Patient’s Awareness Regarding Risk Factors of Coronary Artery Disease in Omdurman Military Hospital, Khartoum State, Sudan

By

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B.Sc. in Nursing Science,
Upper Nile University, (2010)

A Dissertation

Submitted in Partial Fulfillment for the Requirements of the
Degree of Master of Science
in
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Department of Nursing

Faculty of Applied Medical Science

University of Gezira
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Supervision Committee:

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<td>Dr. Ietimad Ibrahim Abd Elrhman. Kambal</td>
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April 2013
Patient's Awareness Regarding Risk Factors of Coronary Artery Disease In Omdurman Military Hospital, Khartoum State, Sudan

By

Nafisa Elgazoly Mohammed Abdullah

Examination Committee

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Examination Date: 22/4/2013
DEDICATION

To my husband
ACKNOWLEDGEMENT

My great thanks to my supervisors

Main Supervisor. Dr Hanan Mabrouk Ramadan

and Co–Supervisor . Dr Eitmad Ibrahim Kambal.

I would like to express my indebtedness to all patients in Omdurman military hospital who involved in this study

Finally my thank extent to

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Patient’s Awareness Regarding Risk Factors of Coronary Artery Disease in Omdurman Military Hospital in Khartoum State, Sudan
Nafisa Elgazoly Mohammed Abdullah

Master of Science in Community Health Nursing (April-2013)
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Abstract

Coronary Artery Disease (CAD) is a major health problem and can lead to sudden death. Understanding the risk factors will lessen the problem and decrease the complications and the burden on the health service as well as decrease the morbidity and mortality caused by (CAD). A descriptive study was conducted aimed to assess the patients’ awareness about risk factors of coronary artery disease in Omdurman Military hospital during (September to December 2012). The study sample included (100) available coronary artery disease patients during the study period. The data was collected using a questionnaire designed for the purpose of the study. The data analyzed by statistical package for social sciences (SPSS). The results showed that 80% of patients aged between 51 – 70 years old and (80%) were Male. It was observed that 30% of patients were Solider and (47%) employer while (63%) of the study people were lived in Khartoum state. The study revealed that patients had inadequate awareness regarding standard weight, normal, Cholesterol level, blood glucose level, balanced diet and exercise (25%, 25%, 10%, 20%, 20% and 14%) respectively. Also, their awareness about the effect of smoking, diabetes mellitus and Hypertension on human health were 15%, (10% and 19%) respectively. The study concluded that the patients had inadequate knowledge about the common risk factors that leads to coronary artery disease. The study recommended health education programs for the patients at risk for coronary artery disease and the (CAD) patients by more professional nurses and designing a teaching class in the hospital for this purpose.
وعي مرضى الشرايين التاجية عن عوامل الخطورة المؤدية لهذا المرض بمستشفى الجيش
بام درمان، بولاية الخرطوم، السودان.

نفيسه الجزولي محمد عبد الله

ماجستير العلوم في تمريض صحة المجتمع (أبريل 2013م)
قسم التمريض
تمريض صحة المجتمع
كلية العلوم الطبية والتطبيقية
جامعة الجزيرة

ملخص الدراسة

يعتبر مرض الشرايين التاجية من مشكلات الصحة الكبرى والتي قد تؤدي الى الموت المفاجئ، الامام بعوامل الخطورة يقلل المشكلة ويقلل المضاعفات والعبء على الخدمات الصحية، اخيراً يقلل من معدل الإصابة والوفيات بهذا المرض. اجريت هذه الدراسة الوصفية بمستشفى الجيش بام درمان بولاية الخرطوم السودان بهدف وعي مرضى الشرايين التاجية عن عوامل الخطورة المؤدية لهذا المرض. استخدم استبيان لجمع البيانات. تم تحليل البيانات باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (SPSS). أوضحت النتائج أن اعمار المرضى تتراوح من 51 إلى 70 عام معظمهم من الرجال 80% كما أوضحت النتائج ان 30% من المرضى جنود بينما 47% منهم موظفين. 63% منهم يسكنون بولاية الخرطوم. 0% من المرضى كان غير كافية عن الوزن المثالى، النسبة الطبيعية للسكرى، الكولسترول في الدم، الطعام المتوازن والتمارين (20%, 25%, 10%, 20% و24%) على التوالي. كما كانت معرفتهم كانت غير كافية عن دور تأثير التدخين، مرض السكري، وارتفاع ضغط الدم على الصحة الإنسانية بنسبة (15%, 20%, 19%) على التوالي. خلصت الدراسة على أن معلومات المرضى غير كافية عن معظم عوامل الخطورة المؤدية لممرض الشرايين التاجية. 0% من المرضى الذين قد يتعرضون لهذا المرض بواضحة

كادر تمريضي مؤهل مع تصميم قاعة للتنقية الصحي بالمستشفى لهذا الغرض.
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<td>CHD</td>
<td>coronary heart disease.</td>
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<td>CAD</td>
<td>coronary artery disease.</td>
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<td>DM</td>
<td>diabetes mellitus.</td>
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<td>LDL</td>
<td>low Density Lipoprotein.</td>
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<td>HTN</td>
<td>Hypertension.</td>
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<td>HDL</td>
<td>High Density Lipoprotein.</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>NSAID</td>
<td>non steroidal anti inflammatory drug.</td>
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<tr>
<td>PCI</td>
<td>Percutaneous coronary intervention</td>
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<tr>
<td>CABG</td>
<td>Coronary artery bypass grafting</td>
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<td>BMI</td>
<td>Body mass index.</td>
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<td>AHA</td>
<td>American Heart Association</td>
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<td>VLDL</td>
<td>very low Density Lipoprotein</td>
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<td>SPSS</td>
<td>statistical package social science</td>
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<td>MI</td>
<td>Myocardial infarction</td>
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1. Introduction

1.1: Background

Coronary heart disease occurs when the coronary arteries become clogged with fatty material called ‘plaque’ or ‘thermo’. Plaque slowly builds up on the inner wall of the arteries, causing them to become narrow. This process is called ‘atherosclerosis’. If arteries become too narrow, the blood supply the heart muscle is reduced. This may lead to symptoms such as angina. If a blood clot forms in the narrowed artery and completely blocks the blood supply to part of the heart, it can cause a heart attack. Coronary heart disease is a major health problem. Understanding the predisposing elements, risk factors, pathophysiology and complication of the disease will lessen the problem and decrease the complication and the burden on the health service. Mosca L, (2007).

The internationally prevalence type of cardiovascular disease is type (A) for this reason it is important for nurse to become familiar with variation type of cardiac problems and methods of assessing, preventing and treating these disorders. The development of Coronary artery disease is depend on many risk factor which have dietary link. These include: hyperlipidemia, hypertension, obesity, diabetes, thrombogenic factors. Cardio productive dietary advice should from part of any life style education, either is primary or secondary. Intervention of coronary artery disease there is evidence to show that before we are born what mother eat during pregnancy may affect the risk of her child developing coronary heart disease in adult life. Mosca L, (2007).
1.2: Problem statement:

Coronary artery disease is one of the diseases that lead to death. It was found that classification and external resources. Micrograph of a coronary artery with the most common form of coronary artery disease (atherosclerosis) and marked luminal narrowing. CAD is the leading cause of death worldwide. While the symptoms and signs of coronary artery disease are noted in the advanced state of disease, most individuals with coronary artery disease show no evidence of disease for decades as the disease progresses before the first onset of symptoms, often a "sudden" heart attack, finally arises. After decades of progression, some of these athermanous plaques may rupture and (along with the activation of the blood clotting system) start limiting blood flow to the heart muscle. The disease is the most common cause of sudden death, and is also the most common reason for death of men and women over 20 years of age (Bechar, 2007).

According to present trends in the United States, half of healthy 40-year-old males will develop CAD in the future, and one in three healthy 40-year-old women. According to the Guinness Book of Records, Northern Ireland is the country with the most occurrences of CAD. By contrast, the Maasai of Africa have almost 90% of sudden death is coronary artery disease. Heart disease is the leading single cause of death in Australia, with over 23,600 Australian lives. Diseases of coronary artery have become the single greatest threat to life in industrialized countries throughout the world. In the United States, for example, more than 600,000 deaths/year or one third of all deaths are directly attributable to this one disease (Bechar, 2007)...
In developing countries about 50% of death from coronary artery disease. While in Sudan it was found that about 80% of death is from coronary artery disease in Khartoum state and about 63% of deaths was from coronary artery disease patients in other states is about 37%.

1-3 Justification and rationale:
Coronary artery disease is one of the diseases that lead to death. It was found that 80% of sudden death is due to coronary artery disease 39,35% in all diseases [CAD] in United States and other developing countries so that management is very important. On other hand Sudanese population undergone marked changes in the last decades these marked transition from simple to complex life style. Therefore coronary artery disease increasing due to an increase of the risk factors. So this research is an attempt to assess the risk factors of coronary artery disease (CAD) among clients, because the management depends on life style of patients.

1-4 Objectives:

1-4-1 General Objective
To assess Patient's Awareness Regarding Risk Factors of Coronary Artery In Omdurman Military Hospital Khartoum State Sudan from (September to December).

1-4-2 Specific Objectives:

1. To assess patient's awareness regarding major risk factors of coronary artery disease e.g. hypertension, diabetes mellitus and hyperlipidaemia in Omdurman Military Hospital Khartoum State Sudan during (September to December).

2 –To assess patient's awareness regarding lifestyle e.g. diet and exercise.
2- Literature Review

2-1 Coronary Artery Circulator

The heart received its blood supply from coronary arteries, which are perused primarily during ventricular diastole. Decreased blood flow to coronary arteries may produce myocardial ischemia which cause a variety of problems such as poor contraction conduction abnormalities. (Bechar and eital 2007)

The left coronary artery supplies the right bundle branch, the anterior superior division of left bundle branch and part of the two thirds of ventricular septum. The relevant anatomy suggested that the most common complication of anterior wall Myocardial infraction will from failure, a trial and ventricular dysrhythmias and intraventricular conduction disturbances. (Texas, 2007)

Patients with inferior wall Myocardial infraction (MI) usually have occlusion of right coronary artery in most people, the right coronary artery supplies Sino a trial node, the anterior ventricular junction tissue and his bundle and the posterior one third of the ventricular septum and the posteriorinferior division of the left bundle branch. People who have had an acute inferior wall MI after have either bradydysrhythmias caused by an ischemic sinus or aterioventericular node. Coronary artery disease (CAD; also atherosclerotic heart disease) is the end result of the accumulation of athermanous plaques within the walls of the coronary arteries that supply the myocardium (the muscle of the heart) with oxygen and nutrients. It is sometimes also called coronary heart disease (CHD). Although CAD is the most common cause of CHD, it is not the only one. (Bechar 2007)
2-2 Divinition of Coronary heart disease:

Coronary heart disease occurs when the coronary arteries (the arteries that supply blood and oxygen to the heart muscle) become clogged with fatty material called ‘plaque’ or ‘atheroma’. Plaque slowly builds up on the inner wall of the arteries, causing them to become narrow. This process is called ‘atherosclerosis’. It can start when the patient’s are young and be well advanced by middle age. If the arteries become too narrow, the blood supply to the heart muscle is reduced. This may lead to symptoms such as angina. If a blood clot forms in the narrowed artery and completely blocks, the blood supply to part of the heart, it can cause a heart attack. Padmanaban P, (2011).

2. 5: Diagnosis

- **Baseline electrocardiography (ECG)**
- **Exercise ECG – Stress test**
- **Exercise radioisotope test (nuclear stress test, myocardial scintigraphy)**
- **Echocardiography** (including stress echocardiography)
- **Coronary angiography**
- **Intravascular ultrasound**
- **Magnetic resonance imaging (MRI)** (Texas, 2007)

2-3 Sign and symptom of Coronary artery disease:

Symptoms of Myocardial infraction:

Pressure in chest, fullness, squeezing pain.

Pain spreading to shoulders, neck, or arms
Lightheadedness, fainting, sweating, nausea

Symptoms of Angina pectoris:

. Painful cramp in chest, arm, neck, or back due to brief blockage of oxygenated blood to the heart.

. More often during exercise, stress, cold temperature and digesting large fat meal.

. Little or no permanent damage.

2-4 complication of Coronary artery disease:

. Myocardial infarction (MI)

. Heart failure.

. Atrial and ventricular dysrhythmias.

. Intraventricular conduction disturbances.

. Heart block.

. Stroke.

. Bleeding

. Sudden death. (Texas, 2007)

**Major risk factors**

1- Cholesterolemia:

Is one of the major modifiable risk factor for coronary artery disease. Treatment directed at lowering blood cholesterol levels through
medication have been shown to lower the risk of coronary artery disease dramatically. (Texas, 2007)

Cholesterol is found in dietary and animal food product. Current data indicate that levels above 180 mg/dl are associated with an increased risk factors are present in counties where total cholesterol level are below 150 mg/dl routinely coronary artery disease rare. Specific fraction cholesterol have been found to be either atherogenic low density lipoproteins (LDL) or anti-iatrogenic [high density lipoprotein (HDL)](Retrieved 2009-09)

Patients with high blood cholesterol are 3 times more likely to have heart disease. High cholesterol in food is not the only factor influencing blood cholesterol. Food high in saturated fat and the body systems that process cholesterol (especially the liver) also affect a person’s cholesterol level (Ghatrehsamani K, 2009).

Cholesterol has many important functions such as formation of cell membranes and some hormones. The mixture of fatty cholesterol and proteins that compose lipoproteins affect the overall transport of cholesterol in the bloodstream. Low-density lipoprotein (LDL) can lead to cholesterol buildup in the arteries and narrow the space through which blood can flow. That is why LDL cholesterol is known as the "bad" cholesterol. High-density lipoprotein (HDL) cholesterol helps bring cholesterol back to the liver, which reduces the amount of cholesterol in the blood. Thus, HDL is known as the "good" cholesterol. There is also very low-density lipoprotein (VLDL), which mainly transports triglycerides. After depositing them, it will become low density lipoprotein. If blood is high in LDL and low in HDL cholesterol, there is increasing chance of heart disease. If we can reduce just 1% of the LDL
cholesterol in our bodies, we will also reduce 1.5 to 3% of the risk of heart disease and help to avoid atherosclerosis. (Oikawa S..2009).

2- Hypertension:

Hypertension has been well stabilized as major cause of coronary artery disease. High blood pressure is defined as an a systolic pressure greater than 140mm\HG or diastole pressure greater than 90mm\Hg the risk associated with elevation of blood pressure is continues in all gender, race and ages. Approximately quarter of the America population has hypertension but many few are treated or controlled. Hypertension is deadly not just cause of CAD, but as major cause of stroke renal disease, the extreme force exerted with heart beat appears to damage the arteries making them more susceptible to the formation of atheroma, hypertension also the turbulence of blood flow one factor associated with atheromatouse formation. Patients with high blood pressure are 2 times more likely to have heart disease. Medical studies have shown that if blood pressure is reduced by 6 mm Hg, the risk of developing coronary heart disease would be reduced by 25%. (Texas2007)

Blood pressure is the pressure of the blood in the arteries blood vessels that carry oxygen and nutrients to the body) as it is pumped around the body by the heart. Blood pressure depends on two main things: the amount of blood pumped by the heart and how easily the blood can flow through the arteries. The blood pressure will go up and down throughout the day, depending on the time of day and what you are doing. However, high blood pressure is a condition where the blood pressure is consistently high. The family history, eating patterns, alcohol intake, weight and level of physical activity have a strong influence on
blood pressure. In some people, medicines, including the contraceptive pill, contraceptive ‘depot’ injections, steroids (cortisone-like medicines) and arthritis medicines, can also raise blood pressure. High blood pressure can overload the heart and coronary arteries and speed up the artery-clogging process. This can lead to problems such as heart attack and stroke. High blood pressure can also affect arteries to other parts of the body, such as the eyes kidneys and legs. If high blood pressure is not treated, the heart may weaken because of the constant extra demand. This may cause ‘heart failure’, a serious condition with symptoms such as tiredness, shortness of breath and swelling of the feet and ankles (Ghatrehsamani K, 2009).

2-1Types of hypertension:

2-1-1Primary hypertension: when there is other cause for hypertension.

2-1-2-secondary hypertension: when hypertension appear as a secondary illness due to some other diseases.

2-1-3-Essential hypertension: it is the commonest form. Affecting men and women usually between ages 40-50 it divided into two groups; a-Benign; it is mild and may even be symptom-less.

B-Malignant; it is severe form of the disease characterized by very high diastolic pressure and renal failure.

2-1-4-Accelerated hypertension: [hypertensive crisis]; blood pressure is elevated very rapidly threatening one or more of the target organs (Ghatrehsamani K, 2009).

2-6-3-Diabetes Mellitus;

Diabetes mellitus is metabolic disorder characterized by hyperglycemia and results from defective insulin, productive, secretion or utilization.

Diabetes mellitus is associated with a 2 - 3 fold increase in risk of
ischemic heart disease. Diabetics who have higher glucose level are more prone to obesity and hypertension. High blood sugar may also affect platelet function that could cause blockage of blood vessels.

Types of diabetes:

3-1. **Type 1**: previously known as insulin dependent or juvenile onset diabetes

3-2. **Type 2**: previously known as non-insulin dependent or mature onset diabetes. If the patient have diabetes, it is important to manage the condition by being physically active, enjoying healthy eating and maintaining a healthy weight. If patient have type 2 diabetes, patient may need to take medicines to help to maintain normal blood glucose levels, as well as make these lifestyle changes. It is also important to stop smoking, reduce total blood cholesterol level, control the blood pressure and regularly see the doctor for diabetes reviews. Culling KS, (December 2007).

**2-4-6 Cigarette Smoking:**

Smokers are 2 to 4 times as likely to suffer heart attack and coronary heart disease as non-smokers. Smoking causes 30% to 40% of the deaths related to cardiovascular disease. The nicotine and carbon monoxide in tobacco smoke damages the cardiovascular system. If the blood vessel wall becomes fragile, cholesterol will easily build up. The cardiovascular risk after quitting smoking diminishes quickly in two to three years and normalizes in about ten years. (Bechar 2007)

Cigarette smoking has been the most modifiable risk factor by the American surgeon, smoking is associated statically with accelerated atherosclerosis and acute MI the exact mechanism by which smoking accele The actual cause of cardiovascular disease has yet to be
discovered. However, scientific studies have uncovered several contributing factors (Bechar 2007)

**5-Age:**

Aging population is a major factor in the increasing number of deaths caused by coronary heart disease. Twenty years ago, only 5% of the population was older than age 65 in Hong Kong. Nowadays it has increased to 9%. Men aged 45 or older and women aged 55 or older have a higher risk of developing coronary heart disease. The risk increases as both groups get older. When men and women developed coronary disease early before ages 55 and 65 respectively, their immediate family members will have a higher risk of developing the disease as well (Rosamond W, 2007).

**6-Family History and Heredity:**

Young people who died during physical activity usually suffered from congenital or hereditary heart disease. Some patients were born without the natural ability to remove the fat in their blood that causes plaque buildup. Also, some people have congenital hypertrophic cardiomyopathy, an abnormal thickening of the heart muscle. It is recommended that anyone who has a family member who died of heart attack should have a total body checkup — even if they are young. It is important to discover if they have a latent chance of developing heart disease (Bechar 2007).
7- Sex:

Men have higher rate than women. Many studies show that women have lower coronary artery disease rate despite the higher level of cholesterol among women. The relation of Low-density lipoprotein (LDL) to cardiovascular events is weak in women in whom the protective effect of High-density lipoprotein (HDL) are strong. Because low fat diet reduce both LDL and HDL. The effects of dietary change might be harmful. Oral contraceptive pills, the menopause hormone replacement therapy increase the risk of CHD is also accepted that women who have natural menopause Padmanaban P,(2011)

2-8-6 Obesity:

People who are overweight are more likely to develop high blood pressure, high cholesterol, and diabetes, all of which can cause heart disease. Weight loss can effectively control high blood pressure, high level of blood cholesterol, and reduce the risk of developing diabetes. The normal body mass index recommended for Asians is between 18.5 and 22.9 Parks EJ,(2008).

2-6-9 Metabolic Syndrome:

People with metabolic syndrome are at high risk developing coronary heart disease. The syndrome is identified by the presence of three or more of the five conditions namely central obesity, low HDL cholesterol, high blood pressure, high fasting glucose, high triglycerides. Newly identified risk factors include elevated levels of Prothrombotic proteins, lipoprotein (a) (Aeberli2007).
Treatment of CAD;

Treatment of CAD is to do the following;

• Lifestyle changes (such as a healthy diet and regular physical activity) are essential for preventing and treating CAD.
• Medications for preventing and treating CAD include aspirin, cholesterol-lowering drugs (statins), and high blood pressure medications. Some patients take nitroglycerin or other nitrate drugs to treat angina.
• Surgery may be needed to open blocked or narrowed coronary artery and improve blood flow to the heart. Percutaneous coronary intervention (PCI), also called angioplasty, uses a small balloon to open the blood vessel. Coronary artery bypass graft (CABG) is a more invasive procedure that is generally for patients with severe heart disease. It uses grafts from arteries or veins to reroute blood flow

Prevention Of coronary Artery Disease:

Heart disease prevention is considered important before and after someone is diagnosed with the condition:
• http://www(.2011)
• Primary prevention refers to measures that should be done to reduce the risk of heart disease in everyone.
• Secondary prevention refers to measures to reduce the risk of progression of heart disease in a patient who has already been diagnosed. Many of these measures are similar or the same as those recommended for primary prevention. Mosca L,( 2007).

Key prevention measures include:
• All patients should stop smoking
• Maintain cholesterol levels at appropriate levels using a heart healthy diet, exercise, and medications
• Maintain an appropriate low blood pressure level
• Maintain an active lifestyle
• Use an ant platelet drug, such as aspirin, if appropriate
• Manage diabetes and kidney disease when present Mosca L, (2007)

1- Smoking Cessation

The doctor should ask about smoking habits at every visit. Smoking is a chronic condition and often requires repeat therapy using more than one technique.

Cholesterol and Other Lipid Disorders;

All patients should start following a heart-healthy diet and exercise regularly, after talking to their doctors. [Depth Report #43: Heart-healthy diet.] Healthy diet, regular exercise, and quitting smoking (if you smoke) may prevent heart disease. Follow your health care provider's recommendations for treatment and prevention of heart disease Mosca L, (2007).

Staten drugs are the primary medications used for lowering LDL (bad) cholesterol levels. For patients without heart disease, the doctor will start or consider medication, increase dosage of medication, or add new medication when:
• LDL cholesterol is 190 mg/dL or higher.
• LDL cholesterol is 160 mg/dL or higher AND patient has one risk factor for heart disease.
• LDL cholesterol is 130 mg/dL or higher AND patient has either diabetes or two other risk factors for heart disease.
• LDL cholesterol is 100 mg/dL or higher AND patient has diabetes. Even without heart disease, medication may be considered for an LDL cholesterol of 100 mg/dL.

For patients with heart disease, the doctor will start or consider medication, increase dosage of medication, or add new medication when:

• LDL cholesterol is 100 mg/dL or higher
• LDL cholesterol is greater than 70 mg/dL. According to national guidelines, treating a patient with LDL cholesterol levels between 70 - 100 mg/dL is not required but is considered reasonable. This would be true particularly for patients who have had a recent heart attack or have known heart disease along with diabetes, current cigarette smoking, poorly controlled high blood pressure, or metabolic syndrome (high triglycerides, low HDL, and obesity). (Culling KS, 2007)

2- Manage High Blood Pressure:

Keep Blood Pressure Low. People in normal health should have a blood pressure reading of 120/80 mm Hg or less. Blood pressure readings of 120/80 are considered normal, readings of 140/90 or higher indicate hypertension, and readings in between the two are called pre-hypertension. Patients with diabetes chronic kidney disease, or atherosclerosis should maintain blood pressure readings of 130/80 mm Hg or less, while others should be no higher than 140/90 mm Hg. Mosca L, (2007).

Depending on blood pressure levels and presence of either risk factors for heart disease or known coronary artery
disease, patients may be recommended to try lifestyle changes first or to immediately begin medications. Several of the medications used to treat coronary artery disease also reduce blood pressure (Mosca L, 2007).

3-Manage Diabetes:

All patients with diabetes should have their blood sugar (glucose) levels well managed. For most patients, a goal would be to bring HbA1c levels down to 7% or below.

Manage Diabetes ketoacidosis:

- Require immediate medical attention and usually admission to hospital.
- Frequent measurement of blood glucose and treat according to glucose levels with regular insulin (mild ketosis, subcutaneous route, severe ketosis with intravenous insulin administration)
- Restore fluid balance: initially 0.9% saline at 500-1000ml/hr, regulate fluids according to client status, when blood glucose is 250mg/dl add dextrose to intravenous solutions.
- Correct electrolyte imbalance: client often is initially hyperkalemic
  - As patient is rehydrated and potassium in pushed back into the cell they become hypokalemic.
- Monitor potassium levels.
- Monitor cardiac rhythm since hypokalemia puts client at risk for dysrrhythmias.

F. Treat underlying condition precipitating Diabetes ketoacidosis
G. Acidosis is corrected with fluid and insulin therapy and rarely needs bicarb. AHA, (2007)
4-Heart-Healthy Diet:

Current American Heart Association (AHA) guidelines recommend:

• Balance calorie intake and physical activity to achieve or maintain a healthy body weight.

• Consume a diet rich in a variety of vegetables and fruits.

• Choose whole-grain, high-fiber foods. These include fruits, vegetables, and legumes (beans). Good whole grain choices include whole wheat, oats/oatmeal, rye, barley, brown rice, buckwheat, bulgur, millet, and quinoa.

• Consume fish, especially oily fish, at least twice a week (about 8 ounces/week). Oily fish such as salmon, mackerel, and sardines are rich in the omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Consumption of these fatty acids is linked to reduced risk of sudden death and death from coronary artery disease. People with existing heart disease should consider taking fish oil supplements of 850 - 1,000 mg eicosapentaenoic acid (EPA) and docosahexaenoic acid (DPA).

• Limit daily intake of saturated fat (found mostly in animal products) to less than 7% of total calories, trans fat (found in hydrogenated fats, commercially baked products, and many fast foods) to less than 1% of total calories, and cholesterol (found in eggs, dairy products, meat, poultry, fish, and shellfish) to fewer than 300 mg per day. Choose lean meats and vegetable alternatives (such as soy). Select fat-free and low-fat dairy products. Grill, bake, or broil fish, meat, and skinless poultry.

• Use little or no salt in your foods. Reducing salt can lower blood pressure and decrease the risk of heart disease and heart failure.
• Cut down on beverages and foods that contain added sugars (corn syrups, sucrose, glucose, fructose, maltose, dextrose, concentrated fruit juice, and honey. Parks EJ, (2008).

2-5-5-Weight Reduction:

People should aim for a BMI index of 18.5 - 24.9. Weight reduction is recommended for obese patients who have high blood pressure, high cholesterol levels, metabolic syndrome, or diabetes. (Aeberli, 2007).

Some obese patients with coronary artery disease may consider having bariatric surgery (stomach bypass) to lose excess weight. The weight lost after surgery can help improve blood pressure, cholesterol, blood sugar and other factors associated with CAD [Aeberli October 2007].

6-Exercise and Cardiac Rehabilitation:

Everyone in normal health should do at least moderate physical activity for a minimum of 30 - 60 minutes on most, if not all, days of the week.

Even low amounts of moderate or high intensity exercise (walking or jogging 12 miles a week) can help produce beneficial changes in cholesterol and lipid levels. However, more prolonged exercise is required to significantly change cholesterol levels, notably by increasing HDL ("good cholesterol"). Resistance (weight) training has also be associated with heart protection (Swarbrick MM, 2008).

Sudden strenuous exercise (especially snow shoveling) puts many people at risk for angina and heart attack. Patients with angina should never exercise shortly after eating. People with risk factors for heart disease should seek medical clearance and a detailed
exercise prescription. And all people, including healthy individuals,
should listen carefully to their bodies for signs of distress as they
exercise. (.Swarbrick M, 2008)

2-8- Treatment of coronary artery disease:

Treatment of coronary artery disease is to do the following;
.Lifestyle changes (such as healthy diet and regular physical
activity.) are essential for preventing and treating (CAD)
(.Swarbrick M, 2008).

2-8- 1 Medications of coronary artery disease. Many types of
medications are used to treat angina and CAD. They include:
• Anti-platelet and anticoagulant drugs (used for preventing heart
disease and preventing blood clots prior to surgery or after stent
insertion)
• Beta blockers
• ACE inhibitors
• Nitrates
• Calcium channel blockers

2-8-2-Surgery:

Surgery is usually recommended for people who have:
• Unstable angina that does not respond promptly to medical
treatment
• Severe recurrent episodes of angina that last more than 20
minutes
• Acute coronary syndrome
• Severe coronary artery disease (severe angina, multi-artery
involvement, evidence of ischemia, or significant narrowing of left
main coronary artery), particularly if abnormalities are evident in the left ventricle of the heart, the main pumping chamber (Aeberli, 2007).

The two main surgical procedures for patients with coronary artery disease are:

- Coronary artery bypass grafting (commonly called bypass or CABG), which is usually reserved for patients with severe coronary artery disease.
- Percutaneous coronary intervention (commonly called angioplasty or PCI), usually with coronary artery stent placement. PCI is less invasive than CABG, but blood vessels can close up again (restenosis) so that patients require additional procedures. The decision to choose angioplasty or coronary artery bypass depends on a patient's individual profile, including the number and types of coronary arteries involved, the health stability, previous procedures, patient choice, and more. Patients considering surgery should discuss all options and risks with their doctors. No surgical procedure cures coronary artery disease, and patients must continue to rigorously maintain a healthy lifestyle and any necessary medications. For some patients, lifestyle changes and medications may be able to control the disease without surgery or angioplasty. Wagoner, LE (2007).
2-8-1-Medications of coronary artery disease:

**Anti-Platelet and Anticoagulant Drugs:**

Anti-clotting drugs that inhibit or break up blood clots are used at every stage of heart disease. They are generally classified as either anti-platelets or anticoagulants. All anti-clotting therapies carry the risk of bleeding, which can lead to dangerous situations, including stroke. A thrombus is a blood clot that forms in a vessel and remains there. An embolism is a clot that travels from the site where it formed to another location in the body. Thrombi or emboli can lodge in a blood vessel and block the flow of blood in that location depriving tissues of normal blood flow and oxygen. This can result in damage, destruction (infarction), or even death of the tissues (necrosis) in that area. (Wallin R.I, 2008)

**Aspirin.** Aspirin is known as a non steroidal anti-inflammatory drug (NSAID). It stops blood platelets, which are major clotting factors, from sticking together to form a blood clot. Aspirin therapy is extremely beneficial for patients with coronary artery disease, peripheral artery disease, or history of stroke. A daily low-dose aspirin (75 - 81 mg) is usually the first choice for preventing heart disease in high-risk individuals. Aspirin can reduce the risk of heart attack and ischemic stroke. However, prolonged use of aspirin can increase the risks for stomach bleeding. A doctor needs to consider a patient's overall medical condition and risk factors for heart attack before recommending aspirin therapy.
In general, daily aspirin is recommended for prevention of heart disease for the following people who have never had a heart attack or stroke:

- Women age 55 to 79. (Women who are younger than age 55 should not take aspirin for primary prevention.)
- Men age 45 to 79 years should take aspirin if the chances for preventing stroke or heart attack outweigh the risks of gastrointestinal bleeding. Men younger than age 45 should not take aspirin for primary prevention.
- For women and men age 80 years or older, it is not clear if the benefits of aspirin for heart protection outweigh the risks for bleeding.

Clopidogrel. Clopidogrel (Plavix) is an anti-platelet drug known as a thienopyridine. For most patients, the addition of Clopidogrel to aspirin for the prevention of heart disease is not recommended, as it adds no significant benefit, adds significantly to the cost, and increases the risk of bleeding. It may be used in place of aspirin for patients who are aspirin allergic or who cannot tolerate aspirin.

When taken with aspirin, clopidogrel is recommended for patients with acute coronary syndrome (unstable angina or early signs of heart attack) or those who have had a drug-eluting stent inserted. According to the American Heart Association, patients who have a drug-eluting stent must take both aspirin and a thienopyridine for at least 1 year after the stent is inserted.

Clopidogrel is also recommended for patients who are undergoing angioplasty. Patients having coronary bypass surgery should not take clopidogrel for at least 5 - 7 days prior to surgery.
because of a significant bleeding risk. Researchers are investigating whether clopidogrel and aspirin together are better than aspirin alone in reducing the risks following coronary bypass surgery. (Wagoner, LE)

Warfarin and Anticoagulants. Anticoagulants are drugs that prevent or delay blood coagulation and the formation of blood clots. Warfarin (Coumadin) is an oral anticoagulant. It prevents clots by inhibiting vitamin K. Warfarin is used for patients with certain types of prosthetic heart valves and to prevent blood clots in patients with atrial fibrillation. Warfarin therapy poses a dangerous risk for bleeding, and blood coagulation must be monitored with frequent blood tests. A third of all people are genetically predisposed to a higher bleeding risk with warfarin. A genetic test can help doctors determine which patients may be especially sensitive to this drug. (Becker, RC 2008)

**Beta Blockers:**

Beta blockers are useful for preventing angina attacks and reducing high blood pressure. They reduce the heart's oxygen demand by slowing the heart rate and lowering blood pressure. They can help reduce risk of death from heart disease and from heart surgeries, including angiography and coronary bypass (Campbell CL 2007).

Beta blockers are used or recommended number of situations:

- They are started in nearly all patients who have just had a heart attack or acute coronary syndrome.
• They are the drugs of choice for older patients with stable angina and may also be beneficial for people with silent ischemia. They are less useful for the treatment Prinzmetal’s angina.
• They may be used alone or with other medications for management of rhythm disturbances or high blood pressure.

Beta blockers include propranolol (Inderal), carvedilol (Coreg), bisoprolol (Zapata), acebutolol (Spectral), atenolol (Tenormin), labetalol (Norm dyne, Tran date), metoprolol (Lopressor, Toprol-XL), and esmolol (Brevibloc). A nasal spray form of propranolol appears to be very helpful in reducing exercise-induced angina attacks (Wagoner, LE2007).

Beta blocker side effects include fatigue, lethargy, vivid dreams and nightmares, depression, memory loss, and dizziness. They can lower HDL (good) cholesterol. Beta blockers are categorized as non-selective or selective. Non-selective beta blockers, such as carvedilol and propranolol, can narrow bronchial airways. These beta blockers should not be used by patients with asthma, emphysema, or chronic bronchitis. Patients should never stopped taking these drugs. The sudden withdrawal of beta blockers can rapidly increase heart rate and blood pressure. The doctor may advise a patient to slowly decrease the dose before stopping completely (Campbell CL 2007).

2-9: Nursing management:

The support care of coronary artery disease patient the major contributor to increase survival and improved quality of life. The doctors, nurses and resources of all member of the interdisciplinary team are required to support the patient and family through all phases of the
disease process. The nurse, relying on a strong knowledge of the disease and potential complications. Uses systemic assessment to monitor physiologic homeostasis. For the person with coronary artery disease, medical and nursing support is required in three areas:

- To prevent or correct expected side effect of the disease and treatment.
- To anticipate and treat unexpected or potential complications.
- To facilitate psychosocial adaptation of the patient and family (AHA, 2007)

2. 10.1: Nursing diagnosis

*Knowledge deficit related to new coronary artery disease diagnosis, disease process, treatment plan, and side effect.

The goal: patient and family will be able to verbalize and demonstrate understanding of disease treatment and goals. (AHA, 2007)

The nursing intervention

- Review disease process, treatment regimen, management and prevention of complications and goal treatment.
- Assess patients preferred style of learning identify any exiting barriers to learning, including language and cultural beliefs; teach in short sessions; involve family member and significant other in teaching sessions; question patient to evaluate understanding of new information and continue to reinforce information.
- Orient patient and family to hospital unite and services.
- Provide information regarding available community resources and link where possible.
Anxiety related to new diagnose, uncertain outcome of potentially fatal disease, loss of control in hospital environmental, alteration in interpersonal relationship.

The goal: patient and family will be able to verbalize and/or demonstrate manageable anxiety throughout course of illness and seek out appropriate resources.

The nursing interventions

- Perform psychosocial assessment of patient /family; identify strengths, weaknesses coping skills and cultural preferences.
- Recognize increased anxiety levels may occur while awaiting and official diagnosis, before painful or frightening procedure, before major treatments, on learning of relapse and on anniversary dates.
- Administer anti anxiety medication as order and assess effectiveness.
- Use guided imagery relaxation training and cognitive distraction to alleviate anxiety before painful procedure.
- Involve chaplaincy services, social workers, psychologists, psychiatry, and support volunteer as needed(Swarbrick mm, 2008)

High risk for fluid volume deficit related to nausea and vomiting

The goal: patient will experience no vomiting

The nursing interventions

- Administer initial dose of anti emetic before onset of nausea and vomiting as doctor order.
- Avoid foods with strong odors.
- Un cover hospital food tray outside of patients room to reduce food odors.
- Mouth care frequently((Swarbrick mm, 2008)

Risk for injury associated with bleeding related to alteration in clotting factors, thrombocytopenia, secondary to Treatment warfaren, aspirin plavix.
The goal: patient will be able to verbalize/demonstrate an understanding of the precautions to prevent bleeding so that risk of bleeding will be minimized

The nursing interventions

- Teach patient/family the significance of Treatment function, side effect and bleeding precautions
- Check bleeding profile at least every other day during heparin or warfarin therapies.
- Monitor results of coagulation studies; assess for signs and symptom of Disseminated Intravascular Coagulation (DIC)
- Apply pressure on venipuncture sites for 3 to 5 minutes
- Do not administer intra muscular injections.

* Altered nutrition less than body requirements related to treatment, induced nausea, vomiting, stomatitis, anorexia

The goal: patient will be able to maintain adequate body weight and muscle mass throughout treatment

The nursing interventions

- Monitor patient weight
- Refer to nutritionist if ingoing pattern of weight loss or of history eating disorder, obesity or diabetes
- Record intake and output every shift
- Record calories counts
- Administer anti emetics for nausea and assess effectiveness
- Teach patient to purpose of oral care protocol and evaluate technique
- Encourage small, frequent meals with high calorie, high protein foods
- Encourage intake of culturally preferred foods from home if unable to obtain at hospital (.Parks,FJ2008)
Patient teaching

General teaching:

> Avoid heavy work.

1- Avoid driving.

2- Follow physion instruction for activity process.

3- Reassume sexual activity by physion instruction.

4- Medication indication, dosage frequency and side effect.

5- Follow dietary restriction e.g. low fat and low salt diet.

6- Pain how much pain expect and how manage it.

7- Risk factors instruction and individual Risk factor referral should be made as appropriate e.g. weight program or stop smoking program or diabetes mellitus center.

8- Follow up appointment, how and when to schedule follow up appointment what report physion change in vital signs.

1- Irregular pulse e.g. palpitation and tachycardia.

2- Shortness of breathing.

3- Edema.

4- Chest pain.
3- Material and Methods

3-1 Study design:

This study was cross sectional descriptive study, conducted to assess patients awareness regarding risk factors of coronary artery disease in Omdurman military hospital Khartoum state Sudan during the period from September to December 2012.

3-2 Study Area:

The study was carried out in military hospital. This hospital was selected for many reasons including that there is a large number of patients with coronary heart disease CAD admitted and still follow up in it. It consists of ten departments as follows: Emergency, medical, surgical, obstetric and gynecological, pediatric, psychiatric, renal unit, coronary care unit, intensive care unit and out site referral for all departments. The target selected from 3 area as follow: medical department, coronary care unit, out site referral for all departments. The coronary care unit is the first unit of coronary artery disease military hospital in Sudan (established in 1987), it includes two cardiologists, ten medical officers, 6 register doctors and 30 registered nurses, 8 auxiliary nurses and 7 beds.

Table 3.1 show number of patients with coronary artery disease in Omdurman military hospital Khartoum state Sudan in last three earlys.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>332</td>
</tr>
<tr>
<td>2011</td>
<td>335</td>
</tr>
<tr>
<td>2012</td>
<td>342</td>
</tr>
</tbody>
</table>
3-3 STUDY Population:

Patients diagnosed as coronary artery disease who are admitted in Omdurman military hospital during period of the study (September to December 2012).

3-3-1 Inclusion Criteria:

. Patients in coronary care unit (CCU) with coronary artery disease.

. Patients in medical ward diagnosis with (CAD).

. Patients out in the refer diagnosis with (CAD).

3-3-2 Exclusion Criteria.

. Patients who were critically ill or any out patient in the hospital not mention.

3-4 Sample size:

A Sample of 100 available patients diagnosed with coronary artery diseases from the selected area in Omdurman military hospital during period of the study, total Coverage.

• 3-5 Sample technique:
  • Permission was taken from the manager of Omdurman military hospital and the head of each unit to collect the data.
  • Explanation to all patients about the study and the questionnaire data collection.
  • Each patients were asked to complete the questionnaire with the guidance of the researcher.
3-6 Data collection tools;

Data collected by using interview patients about important risk factors OF coronary artery diseases . and knowledge about aspects of definition of (risk factors, DM, HTN, Obesity, Exercise and Diet)

3-7 Data Analysis;

Data was processed and analyzed using SPSS (Statistical Package for Social Sciences) to presented in frequency tables and figures.
4 - Results and Discussion

4-1 Results

Table No (1) Show Age of the study population: No 100

<table>
<thead>
<tr>
<th>Age</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-50</td>
<td>15%</td>
</tr>
<tr>
<td>51-70</td>
<td>80%</td>
</tr>
<tr>
<td>71-90</td>
<td>5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
</tr>
</tbody>
</table>

51-70 years was the highest age found (80%) while those where age range from 71-90 years had the lowest percentage 5%.
### Table No(2) Patients distribution of the selected sample according to the sex:

<table>
<thead>
<tr>
<th>Sex</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>80</td>
<td>80%</td>
</tr>
<tr>
<td>female</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
</tr>
</tbody>
</table>

Most of the study population were Male (80%) female (20%).
Table No(3) Shows the distribution of the patients according to occupation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solider</td>
<td>30</td>
<td>30%</td>
</tr>
<tr>
<td>House wife</td>
<td>12</td>
<td>12%</td>
</tr>
<tr>
<td>Employee</td>
<td>47</td>
<td>47%</td>
</tr>
<tr>
<td>Student 18 years</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>workers</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

It was found that most of them were employers (47%) followed by soldiers (30%).
Table No(4) the Education level of the study populations: No 100

<table>
<thead>
<tr>
<th>Education level</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>22</td>
<td>22%</td>
</tr>
<tr>
<td>Basic School level</td>
<td>28</td>
<td>28%</td>
</tr>
<tr>
<td>High School level</td>
<td>30</td>
<td>30%</td>
</tr>
<tr>
<td>graduates</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
</tr>
</tbody>
</table>

High School level was higher level (30%) and the lowest was graduated 20%.
Table No5: Geographical Area of the study population:  

<table>
<thead>
<tr>
<th>Geographical Area</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khartoum state</td>
<td>63</td>
<td>63%</td>
</tr>
<tr>
<td>Other state</td>
<td>37</td>
<td>37%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
</tr>
</tbody>
</table>

The majority of population is from Khartoum state (63%) and (37%) from other state.
Table No(6): showed the awareness of patients about major risk factors for CHD

<table>
<thead>
<tr>
<th>Definition of</th>
<th>Frequency (No)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>risk factors</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>Cholesterol level</td>
<td>25</td>
<td>25%</td>
</tr>
<tr>
<td>weight</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>complications</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>medications</td>
<td>14</td>
<td>14%</td>
</tr>
<tr>
<td>I don't know</td>
<td>11</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
</tr>
</tbody>
</table>

cholesterol (25%) risk factors (20%), weight (20%), complications (10%) and medications (14%) .
Table No [6] reflect knowledge of patient about Diabetes Miletus, Hypertension, Obesity, Exercise and Diet approached to prevent CAD.

<table>
<thead>
<tr>
<th>Definition of</th>
<th>Frequency (No)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>24</td>
<td>24%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>19</td>
<td>19%</td>
</tr>
<tr>
<td>Diabetes Miletus</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>Exercise</td>
<td>21</td>
<td>21%</td>
</tr>
<tr>
<td>Diet</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>I don't know</td>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

DM(10%), Hypertension(19%), Obesity(24%), Exercise(21%) and Diet(20%) only (5%) were not know.
Figure No (1) : Shows the sex of the study population: 

The majority of them were Male (80%) while female (20%).
Figure No(2) Geographical Area of the study population

from Khartoum state (63%) and (37%) from other states.
Discussion

Coronary artery disease is one of the diseases that lead to death and it was found that Classification and external resources Micrograph of a coronary artery with the most common form of coronary artery disease (atherosclerosis) and marked luminal narrowing. CAD is the leading cause of death worldwide. While the symptoms and signs of coronary artery disease are noted in the advanced state of disease, most individuals with coronary artery disease show no evidence of disease for decades as the disease progresses before the first onset of symptoms, often a "sudden" heart attack, finally arises. After decades of progression, some of these athermanous plaques may rupture and (along with the activation of the blood clotting system) start limiting blood flow to the heart muscle. The disease is the most common cause of sudden death, and is also the most common reason for death of men and women over 20 years of age Bechar, k (2007).

This study aimed at assessing the knowledge of patients about risk factors of coronary artery disease in Omdurman military hospital, Their knowledge assessed through interview questionnaire.

The data was presented by frequency tables and figures. Figure No (1) show the age of the study population, most of them with 50-70 years this indicate that the incidences of the disease is more common above 50 year. Aging population is a major factor in the increasing number of deaths caused by coronary heart disease. Twenty years ago, only 5% of the population was older than age 65 in Hong Kong. Nowadays it has increased to 9%. Men aged 45 or older and women aged 55 or older have a higher risk of developing coronary heart disease. The risk
increases as both groups get older. When men and women developed coronary disease early before ages 55 and 65 respectively, their immediate family members will have a higher risk of developing the disease as well (Rosamond W, 2007).

Table No(2) patient distributions of the selected sample according to the sex, most of the study population were Male( 80%) while others were female(20%) The table No(3) Showed the occupation of the study population it found that most of them were Employer( 47%) followed by Soldier(30%). The table Showed:

Education level of the study population show that most of them are high school level (30%) but there are small number of population who are university graduates( 20%) cross population suggest that there is significant relationship between education level and knowledge about risk factors graduated persons understand well what are risk factors and illiterate people of the study population found it difficult to understand risk factor and could not differentiate between symptoms and causes of the diseases.

Residence in figure No (2): show that the majority of population is from Khartoum state (63%) and( 37%) from other state. This result may indicate the affect of life style.

Table No(6): showed the knowledge of patients about risk factors, cholesterol, weight, complications and medications. According to the result patients knowledge was inadequate. This indicates that the patients need more teaching from the staff and continuous follow up.

Knowledge of patients about Diabetes Miletus, Hypertension, obesity, exercise and diet, is shown in table No( 7). According to the result patients Knowledge about obesity, exercise and diet was weak.
In the Literature Review Hypertension is one of the major risk factors, but the Knowledge of patients about DM and HTN is inadequate.

According to present trends in the United States, half of healthy 40-year-old males will develop CAD in the future, and one in three healthy 40-year-old women.

According to the Guinness Book of Records, Northern Ireland is the country with the most occurrences of CAD. By contrast, the Maasai of coronary artery disease. © 1998-2012 Mayo Foundation for Medical Education and Research (MFMER Heart disease is the leading single cause of death in Australia, with over 23,600 Australian lives lost to the disease in 2008.

Previous studies done according to present trends in the United States, half of healthy 40-year-old males will develop CAD in the future, and one in three healthy 40-year-old females. According to the Guinness Book of Record, Northern Ireland is the country with the most occurrences of CAD by contras, the Maasai of Africa have almost no heart disease about 90% of sudden death is CAD.©1998-2012 Mayo Foundation for Medical Education and Research (MFMER) Heart disease is the leading single cause of death in Australia, with over 23,600 Australian lives lost to the disease in 2008 (Alturk I,2007).

Previous studies in kSA show that hypertension is common problem loading to coronary heart disease. The prevalence of hypertension in kSA is 10-30% in general population the prevalence of hypertension in kSA is dabouled for each 10 years (Alnozha.2008).
In USA 35-60 million American have elevated blood pressure. It is spatial problem in African American, Blacks also are more likely to have heart enlargement due to high blood pressure than whites ultimately congestive heart failure. Hypertension occurs with other cardiovascular risk factors specially obesity, dyslipidema and diabetes mellitus. This suggest that a common cause for risk factor is over eating and lifestyle (Alnozha.2008).

In developing country about 50% of death from coronary artery disease. The rule of have still exists. This rule says halve of the hypertensive patients will remain undiscovered halve of the discovered will be treated and only half of the treated will be adequately controlled (Alnozha.2008).

Resent study says that all the diabetic patients 55% have type II diabetes mellitus. Is an important in ischemic heart disease in two ways, first it is important risk factor that contributes to the development of coronary artery disease in patients. Secondly, diabetes with coronary artery disease can present without chest pain eg pregnancy and old age. This high percentages of diabetes explain the increase in coronary artery disease. At the same time diabetes is on an increase in some of the middle east countries. The prevalence of diabetes in the general population varies between countries. this means that certain measures have to be taken so that the effect of diabetes can be reduced (Alnozha.2008).

In Saudi Arabia a retrospective study on 495 diabetes was conducted. Its result as follows. Over weight was 43.2% and female 22%, obesity was 27.9% male and 64.1% were female, cholesterol was
49.5% were male and 68.5% were female, 13.4% of males were hypertensive and 44.3% female. 19.5% of male smoked (Alam 2008).

In this study the sex of the study population most of them were male (80%) while others were female (20%) Table N0 (2).
5.1 Conclusion:

Based on the results of the study, the researcher conducted that the majority of coronary artery disease Patient’s were not aware about the common risk factors that can lead to this illness.
5. 2 Recommendations:

- There was need of teaching department in Omdurman military hospital providing knowledge about risk factors of cardio-vascular disease (CVD).
- Provide health education program for high risk patients to develop coronary artery disease by more skilled nurses in the hospital.
- Mass media education the methods of prevention of coronary artery disease.
References:


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Assessment of Patients awareness regarding risk factors of coronary artery disease in Omdurman Military Hospital

1- الجنس: ذكر □ اثني □

2- العمر: ..............................................................

3- المهنة: ..............................................................

4- السكن: ..............................................................

5- الحالة الاجتماعية: متزوج □ غير متزوج □

6- المستوى التعليمي: 
   □ امي □ اساس □ ثانوي □ جامعي □ فوق الجامعي □

7- ماهي العوامل المؤدية لحدوث مرض الشرايين:
   □ أ - السمنة لزيادة في الوزن
   □ ب - التدخين
   □ ج - ارتفاع ضغط الدم
   □ د - ارتفاع نسبة الدهون
   □ ه - الضغوط النفسية

8- الكلسترول
   □ أ - دهن حيواني يزيد تصلب الشرايين
   □ ب - المعدل الطبيعي للكلسترول في الدم
   □ ج - يتأثر بزيادة الوزن
   □ د - يقل تركيزه في الدم بالرياضة

9- الوزن المثالي:
   □ 2 - يقلل تأثير الجلطة
   □ 1 - الطول -- 100
3 - يحافظ عليه بالرياضة

10 - المضاعفات المتوقعة بعد العلاج:
1 - حدوث نزيف
2 - حدوث جلطة في الشرايين
3 - زيادة ضربات القلب
4 - ألم في الصدر

11 - استعمالات العلاجات المستدامة:
1 - علاج للسيول (إسبرين)
2 - إيقاف العلاج عند ظهور المضاعفات
3 - علاج لتنظيم ضربات القلب
4 - مراجعة الطبيب عند أنتهاء العلاج

12 - ما هو مرض السكري:
1 - معدل السكر الطبيعي في الدم 80-120
2 - يصيب البنكرياس

13 - ما هو ارتفاع ضغط الدم:
1 - يصيب الأوعية الدموية
2 - المعدل الطبيعي 120/80
3 - يصيب الماهي السمنة

14 - ما هو السمنة:
1 - زيادة غير طبيعية في الوزن
2 - تؤدي إلى تصلب الشرايين

15 - ما هو تأثير عدم الرياضة:
2 - زيادة حدوث الجلطة

16 - ما هو النظام الغذائي لمرضى الشرايين:
1 - الخضروات
2 - اللحوم البيضاء
3 - الفاكهة