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# Factors Affecting the Outcomes of Patients with Ischemic Heart Disease among nurses working in Intensive Care Units in Omdurman teaching hospital 2023

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## ABSTRACT

**Background:** All over the world, cardiovascular disease (CVD) is an important of death. By and large, this group of diseases represents a first cause, not only in developing, but also in countries in the **process of development. Among CVDs, ischemic heart disease (IHD) and its different clinical manifestations stand out in prominence**. This study aimed to assess Factors that affecting the Outcomes of Patients with Ischemic Heart Disease at Intensive Care Units .**Design:** this is descriptive cross sectional hospital based study, conducted in Omdurman teaching hospital in the coronary care unit where critical patients received emergency treatmentin period between January 2023-february 2023 among All nurses work in CCU both male and female. **Data collection tools**: modified constructed questionnaire to be suitable for Sudanese nurses and their culture. **Results:** participants had satisfactory level, more than two thirds of them had satisfactory level and practice regarding IHD and their management, and related factors with the Mean,SD and P value (1.28 .452 .004) (1.00 .000 .000) respectively. Conclusion: According to this study, the result concluded that participants had satisfied level of knowledge and practice in CCU ,also the results revealed significant association between their knowledge, attitude and practice with their social data .

**Recommendation**: researcher suggested that another study must be demonstrate and replicate among large sample and different setting to generalize the study.

**KEYWORDS**: Factors Affecting the Outcomes of Patients with IHD, Nurses, CCU, Omdurman teaching hospital

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## INTRODUCTION

All over the world, cardiovascular disease (CVD) is an important of death. By and large, this group of diseases represents a first cause, not only in developing, but also in countries in the process of development. Among CVDs, ischemic heart disease (IHD) and its different clinical manifestations stand out in prominence. The IHD is a group of disease arises from narrowing of coronary arteries over times, It is primary effect is decreasing to complete loss of oxygen and nutrient to myocardial tissues. It encompasses partial loss of myocardial blood and ischemia to complete blockage of coronary artery blood flow without collateral circulation (1).

Acute myocardial infarction (AMI) is a life-threatening medical emergency that impacts a person's physical, psychological, and social aspects. Myocardial injury with necrosis in a clinical condition consistent with myocardial ischemia is acute myocardial infarction (2)

Acute myocardial infarction (AMI) is a medical emergency requiring immediate treatment. It may result in irreversible harm or

death of the heart muscle if not treated immediately [3] cute myocardial infarction (AMI) is one of the most dial infarction is usually gradual, over several minutes and common diseases among the developing countries [3].It is commonly known as a heart attack, which occurs when there is a sudden block in blood flow in one or more of the coronary arteries and this cut off blood supply to a part of the heart muscle, causing necrosis (massive cell death, a permanent damage). If the block is severe, the heart can stop beating (cardiac arrest). This is most commonly due to occlusion or blockage of a coronary artery following the rupture of a vulnerable atherosclerotic plaque which is an unstable collection of lipids (cholesterol and fatty acids) and white blood cells (especially macrophages) in the wall of an artery. Myocardial infarction usually begins in the endocardium and spread towards the epicardium.[4].In addition There are many vital causes of IHD such as; atherosclerosis, dissecting aneurysm, infective vocalists, syphilis, congenital defects, coronary artery spasm and migrating thrombus from deep venous thrombosis (DVT) [5]

The symptoms of acute myocardial infarction but the most common is chest pain, which may travel into the shoulder, arm, back, neck or jaw. This type of pain always starts from the center or left side of the chest and remains for few minutes. The onset of symptoms in acute myocar The incidence of myocardial infarction in the world varies greatly. In the United States and United Kingdom, nearly 650.000 and 180.000 patients get an acute myocardial infarction every year, respectively.. [6] Reinfarction after ST-elevation myocardial infarction (MI) is a very serious occurrence, and it leads to high mortality among patients. Recurrent MI or reinfarction is defined as recurrence of clinical signs and symptoms of ischemia in patients with previously diagnosed MI, with accompanying electrocardiographic changes and raised serum biomarker levels consistent with myocardial necrosis. [7]

Regard risk Factors:

There are various risk factors of AMI. Among them, some are modifiable (treatable) and others are non-modifiable (can not be changed). The major risk factors of AMI are described hereunder

Physical activity:

Inactive people with multiple cardiac risk factors are more likely to develop AMI. [8].Physical activity may contribute up to 20%-30% reduced risk of coronary heart disease (9) .However, studies have shown that different types of physical activities may have different effects on the risk of cardiovascular disease (CVD) and may interact together. For example, some leisure time activities such as walking, stair climbing, and cycling provide protection against CVD, whereas others, such as intensive domestic physical activity, may not offer protection against CVD [10]

Smoking:

Smoking is considered to be strong risk factor of myocardial infarction, premature atherosclerosis and sudden cardiac death. Smoking results in early STEMI especially in otherwise healthier patients. [11]

Dyslipidemia

Dyslipidemia, a major risk factor of cardiovascular disease, is generally defined as the total cholesterol, LDL, triglycerides, apo B or Lp (a) levels above the 90th percentile or HDL and Apo A levels below the 10th percentile of the general population [12].

Diabetes Mellitus:

Type 2 diabetes mellitus is on the verge of becoming a pandemic in India.[55] It is a chronic condition that occurs when the body cannot produce enough or effectively use of insulin, and are induced by a genetic predisposition coupled with environmental factors .[13]

Obesity/BMI:

Increased BMI is directly related to incidence of myocardial infarction. Infarction is greatly enhanced by extreme obesity because it is a recognized risk factor for myocardial infarction [14]

Stress:

Chronic life stress, social isolation and anxiety increase the risk of heart attack and stroke.[15] .Acute psychological stress also is associated with increased risk for coronary heart disease, and it has been reported that intense grief in the days after death of a significant person may trigger the onset of myocardial infarction

The intensive care nurse plays a vital role in the care of patient with IHD. So, this study aimed to find out the factors that affecting the Outcomes of Patients with Ischemic Heart Disease at Intensive Care Units in Omdurman teaching hospital and the nurses' performance and outcomes beyond morbidity and mortality. Accountability for patient outcomes is a fundamental responsibility of professional nurses and the patient outcomes that are sensitive to nursing intervention is essential for efforts to determine the effectiveness and improve the quality of nursing care.

## OBJECTIVE

To assess Factors that affecting the Outcomes of Patients with Ischemic Heart Disease at Intensive Care Units

**Research question:**

1- What are the nurses knowledge and practice regard patient with ischemic heart disease

2- What are the factors affecting the outcomes of patients with ischemic heart disease?

**Materials and Methods:**

**Research design: this is descriptive cross sectional hospital based study**

**Study area:** Omdurman teaching hospital

**Setting:** The present study was conducted in Omdurman teaching hospital in the coronary care unit where critical patients received emergency treatment

**Study period**

Time of data collection between January 2023-february 2023

**Study population:**

**All nurses work in CCU both male and female**

**Exclusion criteria**

Nurses not available at data collection

Nurses work outside the coronary care unit

Sample size: 40 nurses those who are available during data collection

**Tool of data collection:**

This is descriptive study questionnaire constructed to be suitable for Sudanese nurses and their culture [16]. Which consists of socio demographic data (age, gender ,educational level and years of experience),the second part ,knowledge questionnaire regard ischemic heart disease definition. Risk factors, drug therapy and nursing role for patients with ischemic heart disease

Third part regard consists of two parts nurses' level of practice regarding the ischemic heart disease which consist of patient assessment and intervention and nurses' practice regard discharge plan regarding the ischemic heart disease as showed in tables below(3+4

**Data analysis:**

After collection of data, it were organized, coded and analyzed by SPSS version (26) using descriptive statistics (frequency, percent and mean and SD)

Fore knowledge divided into yes and give it (2) no(1) and don't know (0)the total correct answers (54), we scoring the level of knowledge and distributed it as good knowledge which between Satisfied 80-75% and Not satisfied less than 75% and also same for regard patient assessment and intervention

Regard practice Fore knowledge divided into always and give it (2) sometimes (1) and for never scored with (0) the total correct answers (17), we scoring the level of practice and distributed it as good knowledge which between Satisfied 80-75% and Not satisfied less than 75%

For inferential statistic we use chi squire for correlation of the participants demographic data with their knowledge and practice and consider p value 0.000 as significant correlation

**Ethical approval:**

Before starting the study ethical approval was obtained ,verbal consent were taken from participants after explaining the purpose of the study and explained that it has no any risks for them and they have right to withdraw from the study at any time without giving any reasons.

**Results:**

**From the data in table (1) most of our participants were female 23 (57.5%) and male were less than half 17 (42.5%), their age between 25-30 which represent 22(55%) with qualification level more than half is MSc certificate, more of them their experience5<10 years 26 (65%) same percent not received training program regard IHD but they received general training courses for critically ill patients 32( 80%)**

**In table (2) showed the participants knowledge responses toward IHD most of them know the definition and etiology and while all of them know the risk factors(age race and gender are non-modifiable risk factors 32(80%) 28(70%) 40(100%) respectively**

**All of them know Nitroglycerin in IHD is curtail therapy ,and in chest pain we Administer Morphine and 30(75%) Explaining to the patient about his health status, the rest of questions in table (2) mean ,SD and P value as fellows 1.28 .452 .004**

**In table (3) showed most that half know very well how Assess temperature accurately, pulse**

**blood pressure and level of consciousness38(95%) 31(77.5%) 29(72.5%) 25(62.5%)**

**28(70%) respectively they report satisfied practice their mean knowledge about IHD**

**29(72.5%) mean SD and P value 1.28 .452 .004 in table(4)**

**And regard patient's intervention they report good practice regard Monitor arterial blood gases periodically, administer pain killer as prescribed correctly, Obtain and interpret 12 leads ECG correctly. , Administer anticoagulant as prescribed correctly, Observe signs of bleeding (epistaxis, gums, hematuria, etc.), and Monitor drug side effects if happened. 38(95%)**

**38(95%), 38(95%), 38(95%), 28(70%), 28(70%) respectively the rest of questions in table (3) they report satisfied practice their mean practice about IHD**

**in continuing to table (3) practice regard discharge plan regarding the ischemic heart disease ALL of them were satisfied mean ,SD and P value as fellows 1.53 .506 .752 in table(4)**

**In table (5) showed insignificant correlation between participants knowledge, practice with their social data**

**Table (1) Distribution sociodemographic characteristics of participants (n=40)**

| variable | frequency | Percent (%) | Mean | SD |
|---|---|---|---|---|
| Gender | | | | |
| male | 17 | 42.5 | 1.5750 | .50064 |
| female | 23 | 57.5 | | |
| Age by years | | | | |
| 25-30 | 22 | 55 | 1.4500 | .50383 |
| More than30 | 18 | 45 | | |
| Qualification level | | | | |
| Diploma certificate | 9 | 22.5 | 2.3250 | .82858 |
| BCs | 9 | 22.5 | | |
| MSc | 22 | 55 | | |
| Years of experience in CCU | | | | |
| 1<5 | 14 | 35 | 1.6500 | .48305 |
| 5<10 | 26 | 65 | | |

| | | | | |
|---|---|---|---|---|
| **Specific training courses for caring of IHD.** | | | | |
| **yes** | **14** | **35** | **1.6500** | **.48305** |
| **no** | **26** | **65** | | |
| **General training courses for critically ill patients** | | | | |
| **yes** | **32** | **80** | **1.2000** | **.40510** |
| **no** | **8** | **20** | | |

**Table (2): Percentage distribution of nurses' level of knowledge regarding the ischemic heart disease (n=40)**

| Items | Yes (%) | No (%) | I don't know (%) |
|---|---|---|---|
| **Do you know the** | | | |
| **Definition of IHD** | **32(80%)** | **8)20%** | **0** |
| **Etiology of IHD** | **28(70%)** | **0** | **12(30%)** |
| **Risk factors of IHD** | **25(62.5%)** | **12(30%)** | **3(7.5%)** |
| **Age race and gender are Non modifiable risk factors** | **40(100%** | **0** | **0** |
| **DM, hypertension considered as Modifiable risk factors** | **40(100%** | **0** | **0** |
| **Myocardial infarction is Complications of IHD** | **40(100%** | **0** | **0** |
| **There is Side effect of O2 therapy** | **29(72.5%)** | **4(10%)** | **7(17.5%)** |
| **Nitroglycerin in IHD is curtail therapy** | **40(100%** | **0** | **0** |
| **In chest pain we Administer Morphine** | **40(100%** | **0** | **0** |
| **There is Side effect of Morphine administration** | **29(72.5%)** | **4(10%)** | **7(17.5%)** |
| **In IHD we Administer anticoagulant** | **29(72.5%)** | **4(10%)** | **7(17.5%)** |
| **Anti-coagulant has adverse effect** | **33(82.5%)** | **4(10%)** | **3(7.5%)** |
| **Nurses notify the physician if heart rate changed** | **33(82.5%)** | **4(10%)** | **3(7.5%)** |
| **Importance of performing regular ECG** | **29(72.5%)** | **4(10%)** | **7(17.5%)** |
| **Following the vital signs assessment schedule** | **33(82.5%)** | **4(10%)** | **3(7.5%)** |
| **Monitoring the patients conscious level assessment** | **31(77.5%)** | **4(10%)** | **5(12.5%)** |
| **Attaching the ICU monitor to the patients** | **33(82.5%)** | **4(10%)** | **3(7.5%)** |
| **Maintaining bed rest for the patients'** | **35(87.5%)** | **1(2.5%)** | **4(10%)** |
| **Inserting IV access during the patients' care** | **37(92.5%)** | **3(7.5%)** | **0** |

| | | | |
|---|---|---|---|
| **Aspirate necessary blood laboratories.** | **28(70%)** | **9(22.5%)** | **3(7.5%)** |
| **Calculating the patients' BMI** | **39(97.5%)** | **0** | **1(2.5%)** |
| **Following up the blood glucose level** | **36(90%)** | **4(10%)** | **0** |
| **Following up cardiac enzymes and troponins** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Knowing that patients' diet must be low in fat and salt.** | **32(80%)** | **1(2.5%)** | **7(17.5%)** |
| **Explaining to the patient about his health status** | **30(75%)** | **5(12.5%)** | **5(12.5%)** |
| **Giving the patients' information about the disease** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Following up the patients after discharge** | **29(73.5%)** | **4(10%)** | **7(17.5%)** |
| **Mean knowledge** | **frequency** | | **Percent (%)** |
| **Satisfied 80-75%** | **29** | | **72.5%)** |
| **Not satisfied less than 75%** | **11** | | **27.5%)** |

**Table (3): Percentage distribution of nurses' level of practice regarding the ischemic heart disease (n=40)**

| **Item** | **yes** | **no** | **I don't know** |
|---|---|---|---|
| **Patient assessment** | | | |
| **Assess temperature accurately.** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Assess pulse accurately.** | **31(77.5%)** | **8(20%)** | **1(2.5%)** |
| **Assess respiration accurately.** | **29(72.5%)** | **10*25%)** | **1(2.5%)** |
| **Assess blood pressure accurately.** | **25(62.5%)** | **14(35%)** | **1(2.5%)** |
| **Assess level of consciousness** | **28(70%)** | **11(27.5%)** | **1(2.5%)** |
| **Monitor blood oxygen level through obtaining arterial sample** | **18(45%)** | **6(15%)** | **16(40%)** |
| **Assess patient medical history.** | **20(50%)** | **17(42.5%)** | **3(7.5%)** |
| **Calculate body mass index (BMI) accurately.** | **14(35%)** | **14(35%)** | **12(30%)** |
| **Assess pain level on numerical pain scale (1 – 10).** | **25(62.5%)** | **14(35%)** | **1(2.5%)** |
| **Assess capillary refill time accurately.** | **13(32.5%)** | **11(27.5%)** | **16(40%)** |
| **Assess intake and output accurately.** | **34(85%)** | **4(10%)** | **2(5%)** |
| **Monitor PTT, PT, PC and INR.** | **18(45%)** | **11(27.5%)** | **11(27.5%)** |
| **Calculate MEWS accurately.** | **17(42.5%)** | **3(7.5%)** | **20(50%)** |
| **Nursing intervention** | | | |
| **Physician prescription.** | **34(85%)** | **1(2.5%)** | **5(12.5%)** |

| | | | |
|---|---|---|---|
| **Monitor arterial blood gases periodically** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Administer pain killer as prescribed correctly** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Obtain and interpret 12 leads ECG correctly.** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Administer anticoagulant as prescribed correctly** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Observe signs of bleeding (epistaxis, gums, hematuria, etc.)** | **28(70%)** | **4(10%)** | **8(20%)** |
| **Monitor drug side effects if happened.** | **28(70%)** | **7(17.5%)** | **5(12.5%)** |
| **Monitor capillary blood glucose level.** | **28(70%)** | **2(5%)** | **10(25%)** |
| **Ensure patient safety by side rails raised.** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Measure CVP if available.** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Document nursing interventions accurately and timely.** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Report for any abnormality on time.** | **29(72.5%)** | **8(20%)** | **3(7.5%)** |
| **Mean practice IHD** | **FREQUENCY** | | **Percent (%)** |
| **Satisfied 80-75%** | **31** | | **77.5%** |
| **Not satisfied less than 75%** | **9** | | **22.5%** |

**Table (3 cont.): Percentage distribution of nurses' practice regard discharge plan regarding the ischemic heart disease (n=40)**

| **Item** | **always** | **sometimes** | **never** |
|---|---|---|---|
| **Discharge care plan** | **27(67.5%)** | **11(27.5%)** | **2(5%)** |
| **Provide health education about IHD ( change in anatomic structure or function, signs and symptoms and complications)** | **29(72.5%)** | **4(10%)** | **7(17.5%)** |
| **Describe ongoing regimen (diet, exercise, medications as physician** | **33(82.5%)** | **3(7.5%)** | **4(10%)** |
| **Prescription and avoid any aggressive emotional and physical activity).** | **29(72.5%)** | **4(10%)** | **7(17.5%)** |
| **Interpreted patient blood sampling and lab investigations** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Promote psychological support** | **25(62.5%)** | **14(35%)** | **1(2.5%)** |
| **State time and date of follow up appointment** | **38(95%)** | **1(2.5%)** | **1(2.5%)** |
| **Mean practice regard discharge plan** | **frequency** | | **(%)** |
| **Satisfied 80-75%** | **40** | | **100** |
| **Not satisfied less than 75%** | **0** | | **0** |

**Table (4) means and SD and P value for participants' knowledge and practice regard IHD**

| ITEM | Mean | SD | P value |
|---|---|---|---|
| Knowledge regard IHD | 1.28 | .452 | .004 |
| Practice regard IHD | 1.53 | .506 | .752 |
| Practice regard discharge plan | 1.00 | .000 | .000 |

**Table (5)Correlation between social data with knowledge and practice regard IHD**

| item | Social data | P value |
|---|---|---|
| knowledge | Age | .002 |
| | experience | .713 |
| | qualification | .916 |
| | Training course | .916 |
| Practice regard IHD | Age | .001 |
| | experience | .118 |
| | qualification | .211 |
| | Training course | .118 |
| Practice regard discharge plan | Age | .522 |
| | experience | .000 |
| | qualification | .211 |
| | Training course | .000 |

From the data in table (1) most of our participants were female 23 (57.5%) and male were less than half 17 (42.5%), their age between 25-30 which represent 22(55%) with qualification level more than half is MSc certificate, more of them their experience5<10 years 26 (65%) same percent not received training program regard IHD but they received general training courses for critically ill patients 32( 80%)

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In table (5) showed insignificant correlation between participants knowledge, practice with their social data

## DISCUSSION:

This is descriptive cross sectional hospital based study carried in Omdurman teaching hospital among nurses who works in CCU from the results we found most of them are females

23(57.5%),their age between 25-30 years 22(55%) with same percent of MSc qualification and most of them has experience in CCU more than more than 5 years and less than 10 years and attended training courses for critically ill patients this inconsistent with study done in Egypt where their participants qualification more of them with BSc and their age less than 30 years despite the fact that, more than half of studied nurse attended training courses for caring of critically ill patients this only same as our participants characteristic

And vice versa study done Abd-Allah, Arafa and Mohammed (2017), which their participants age between 25 and 30 years old and most of them were females. Two-thirds of them had between 5 and 10 years of experience and less than half of them held a bachelor's degree in nursing which support our study [17]

The present study finding our participants reported that the most of studied nurses had

( 72.5%)) total satisfactory level of knowledge regarding IHD definition, modified is factors causing IHD and non-modified risk factors. In addition to (77.5%) total satisfactory level of knowledge regarding caring for patients with IHD, medication (morphine, nitroglycerine and anticoagulant), O2 therapy and ECG and notify the physician about patient parameters. As well as explaining the health status of the patient, and Monitor arterial blood gases periodically all of them had good demonstrating the discharge plan for ischemic patients (100%) this came in consistent with study by [18]

Again our finding came in consistent with study done in Asmara and Nairobi where their participants revealed low level of knowledge. [19]

On other hands our participants' reported knowledge came consistent with study done in Sudan where their participants response were good and satisfied (20) (21)

From results of our study there is significant correlation of their knowledge, attitude and practice with age ,experience and training course received . In contrast, age, gender, and experience were not significantly associated with emergency nurses' knowledge of early AMI management. [22]

## CONCLUSION:

According to this study, the result concluded that participants had satisfied level of knowledge and practice in CCU ,also the results revealed significant association between their knowledge, attitude and practice with their social data .

## RECOMMENDATION:

Researcher suggested that there must be additional demonstration and Replication of this study using large sample and different setting to generalize the study

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