheterizations*	number	

	None	
	Diagnostic	
	treatment	
	Diagnostic and treatment	

Part 111: Quality of life short form - 36

1-	**In general, would you say your health is:**	

a) Excellent	b) Very good	c) good	d) fair	e) poor

2-	**Compared to one year ago, how would you rate your health in general now**	
	Much better now than one year ago	
	Somewhat better now than one year ago	
	About the same	
	Somewhat worse now than one year ago	
	Much worse than one year ago	

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

3-	**Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.**	
	Yes, Limited a lot	
	Yes, Limited a Little	
	No, Not Limited at all	
4-	**Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf**	
	Yes, Limited a Lot	
	Yes, Limited a Little	
	No, Not Limited at all	
5-	**Lifting or carrying groceries**	
	Yes, Limited a Lot	
	Yes, Limited a Little	
	No, Not Limited at all	
6-	**Climbing several flights of stairs**	
	Yes, Limited a Lot	
	Yes, Limited a Little	
	No, Not Limited at all	
7-	**Climbing one flight of stairs**	
	Yes, Limited a Lot	

	Yes, Limited a Little		
	No, Not Limited at all		
8-	**Bending, kneeling, or stooping**		
	Yes, Limited a Lot		
	Yes, Limited a Little		
	No, Not Limited at all		
9-	**Walking more than a mile**		
	Yes, Limited a Lot		
	Yes, Limited a Little		
	No, Not Limited at all		
10-	**Walking one block**		
	Yes, Limited a Lot		
	Yes, Limited a Little		
	No, Not Limited at all		
11-	**Walking several blocks**		
	Yes, Limited a Lot		
	Yes, Limited a Little		
	No, Not Limited at all		
12-	**Bathing or dressing yourself**		
	Yes, Limited a Lot		
	Yes, Limited a Little		
	No, Not Limited at al		

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

13-	**Cut down the amount of time you spent on work or other activities**	yes	No
14-	**Accomplished less than you would like**	yes	No
15-	**Were limited in the kind of work or other activities**	yes	No
16-	**Had difficulty performing the work or other activities (for example, it took extra effort)**	yes	No

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

17-	**Cut down the amount of time you spent on work or other activities**	yes	No
18-	**Accomplished less than you would like**	yes	No
19-	**Didn't do work or other activities as carefully as usual**	yes	No
20-	**Emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?**		

	Not at all	Slightly	Moderately	Severe	Very Severe
21-	**How much bodily pain have you had during the past 4 weeks?**				
	None	Very Mild	Mild	Moderate	Severe	Very Severe
22-	**During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?**				
	Not at all	A little bit	Moderately	Quite a bit	Extremely

These questions are about how you feel and how things have been with you during the last 4 weeks. For each question, please give the answer that comes closest to the way you have been feeling.

23-	**Did you feel full of pep?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time
24-	**Have you been a very nervous person?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time
25-	**Have you felt so down in the dumps that nothing could cheer you up?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time
26-	**Have you felt calm and peaceful?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time
27-	**Did you have a lot of energy?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time
28-	**Have you felt downhearted and blue?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time
29-	**Did you feel worn out?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time
30-	**Have you been a happy person?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time
31-	**Did you feel tired?**					
	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time

32-	During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?				
	All of the time	Most of the time	Some of the time	A little bit of the time	None of the Time

How true or false is each of the following statements for you?

33-	I seem to get sick a little easier than other people				
	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
34-	I am as healthy as anybody I know				
	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
35-	I expect my health to get worse				
	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
36-	My health is excellent				
	Definitely true	Mostly true	Don't know	Mostly false	Definitely false

العوامل المؤثرة على نوعية حياة مرضى الشرايين التاجية

الجزء الاول والثاني : (المعلومات العامة والسريرية)

	الجنس
	ذكر
	انثى
	العمر
	34 = >
	35 - 44
	45 - 54
	فما فوق 55
	المستوى التعليمي
	غير متعلم
	يقرا ويكتب
	خريج ابتدائي
	خريج متوسط
	خريج اعدادي
	خريج معهد او جامعي
	الوظيفة
	طالب
	موظف
	متقاعد
	كاسب
	ربة منزل
	الحالة الزوجية
	اعزب
	متزوج
	مطلق
	ارمل
	الدخل الشهري
	غير كافي
	كافي الى حد ما

	كافي
السكن	
	حضري
	ريف
التدخين	
	غير مدخن
	ثانوي
	سابقا
مدة التدخين	مدخن

لا	نعم:	**الامراض المزمنة**	
		ارتفاع بضغط الدم	
		سكر الدم	
		امراض القلب	
		امراض الكلى	
		امراض التنفسية	
		امراض الغدد الصماء	
		ارتفاع دهون الدم	
		امراض اخرى	

مؤشر كتلة الجسم	
	الطول
	الوزن
	الكلي
مدة المرض (السنوات)	
عدد الشرايين المسدودة	
	شريان واحد
	شريانان
	ثلاث شرايين او اكثر
عدد	**نوع القسطرة القلبية**
	لا يوجد
	تشخيصية
	علاجية
	تشخيصية وعلاجية

الجزء الثالث : الاسالة الخاصة بنوعية الحياة: (SF-36 مقياس)

	1- بصورة عامة كيف ترى حالتك الصحية

سيئة		لابأس	جيد	جيد جدا	ممتاز

	2- مقارنة بعام مضى كيف تقييم حالتك الصحية بصورة عامة
	افضل من العام الماضي
	افضل نوعا ما
	تقريبا على ماهيه عليه
	أسوأ إلى حد ما الآن مما كان عليه قبل عام
	أسوأ بكثير من عام مضى

تتعلق العناصر التالية بالأنشطة التي قد تقوم بها خلال يوم عادي. هل صحتك الآن تقيدك في هذه الأنشطة؟ إذا كان الأمر كذلك، كم؟

	3- الأنشطة العنيفة مثل الجري ورفع الأشياء الثقيلة والمشاركة في الرياضات الشاقة.
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق

	4- الأنشطة المعتدلة ، مثل تحريك الطاولة أو دفع المكنسة الكهربائية أو البولينج أو لعب الجولف
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق

	5- رفع أو حمل مواد البقالة
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق

	6- صعود عدة درجات من السلالم
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق

	7- تسلق درج واحد
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق

	8-الانحناء أو الركوع أو الانحناء
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق

	9-المشي أكثر من ميل

	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق
	10- يمشي بلوك واحد
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق
	11-المشي عدة كتل
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق
	12- الاستحمام أو ارتداء الملابس
	نعم ، محدودة للغاية
	نعم ، محدودة قليلا
	لا ، غير محدود على الإطلاق

خلال الأسابيع الأربعة الماضية ، هل واجهت أيًا من المشكلات التالية في عملك أو الأنشطة اليومية المنتظمة الأخرى نتيجة لصحتك البدنية؟

نعم لا	13- قل مقدار الوقت الذي تقضيه في العمل أو الأنشطة الأخرى
نعم لا	14- أنجزت أقل مما تريد
نعم لا	15- كانت محدودة في نوع العمل أو الأنشطة الأخرى
نعم لا	16- واجهت صعوبة في أداء العمل أو الأنشطة الأخرى (على سبيل المثال ، استغرق الأمر جهدًا إضافيًا(

خلال الأسابيع الأربعة الماضية ، هل واجهت أيًا من المشكلات التالية في عملك أو الأنشطة اليومية المعتادة الأخرى نتيجة لأي مشاكل عاطفية (مثل الشعور بالاكتئاب أو القلق)؟

نعم لا	17- قل مقدار الوقت الذي تقضيه في العمل أو الأنشطة الأخرى
نعم لا	18- أنجزت أقل مما تريد
نعم لا	19- لم أقم بالعمل أو الأنشطة الأخرى بعناية كالمعتاد
	20- تتداخل المشاكل العاطفية مع أنشطتك الاجتماعية العادية مع العائلة أو الأصدقاء أو الجيران أو المجموعات؟

	لا على الاطلاق	بعض الشيء	باعتدال	شديدة	شديد جدا

21- ما مقدار الألم الجسدي الذي عانيت منه خلال الأسابيع الأربعة الماضية؟					
لا يوجد	شيء خفيف جدا	خفيف	باعتدال	شديدة	شديد جدا

22- خلال الأسابيع الأربعة الماضية ، ما مدى تأثير الألم في عملك المعتاد (بما في ذلك العمل خارج المنزل والأعمال المنزلية)؟					
لا على الاطلاق	قليلا		معتدل	معتدل جدا	قليلا للغاية

تدور هذه الأسئلة حول ما تشعر به وكيف كانت الأمور معك خلال الأسابيع الأربعة الماضية . لكل سؤال ، يرجى إعطاء الإجابة الأقرب إلى ما كنت تشعر به .

23- هل تشعر بالحيوية؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

24- هل كنت شخص عصبي جدا؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

25- هل شعرت بالإحباط الشديد في مقالب القمامة بحيث لا يمكن أن يبهجك أن شيء؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

26- هل شعرت بالهدوء والسكينة؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

27- هل كان لديك الكثير من الطاقة؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

28- هل شعرت بالاكتئاب والزرقاء؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

29- هل شعرت بالإرهاق؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

30- هل كنت شخص سعيد؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

31- هل شعرت بالتعب؟					
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت	لا شيء في ذلك الوقت

32- خلال الأسابيع الأربعة الماضية ، ما مقدار الوقت الذي تداخلت فيه صحتك الجسدية أو مشاكلك العاطفية مع أنشطتك الاجتماعية (مثل زيارة الأصدقاء والأقارب وما إلى ذلك)؟				
طوال الوقت	معظم الوقت	جزء جيد من الوقت	بعض الوقت	قليلا من الوقت

33- يبدو أن المرض أسهل قليلاً من الناس الآخرين

بالتأكيد صحيح	في الغالب صحيح	لا أعرف	في الغالب خطأ	بالتأكيد خطأ

34- أنا بصحة جيدة مثل أي شخص أعرفه

بالتأكيد صحيح	في الغالب صحيح	لا أعرف	في الغالب خطأ	بالتأكيد خطأ

35- أتوقع أن تسوء صحتي

بالتأكيد صحيح	في الغالب صحيح	لا أعرف	في الغالب خطأ	بالتأكيد خطأ

36- صحتي ممتازة

بالتأكيد صحيح	في الغالب صحيح	لا أعرف	في الغالب خطأ	بالتأكيد خطأ

Appendix- F

Ref. No :

Date: /   /

العدد : ٤٨٠٢
التاريخ : ١ / ٢١ / ٥

الى /جامعة بابل /عمادة كلية التمريض /مكتب السيد معاون العميد للشؤون العلمية المحترم
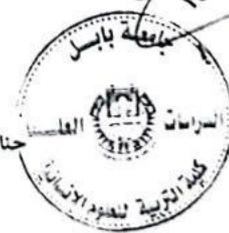
م/اعادة اطروحة

تحية طيبة:

نعيد اليكم اطروحة طالبة الدكتوراه (ايمـان قاسـم كطيـو) في كليتكم بغداد تقييمها لغويـا مـن قبل (أ.د. ايمـان منغـر عبيـد) من قسم اللغة الانكليزيـة في كليتنـا. نأمـل مـن الباحثـة الالتـزام بالملاحظات المثبتة على متن الاطروحة .

... .. مع الاحترام .. ...

أ.د. اسامة كاظم عمران
معاون العميد للشؤون العلمية
والدراسات والعليا

نسخة منه الى //

- الدراسات العليا .
- الصادرة

جنان ٥/٣١

Appendix- G

الملخص

مرض الشرايين التاجية هو السبب الشائع للوفاة على مستوى العالم ، ويمكن أن يؤثر على الجوانب الجسدية والعاطفية والاجتماعية والبيئية للمريض ، ويمكن أن يؤثر مرض الشرايين التاجية سلبيا على نوعية حياة المريض. لحسن الحظ ، يمكن علاج مرض نقص التروية القلبية بنجاح من خلال تغيير نمط الحياة والأدوية والإجراءات الجراحية. أدى التعرف المبكر على عوامل الخطر والوقاية الأولية إلى انخفاض كبير في معدلات المراضة والوفيات المرتبطة بمرض الشرايين التاجية.

تتمثل أهداف الدراسة في تقييم جودة حياة المرضى بعد مرض الشريان التاجي ، ومعرفة العلاقة بين نوعية حياة المريض الذي يشكو من مرض الشرايين التاجية والبيانات الديموغرافية ومعرفة العلاقة بين جودة الحياة لمرضى الشرايين التاجية ومعلوماتهم السريرية

تم اختيار التصميم الوصفي للدراسة لتحقيق أهداف الدراسة. تم اختيار عينة غير احتمالية (هادفة) تتكون من 120 مريضا منهم ذكور و منهم اناث لدراسة العوامل المؤثرة على نوعية الحياة لمرضى الشرايين التاجية في مدينة النجف الاشرف.

أظهرت النتائج أن أعلى نسبة للفئات العمرية تصل إلى 55 سنة ، وللجنس كانوا الذكور ، وأعلى نسبة خريجين من المرحلة الابتدائية ، وحول المهنة كانت ربة منزل ، وبالنسبة للحالة الاجتماعية متزوج ، فيما يتعلق بالدخل الشهري كان غير كاف و غالبية عينة الدراسة يعيشون في المناطق الحضرية. نتيجة المعلومات السريرية حول عينة الدراسة ، كانت أعلى نسبة منهم غير مدخنين ، حول مدة التدخين كانوا ما بين (11 - 20) سنة ، فيما يتعلق بالأمراض المزمنة أعلى نسبة المشار إليها (ارتفاع ضغط الدم وفرط شحميات الدم) ، بالنسبة لمؤشر كتلة الجسم كانوا يعانون من زيادة الوزن ، فيما يتعلق بمدة المرض (سنوات) ، كانت أعلى نسبة 5 سنوات فمادون ، فيما يتعلق بعدد الشرايين المسدودة ، كان لدى غالبية المشاركين في الدراسة شريانان مسدودان ، وفيما يتعلق بالقسطرة القلبية غالبية عينة الدراسة كان لديهم قسطرة تشخيصية وعلاجية.وفقًا لنتائج الدراسة ، كان التقييم العام لنوعية حياة مرضى الشرايين التاجية ضعيفًا ، وكانت هناك علاقة ذات دلالة احصائية قوية بين (الدخل الشهري وعدد الشرايين المسدودة) لأفراد العينة مع التقييم العام لنوعية حياتهم .

خلصت الدراسة بان جودة الحياة تعتمد على التصورات الفردية لجوانب الحياة المختلفة. صرحت الدراسة أن هناك العديد من العوامل المستقلة التي قد يكون لها تأثير على نوعية الحياة . من الضروري تحديد العوامل التي تؤثر على جودة الحياة. سيساعد هذا مقدمي الرعاية الصحية في

تحديد أفضل التدخلات التمريضية ، وتحسين الصحة ، وضمان الحفاظ على جودة الحياة وتحسينها ، وهو أمر مهم للمرضى الذين يعانون من مرض الشرايين التاجية. وقد اوصت الدراسة بان يجب دراسة المزيد من الأبحاث حول العوامل التي لم يتم اكتشافها ومعرفتها مسبقًا والتي قد يكون لها تاثيرا على جودة حياة المرضى ، بالإضافة إلى مزيد من البحث لتحديد المتغيرات الأخرى التي قد يكون لها تأثير أكبر على الرضا عن الحياة.

وزارة التعليم العالي والبحـث العلمـي

جامعـة بابـــل

كليــة التمريض

العوامل المؤثرة على نوعية حياة مرضى الشرايين التاجية

اطروحة مقدمة الـى

مجلــــس كليــــة التمريــض/ جامعة بابـل كجزء من متطلبات نيل درجة الدكتوراه فلسفة في علوم التمريض

من قبل
ايمـان قاسم كطيو الحسين

بإشـــــراف

الأستـــــاذ

الدكتورة فخرية جبر محيبس