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**Assessment Of Nurses Knowledge Regarding Care Of Patient  
With Arrhythmia In Emergency Department and Intensive Care  
Unit In Military Hospital , Sudan (2017)**

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بسم الله الرحمن الرحيم

## الآية

قال تعالى :

"فبما رحمة من الله لنت لهم ولو كنت فظا غليظ القلب لانفضوا من حولك فاعف عنهم واستغفر لهم وشاورهم في الأمر فإذا عزمت فتوكل على الله إن الله يحب المتوكلين "

صدق الله العظيم (آل عمران 159) .

## **DEDICATION**

This work is dedicated to all the candles that fired to lighten my way  
To my mother and sisters which made me strong to face the difficulties of life.  
To my college who support and help me

## ***ACKNOWLEDGMENT***

*The magnificent thanks for Allah liege lord Who helped to present this simple study.*

*MY thanks torrential to that one who taught me how to make this study MY supervisor Dr. Sania Ahmed Mohammed Salih My thanks to all members of study sample and to my colleagues.*

## Abstract

Cardiac arrhythmias are one of the most commonly seen manifestations of cardiac disease in critically ill patient.

The nature of this study is descriptive , hospital base study .and the main aim of this study was to assess the nurses knowledge regarding care of patient with arrhythmia in emergency department and intensive care unit in military hospital .

The sample size was 90 nurses all of them are work in emergency of military hospital , structured questionnaire was the method of data collection , simple random sampling , and *data analysis using statistical package of social science* .

The main findings are seventy three of nurses are female and most of the subjects were having experience between one to five years ,this means most of the nurses work in emergency of military are a senior.the majority of the nurses under study they did not receive training in ICU postgraduate .the result revealed that less than half of subjects( 41%)were are weak knowledge about the mechanism of arrhythmia and minimum ( 3%) of nurses are good knowledge regarding mechanism of arrhythmia , and more than half of nurses (56%) are very good knowledge about arrhythmia mechanism ,and the majority of the subject(82%) are weak knowledge about main symptoms of tachycardia , and minimum(9%) of sample study are very good knowledge about main symptoms of tachycardia , and more than half (73%) of nurses are weak knowledge regarding main symptoms of bradycardia , and the one quarter (20%) of sample study are good knowledge about main symptoms of bradycardia , and minimum (7%) of nurses are very good knowledge about bradycardia symptoms , and the majority of subjects (80%) are weak knowledge regarding main symptoms of atrial fibrillation , and less than one quarter (16%) are good knowledge about main symptoms of atrial fibrillation , and minimum of sample study (4%) are very good knowledge about main symptoms of atrial fibrillation, and less than two third (63%) of nurses are weak knowledge

regarding patients management in emergency , and minimum of subjects (12%) were are good knowledge about management of patients in emergency , and less than one third (26%) of nurses are very good knowledge regarding management of patients in emergency most (72%) of sample study are weak knowledge about predisposing factor of arrhythmia , and minimum of nurses (8%) are very good knowledge regarding predisposing factor of arrhythmia ,and more than three quarters (78%) of sample study are weak knowledge about common causes of arrhythmia , and the minimum of nurses (8%) are very good knowledge about common causes of arrhythmia, and more than three quarters (77%) are weak knowledge about classification of arrhythmia , and less than one quarters of nurses (16%) are very good knowledge about classification of arrhythmia ,and two third (66%) of sample study are weak knowledge regarding type of arrhythmia ,and less than one quarter (17%) of nurses are very good knowledge about type of arrhythmia,more than three quarters (76%) of nurses are weak knowledge about common type of ventricular arrhythmia , and minimum of nurses (13%) are very good knowledge regarding common type of ventricular arrhythmia , and minimum of nurses (11%) are very good knowledge about common types of ventricular arrhythmia , and less than three quarters (71%) of nurses are weak knowledge about effective management of atrial fibrillation , and less than one quarter (19%) of sample study are good knowledge about effective management of atrial fibrillation , and minimum of nurses are very good knowledge regarding effective management of atrial fibrillation , more than half (60%) of subjects are weak knowledge about effective management of a systole patient , and one quarter (20%) of study sample are good knowledge about effective management of a systole patient , and one quarter (20%) of nurses are very good knowledge about effective management of a systole patient the majority of sample study (81%) are weak knowledge about treatment of tachycardia , and less than one fifth (14%) of nurses are good knowledge about treatment of tachycardia , and minimum (4%) of nurses are very good knowledge regarding treatment of patient with tachycardia .

more than half(53%) of subjects are weak knowledge about useful method of preventions from arrhythmia , and more than one fifth (21%) of nurses are good knowledge about useful method of prevention from arrhythmia , and more than one quarter (27%) of nurses are very good knowledge about method of arrhythmia prevention. Less than two third (65%) of nurses are weak knowledge regarding nursing management of arrhythmia in emergency department , and less than one fifth (18%) of nurses are good knowledge about nursing management of arrhythmia in emergency , and less than one fifth (17%) of nurses are very good knowledge about nursing management of arrhythmia in emergency department . more than one fifth of nurses (23%) are weak knowledge about common complication of arrhythmia , and more than three quarters (77%) of nurses are very good knowledge regarding the common complications of arrhythmia ,The finding results suggest that is inadequate knowledge about care of patient with arrhythmia .

## ملخص البحث

عدم انتظام القلب واحده من اكثر امراض القفب شيوعا في المرضي المصابين بأمراف خطيره .اجريت هذه الدراسة الوصفية وهي دراسة مستنده الي المستشفى ، تهدف هذه الدراسة الي تقييم معرفة الممرضين و الممرضات بخصوص رعاية المرضي الذين يعانون من عدم انتظام ضربات القلب بقسم الطوارئ ووحدة العناية المركزة بمستشفى السلاح الطبي امدرمان.

اشتملت عينة الدراسة علي 90 ممرض اثناء الفترة من (مارس الي سبتمبر 2017) . تم جمع البيانات باستخدام استمارة استبيان تم تصميمها بغرض الدراسة وقد تم تحليل البيانات باستخدام برنامج الحزمة الاحصائية للعلوم الاجتماعية اسفرت نتائج البحث عن ان 73% من عينة الدراسة من العنصر النسائي وتتراوح اغلبية سنين خبرة عينة الدراسة ما بين 1-5 سنوات تدل هذه النتيجة علي ان اغلبية الممرضين العاملين بقسم الطوارئ بالسلاح الطبي لديهم خبرة عمل كافية. اغلبية عينة الدراسة لم تتلقي التدريب علي وحدة العناية المركزة بعد التخرج، وقد كشفت نتائج الدراسة ان 100% من الممرضين لديهم معرفه بمعني عدم انتظام ضربات القلب و 98% منهم لديه المعرفة بأول جزء يبدأ النبض الكهربائي بالقلب (العقدة الجيبية الاذينية)، و56% من الممرضين والممرضات لديهم قلة معرفة بأعراض عدم انتظام ضربات القلب و46% منهم لديه قلة معرفة بالخطوات الاولية لعلاج عدم انتظام ضربات القلب بقسم الطوارئ . كما ان 39% من عينة الدراسة لديهم معرفة ضعيفة اتجاه الاسباب التي تؤدي للإصابة بعدم انتظام ضربات القلب و43% منهم لديهم معرفة قليلة اتجاه تصنيف عدم انتظام ضربات القلب وان 51% من الممرضين والممرضات لديهم معرفة قليلة اتجاه علاج تسارع ضربات القلب . وتظهر النتائج ان 100% من عينة الدراسة لديهم معرفة بمضاعفات عدم انتظام ضربات القلب .

خلصت الدراسة الي ان معرفة الممرضين والممرضات برعاية مرضي عدم انتظام ضربات القلب غير كافية وتحتاج الي تدريبات وكورسات مختصه.



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## ABBREVIATIONS

AF	Atrial Fibrillation
AV	Atrioventricular
ACS	Acute Coronary Syndrome
AVR	Accelerated Ventricular Rhythm
b.PM	Beat per Minute
CAD	Coronary Artery Disease
CHF	Congestive Heart Failure
CPR	Cardiopulmonary Resuscitation
ECG	Electrocardiogram
HR	Heart Rate
ICU	Intensive Care Unit
IV	Intravenous
MI	Myocardial Infarction
PACS	Premature Atrial Complexes
PJC	Premature Junctional Complexes
PEA	Pulseless Electrical Activity
SA	SinoAtrial
SN	Sinus Node
VT	Ventricular Tachycardia
VF	Ventricular Fibrillation

# CHAPTER ONE

## 1-1 Introduction

Cardiac arrhythmias, a common problem encountered in the intensive care unit (ICU), increase the length of stay and represent a major source of morbidity.<sup>(1)</sup> The frequency and adverse consequences of clinically unrecognized and asymptomatic atrial fibrillation (AF) are increasingly reported, particularly in older adults. For instance, in a community-based study in Sweden, >7000 people 75 to 76 years of age were monitored intermittently; 3% had newly diagnosed AF, of whom only 17% had their AF detected by a screening ECG.

- A recent meta-analysis from 4 large contemporary randomized trials revealed that AF is associated with systemic embolism, occurring at a rate of 0.24 per 100-person years compared with 1.92 for stroke per 100-person years.
- Data from the Framingham Heart Study, the Atherosclerosis Risk in Communities study, the United Kingdom, and other sites suggest that the incidence and prevalence of AF are increasing over time.

In 2015, Get With the Guidelines–Resuscitation reported the rate of survival to hospital discharge from pulseless in-hospital cardiac arrest in adults  $\geq 18$  years old was 23.8% (95% CI, 23.2%–24.3%), whereas in children 0 to 18 years old, it was 35.9% (95% CI, 31.4%–40.6%), and in neonates (0–30 days old), it was 24.2% (95% CI, 18.2%–31.4%)<sup>(2)</sup>.

## **1-2 Justification**

Arrhythmia is an serious condition can lead to more force to heart ,and need urgent and accurate intervention , for this need well qualified nursing staff to deal with emergency cases. In general nursing knowledge about arrhythmia not enough.this study aiming to help policymarker to improve nursing knowledge about ECG and mainly about arrhythmia .an arrhythmia as almost universal accompanied of a cut myocardial infarction .

## **1-3 General Objectives of the study**

A study to assessment of the nursing knowledge regarding care of patient with arrhythmia in emergency departments and intensive care units in military hospital .

## **1-4 Specific Objectives**

- To assess the level of nursing knowledge about arrhythmia ( definition ,mechanism, signs and symptoms)
- To assess nursing knowledge about causes and types of arrhythmia .
- To assess nursing knowledge of diagnostic method for arrhythmia.
- To assess nursing management for patient with arrhythmia .
- To assess nursing knowledge about complication and prevention method of arrhythmia.

## CHAPTER TWO

### Literature Review

**2.1 Dysrhythmias** are disorders of the formation or conduction (or both) of the electrical impulse within the heart. These disorders can cause disturbances of the heart rate, the heart rhythm, or both. Dysrhythmias may initially be evidenced by the hemodynamic effect they cause (eg, a change in conduction may change the pumping action of the heart and cause decreased blood pressure. Dysrhythmias are diagnosed by analyzing the electrocardiographic (ECG) waveform. Their treatment is based on frequency and severity of symptoms produced. Dysrhythmias are named according to the site of origin of the impulse and the mechanism of formation or conduction involved. For example, an impulse that originates in the Sino atrial (SA) node and at a slow rate is called sinus bradycardia <sup>(3-4)</sup>.

### 2.2 THE CARDIAC CONDUCTION SYSTEM

The normal heartbeat sequence occurs through rhythmic stimulation of the heart via its specialised conduction system. The sinoatrial node, located superiorly in the cardiac conduction system. The normal heartbeat sequence occurs through rhythmic stimulation of the heart via its specialised conduction system. The sinoatrial node, located superiorly in the right atrium, spontaneously generates an activation current that conducts across preferential right and left atrial pathways (producing a P wave on the surface ECG) and then to the atrioventricular node at the lower inter-atrial septum. After a brief physiological slowing of the current (to allow the ventricles to be optimally 'pre-loaded'), the impulse travels to the Bundle of His in the upper interventricular septum before spreading down through the ventricles via the right and left bundle branches.

. These terminate distally as branching Purkinje fibres which penetrate and activate the ventricles. This ventricular activation (or depolarisation) sequence produces a QRS complex on the surface ECG and subsequent repolarisation gives rise to an

electrocardiographic T wave. Pathophysiological processes may disrupt this sequence, giving rise to arrhythmia production (5).

**2.3 Arrhythmogenic mechanism** Normal sinus rhythm initiates as the sinus node (SN) generates an electrical impulse, which relays along internodal pathway before arriving at the atrioventricular node (AV node). The electrical impulse is delayed at the AV node before transmissions continued along the atrioventricular bundle, left and right bundle branch, the Purkinje fibres and eventually concludes in contraction of the myocytes in the ventricles. Reduction or failure of the automaticity of the SN (i.e. sick sinus syndrome) or interruption of the propagation of electrical impulses along the conduction pathway (i.e. bundle branch block) gives rise to bradyarrhythmia. On the other hand, enhanced automaticity, re-entry and triggered activity are the three main mechanisms which lead to tachyarrhythmia. Often, more than one mechanism results in the occurrence and ongoing event of the cardiac arrhythmias.

Factors that contribute to cardiac dysrhythmias are highly varied. Examples include metabolic derangements (e.g., hypoxia, acidosis, alkalosis), electrolyte abnormalities (e.g., hypokalemia, hyperkalemia, hypocalcaemia, hypomagnesaemia), chronic illness (e.g., CAD, chronic obstructive pulmonary disease), cardiac trauma, medications (e.g., digoxin, bronchodilators), congenital disorders, and stimulant abuse (e.g., cocaine, amphetamines) (5).

## **2.4 Symptoms of arrhythmia**

Some patients have no symptoms, but a doctor might detect an arrhythmia during a routine examination or on an EKG.

Even if a patient notices symptoms, it does not necessarily mean there is a serious problem, for instance, some patients with life threatening arrhythmias may have no symptoms while others with symptoms may not have a serious problem (6).

## **2.5 Symptoms depend on the type of arrhythmia**

### **Symptoms of tachycardia**

Tachycardia is when the heart beats quicker than normal symptoms include:

- Breathlessness(dyspnea).
- Dizziness.
- Syncope(fainting, or nearly fainting).
- Fluttering in the chest.
- Chest pain.
- Lightheadedness
- Sudden weakness.

### **Symptoms of bradycardia**

Bradycardia is when the heart beats slower than normal ,symptoms include:

- Angina(chest pain).
- Trouble concentrating.
- Confusion.
- Difficulties when exercising.
- Dizziness.
- Fatigue(tiredness).
- Lightheadedness.
- Palpitations.
- Shortness of breath.
- Syncope(fainting, or nearly fainting).
- Diaphoresis, or sweating <sup>(7)</sup>.

### **Symptoms of atrial fibrillation**

Atrial fibrillation is when the upper chambers of heart beat in an irregular pattern and out of synchrony with the lower chambers .symptoms often develop rapidly ,although sometimes ,there are no symptom:



- Angina(chest pain)
- Breathlessness(dyspnea)
- Dizziness.
- Palpitations
- Syncope(fainting, or nearly fainting.
- Weakness.

## **2.5 Risk factors for arrhythmia**

The following are possible risk factors for arrhythmia :

- Old age.
- Inherited gene defects.
- Heart problems.
- Hypothyroidism or hyperthyroidism.
- Some prescription medications ,and over the counter drugs.
- Hypertension.
- Obesity.
- Uncontrolled diabetes.
- Obstructive sleep apnea.
- Electrolyte imbalances.
- Heavy and regular alcohol.
- Too much caffeine <sup>(7)</sup>.

## **2. 6 Diagnosis of arrhythmia:**

The doctor will try to find out what triggers the patients arrhythmia this will involve a detailed interview, which may include the patient's medical history ,family history, diet, and lifestyle.

The following tests might be ordered:

### **EKG (Electrocardiogram)**

An EKG is a simple ,painless test that detects and records the heart electrical activity.

## **Holter and event monitor**

A holter monitor records the heart electrical signals for a full 24- or 48-hour period .an event is similar a holter , but it does not record all the heart beats .there are two type:

- 1- One uses a phone to transmit signals from the recorder while the patient is experiencing symptoms
- 2- The other is worn all the time for a long time .some time as long as a month. this device is a good for diagnosing rhythm disturbances that happen at random moment.

## **Other tests**

Other tests also are used to help diagnose arrhythmias:

### **Blood tests**

Blood tests check the level of substances in the blood , such as potassium can increase your chances of having an arrhythmia.

### **Chest x-ray:**

The images help the doctor check the state of the patients heart and lungs. A chest x-ray may also help a doctor determine whether the patient has any congenital heart defects.

### **Echocardiography**

This test uses sound waves to creates a moving picture of your heart size and shape of your heart and how well your heart chambers and valves are working.

### **Stress test**

Some heart problems are easier to diagnose when your heart is working hard and beating fast .during stress testing ,you exercise to make your heart work hard and beat fast while heart tests are done.

## **Implantable loop recorder**

This device detects abnormal heart rhythms .minor surgery is used to place this device under the skin in the chest area. The device can be used for as long as 12 to 24months <sup>(8-9)</sup>.

### **2.7 The causes of arrhythmia**

- Alcohol abuse.
- Diabetes.
- Drug abuse.
- Excessive coffee consumption.
- Heart disease.
- Hypertension.
- Hyperthyroidism.
- Mental stress.
- Scarring of the heart result from (coronary artery disease).
- Valvular heart disease.
- Cardiomyopathy.
- Smoking.
- Some dietary supplement <sup>(1)</sup>.

**2. 8 Type of arrhythmia** Arrhythmias are named by the place where they originate and by their rate. Arrhythmias are grouped as follows:

1. Rhythms originating in the sinus node
2. Rhythms originating in the atria
3. Rhythms originating in the junction
4. Rhythms originating in the ventricle
5. AV blocks

Arrhythmias are abnormalities in the origin, timing and sequence of cardiac depolarization. They may be fast (HR > 100/min; tachyarrhythmias) or slow (HR < 60/min; brad arrhythmias;<sup>(10)</sup>.

## **RHYTHMS ORIGINATING IN THE SINUS NODE**

**Sinus Bradycardia** All aspects of sinus bradycardia are the same as normal sinus rhythm except the rate is slower. It can be a normal finding in athletes and during sleep. Sinus bradycardia may be a response to vagal stimulation, such as carotid sinus massage, ocular pressure, or vomiting. Sinus bradycardia can be caused by inferior MI, myxedema, obstructive jaundice, uremia, increased intracranial pressure, glaucoma, anorexia nervosa, and sick sinus syndrome. Sinus bradycardia can be a response to several medications, including digitalis, beta-blockers, and some calcium channel blockers.

ECG findings include normal-width QRS complexes preceded by P waves at a rate less than 60/min.

### **Treatment**

Treatment of sinus bradycardia is not required unless the patient is symptomatic. If the arrhythmia is accompanied by hypotension, confusion, diaphoresis, chest pain, or other signs of hemodynamic compromise or by ventricular ectopy, 0.5 to 1.0 mg of atropine IV is the treatment of choice. Attempts are made to decrease vagal stimulation. If the arrhythmia is due to medications, they are held until their need has been reevaluated.

**Sinus Tachycardia** Sinus tachycardia is a sinus rhythm at a rate greater than 100 beats/min. Sinus tachycardia is a normal response to exercise and emotion. Sinus tachycardia that persists at rest usually indicates some underlying problem, such as fever, acute blood loss, shock, pain, anxiety, heart failure, hypermetabolic states, or anemia. Sinus tachycardia is a normal physiologic response to a decrease in cardiac output; cardiac output is the product of heart rate and stroke volume. Sinus tachycardia can be caused by the following medications: atropine, isoproterenol, epinephrine, dopamine, dobutamine, norepinephrine, nitroprusside, and caffeine

**Treatment** Treatment of sinus tachycardia is directed at the underlying cause. This arrhythmia is a physiologic response to a decrease in cardiac output, and it should never be ignored, especially in the cardiac patient. Because the ventricles fill with blood and the coronary arteries perfuse during diastole, persistent tachycardia can cause decreased stroke volume, decreased cardiac output, and decreased coronary perfusion secondary to the decreased diastolic time that occurs with rapid heart rates. Carotid sinus pressure may slow the heart rate temporarily and thereby help in ruling out other arrhythmias

## **Sinus Arrhythmia**

Sinus arrhythmia occurs when the sinus node discharges irregularly. It occurs frequently as a normal phenomenon and is commonly associated with the phases of respiration. During inspiration, the sinus node fires faster; during expiration, it slows. Digitalis toxicity may also cause this arrhythmia. Sinus arrhythmia looks like normal sinus rhythm except for the sinus irregularity.

### **ECG Characteristics**

- Rate: 60 to 100 beats/min

Rhythm: Irregular; phasic increase and decrease in rate, which may or may not be related to respiration

**Treatment** Treatment of sinus arrhythmia usually is not necessary. If the arrhythmia is thought to be due to digitalis toxicity, then digitalis is held. Atropine increases the rate and eliminates the irregularity

**Sinus Arrest** Sinus arrest occurs when sinus node firing is depressed and impulses are not formed when expected. The result is an absent P wave at the expected time. The QRS complex is also missing, unless there is escape of a junctional or ventricular impulse (seen below for description). If only one sinus impulse fails to form, this is usually called a sinus pause. If more than one sinus impulse in a row fails to form, this is termed a sinus arrest. Because the sinus node is not forming impulses regularly as expected, the PP interval in sinus arrest is not an exact multiple of the sinus cycle. Causes of sinus arrest include vagal stimulation, carotid sinus sensitivity, and MI interrupting the blood supply to the sinus node. Drugs such as digitalis, beta-blockers, and calcium channel blockers can also cause sinus arrest.

#### ECG Characteristics

- Rate: Usually within normal range, but may be in the bradycardia range
- Rhythm: Irregular due to absence of sinus node discharge .

**Treatment** Treatment of sinus arrest is aimed at the underlying cause. Drugs that are thought to be responsible are discontinued and vagal stimulation is minimized. If periods of sinus arrest are frequent and cause hemodynamic compromise, 0.5 to 1.0 mg of atropine IV may increase the rate. Pacemaker therapy may be necessary if other forms of management fail to increase the rate to acceptable levels <sup>(11-12)</sup>.

## **ARRHYTHMIAS ORIGINATING IN THE ATRIA**

### **Premature Atrial Complexes**

A premature atrial complex (PAC) occurs when an irritable focus in the atria fires before the next sinus node impulse is due to fire. PACs can be caused by caffeine, alcohol, nicotine, congestive heart failure (CHF), pulmonary disease, interruption of atrial blood supply by myocardial ischemia or infarction, anxiety, and hypermetabolic states. PACs can also occur in normal hearts.

## **ECG Characteristics**

- Rate: Usually within normal range.
- Rhythm: Usually regular except when PACs occur, resulting in early beats.

- P waves: Precede every QRS
- QRS complex: May be normal, aberrant (wide), or absent.

Treatment Treatment of P ACs usually is not necessary because they do not cause hemodynamic compromise. Frequent P ACs may precede more serious arrhythmias such as atrial fibrillation. Treatment is directed at the cause. Drugs such as quinidine, disopyramide, or procainamide can be used to suppress atrial activity if necessary.

## **Atrial Tachycardia**

Atrial tachycardia is a rapid atrial rhythm occurring at a rate of 120 to 250 beats/min. When the arrhythmia abruptly starts and terminates, it is called paroxysmal atrial tachycardia. Rapid atrial rate can be caused by emotions, caffeine, tobacco, alcohol, fatigue, or sympathomimetic drugs. Whenever the atrial rate is rapid, the A V node begins to block some of the impulses attempting to travel through it to protect the ventricles from excessively rapid rates. In normal healthy hearts the A V node can usually conduct each atrial impulse up to rates of about 180 to 200 beats/min. In patients with cardiac disease or who have taken too much digitalis, the A V node may not be able to conduct each impulse and atrial tachycardia with block occurs.

Treatment of atrial tachycardia is directed toward eliminating the cause and decreasing the ventricular rate. Sedation may terminate the rhythm or slow the rate. Vagal stimulation, either through carotid sinus massage or the Valsalva maneuver, may slow the rate or convert the rhythm to sinus rhythm. Digitalis slows the ventricular rate by increasing the block at the A V node, but it can also be the cause of atrial tachycardia with block and is discontinued if that is the case. Propranolol, verapamil, and diltiazem increase block at the A V node and may either slow the ventricular rate or terminate the tachycardia. Types IA, IC, and III antiarrhythmic may be effective in reducing the number of tachycardia episodes, but can also be proarrhythmic. Radiofrequency catheter ablation of the ectopic focus or reentry circuit is successful in many cases .

**Atrial flutter** In atrial flutter, the atria are depolarized at rates of 250 to 350 times per minute. Classic or typical atrial flutter is due to a fixed reentry circuit in the right atrium around which the impulse circulates in a counterclockwise direction, resulting in negative flutter waves in leads II and III and an atrial rate between 250 and 350 beats/min (most commonly 300 beats/min). At such rapid atrial rates, the A V node usually blocks at least half of the impulses to protect the ventricles from excessive rates. Causes of atrial flutter include rheumatic heart disease, atherosclerotic heart disease, thyrotoxicosis, heart failure, and myocardial ischemia or infarction. Because the ventricular rate in atrial flutter can be quite fast, symptoms associated with decreased cardiac output can occur. Mural thrombi may form in the atria due to the fact that there is no strong atrial contraction, and blood stasis occurs, leading to a risk of systemic or pulmonary emboli.



Treatment The immediate goal of treatment depends on the hemodynamic consequences of the arrhythmia. Ventricular rate control is the priority if cardiac output is significantly compromised due to rapid ventricular rates. Electrical (direct current) cardioversion may be necessary as an immediate treatment, especially if 1:1 conduction occurs. IV calcium channel blockers (verapamil or diltiazem) or betablockers can be used for ventricular rate control. Conversion to sinus rhythm can be accomplished by electrical cardioversion, drug therapy, or overdrive atrial pacing. Class IA (disopyramide, procainamide), type IC (flecainide, propafenone), or type III antiarrhythmics (sotalol, amiodarone, ibutilide, dofetilide) may convert flutter to sinus rhythm. These agents are also useful in maintaining sinus rhythm after conversion. Drugs that slow the atrial rate, like class IA or IC drugs, should not be used unless the ventricular rate has been controlled with an AV nodal blocking agent (a calcium channel blocker, betablocker, or digitalis). The danger of giving class IA or IC agents alone is that as atrial rate slows from 300 to 200 beats/min; for example, it is possible for the AV node to conduct each impulse rather than block impulses, thus leading to even faster ventricular rate.

### **Atrial Fibrillation**

Atrial fibrillation is an extremely rapid and disorganized pattern of depolarization in the atria. Atrial fibrillation is the most common rhythm seen in adults (next to sinus rhythm) and can be chronic or occur in paroxysms. Atrial fibrillation commonly occurs in the presence of atherosclerotic or rheumatic heart disease, thyrotoxicosis, CHF, cardiomyopathy, valve disease, pulmonary disease, MI, congenital heart disease, and after cardiac surgery. If the ventricular response to atrial fibrillation is very rapid, cardiac output can be reduced secondary to decreased diastolic filling time in the ventricles. Because the atria are quivering rather than contracting, atrial kick is lost, which can also reduce cardiac output. Another possible complication is mural thrombus formation in the atria due to stasis of blood as the atria quiver.

## **Treatment**

Treatment of atrial fibrillation is directed toward eliminating the cause, controlling ventricular rate, restoring and maintaining sinus rhythm, and preventing thromboembolism. Electrical cardio version may be necessary if the patient is hemodynamically unstable because of rapid ventricular rates. IV calcium channel blockers (diltiazem, verapamil) and beta-blockers are commonly used in the acute situation for ventricular rate control. Beta-blockers, calcium channel blockers, and digitalis can be used orally for long-term rate control. Atrial antiarrhythmic drugs used to convert atrial fibrillation to sinus rhythm and to maintain sinus rhythm include class IA agents (procainamide, disopyramide), class IC agents (flecainide, propafenone), and class III agents (amiodarone, sotalol, ibutilide, dofetilide). Anticoagulation with warfarin is necessary if atrial fibrillation is chronic. Non-pharmacologic therapies used for treatment of atrial fibrillation include implantable atrial defibrillators and radiofrequency catheter ablation. Atrial defibrillators detect the onset of atrial fibrillation and deliver a shock between two intracardiac leads to terminate atrial fibrillation. Ablation to create linear lesions within the atria (similar to the surgical Maze procedure) may be successful, as well as focal ablations around the orifice of the pulmonary veins in the left atrium <sup>(13)</sup>.

## **ARRHYTHMIAS ORIGINATING IN THE ATRIOVENTRICULAR JUNCTION**

Cells surrounding the A V node in the A V junction are capable of initiating impulses and controlling the heart rhythm.

### ***Premature Junctional Complexes***

Premature junctional complexes (PJs) are due to an irritable focus in the A V junction. Irritability can be due to coronary heart disease or MI disrupting blood flow to the A V junction, nicotine, caffeine, emotions, or drugs such as digitalis. Rate: 60 to 100 beats/min or whatever the rate of the basic rhythm .

**Treatment** is not necessary for PJs

Junctional Rhythm, Accelerated Junctional Rhythm, and Junctional Tachycardia  
Junctional rhythms can occur if the sinus node rate falls below the rate of the A V junctional pacemakers or when atrial conduction through the A V junction has been disrupted. Junctional rhythms commonly occur from digitalis toxicity or following inferior MI owing to disruption of blood supply to the sinus node and the A V junction. These rhythms are classified according to their rate: junctional rhythm usually occurs at a rate of 40 to 60 beats/min, accelerated junctional rhythm occurs at a rate of 60 to 100 beats/min, and junctional tachycardia occurs at rates of 100 to 250 beats/min.

**Treatment** Treatment of junctional rhythm rarely is required unless the rate is too slow or too fast to maintain adequate cardiac output. If the rate is slow, atropine is given to increase the sinus rate and override the junctional focus or to increase the rate of firing of the junctional pacemaker. If the rate is fast, drugs such as verapamil, propranolol, or digitalis may be effective in slowing the rate or terminating the arrhythmia. Because digitalis toxicity is a common cause of junctional rhythms, the drug should be held.

## **ARRHYTHMIAS ORIGINATING IN THE Ventricles**

Ventricular arrhythmias originate in the ventricular muscle or Purkinje system and are considered to be more dangerous than other arrhythmias because of their potential to severely decrease cardiac output. However, as with any arrhythmia, a ventricular rate is a key determinant of how well a patient can tolerate a ventricular rhythm. Ventricular rhythms can range in severity from mild, well-tolerated rhythms to pulseless rhythms leading to sudden cardiac death.

### **Ventricular tachycardia**

Ventricular tachycardia (VT) is present when five or more ventricular extrasystoles occur in rapid succession. VT may be monomorphic (originating from a single focus with identical QRS complexes) or polymorphic (may appear as an irregular rhythm, with varying QRS complexes). The duration may vary from a

few beats to many hours, and VT is ‘sustained’ if of more than 30-s duration. VT is often preceded by ectopic beats and evolves from a ventricular focus in the right or left ventricle that depolarizes with a rate of 120–250 bpm . There are no absolute criteria for establishing that a tachyarrhythmia is VT, but the following criteria are very suggestive that the rhythm is VT:

- Rate greater than 100 bpm (usually 150–200)
- Wide QRS complex (1q20 ms)
- Fusion beat but it is prudent for the non-expert to consider VT the ‘default’ diagnosis and seek specialist advice. Ventricular tachycardia is always serious, and the rate may be so fast that adequate ventricular filling is not possible. Because coronary blood flow occurs predominantly during diastole, high heart rates reduce filling time, resulting in poor coronary blood flow and myocardial Ischaemia. Sudden reduction in cardiac output is sufficient to cause cardiac arrest (so called ‘pulseless VT’) . Even when cardiac output is sufficient to produce a pulse, VT can lead quickly to heart failure and shock with pulmonary oedema and requires urgent treatment. There is a high risk of VT deteriorating to ventricular fibrillation and cardiac arrest.

VT is usually a consequence of structural heart disease that causes a breakdown of normal conduction patterns, increased automaticity (favouring ectopic foci) and activation of re-entrant pathways in the ventricular conduction system . It is often caused by ischaemic heart disease and occurs most frequently in the first few hours following MI. Other common causes of VT include electrolyte imbalance, cardiomyopathy and congenital long QT syndromes. Variants of VT include:

- Torsades de Pointes (twisting of the points): a distinctive pattern of VT in which the QRS axis shifts, giving a spindle-shaped pattern. Usually associated with a prolonged QT interval (congenital or acquired) and may occur with myocardial ischaemia or infarction).
- Accelerated ventricular rhythm (AVR): some- times called ‘slow VT’, presents at a rate between 60 and 100 bpm and typically occurs with underlying

ischaemic or structural heart disease. Often seen as a ‘reperfusion arrhythmia’. Treatment is not usually required unless the AVR is prolonged with hemodynamic compromise.

- Catecholaminergic polymorphic VT: Recently described VT that appears to be congenital, exercise or stress induced, most commonly found in pediatric cases and can result in syncope or sudden death.

VT will occur for periods where there is no haemodynamicdecompensation, but VT tends to deteriorate into unstable states and more malignant arrhythmias and thus should be treated withantiarrhythmic therapy such as amiodarone or lignocaine. Synchronizedcardio versionmay be necessary to stabilise the patient if medical therapy fails . If VT is associated with significant haemodynamic compromise or deteriorates into VF, basic and advanced life-support guidelines are followed <sup>(14)</sup>.

## **Premature Ventricular Complexes**

Premature ventricular complexes (PVCs) are caused by pre- mature depolarization of cells in the ventricular myocardium or Purkinje system or to reentry in the ventricles. PVCs can be caused by hypoxia, myocardial ischemia, hypokalemia, acidosis, exercise, increased levels of circulating catecholamines, digitalis toxicity, caffeine, alcohol, among other causes. PVCs increase with aging and are more common in people with coronary disease, valve disease, hypertension, cardiomyopathy, and other forms of heart disease. PVCs are not dangerous in people with normal hearts but are associated with higher mortality rates in patients with structural heart disease or acute MI, especially if left ventricular function is reduced. PVCs are considered potentially malignant when they occur more frequently than 10 per hour or are repetitive (occur in pairs, triplets, or more than three in a row) in patients with coronary disease, previous MI, cardiomyopathy, and reduced ejection fraction.

**Treatment** The significance of PVCs depends on the clinical setting in which they occur. Many people have chronic PVCs that do not need to be treated, and most of

these people are asymptomatic. There is no evidence that suppression of PVCs reduces mortality, especially in patients with no structural heart disease. If PVCs cause bothersome palpitations, patients are told to avoid caffeine, tobacco, other stimulants, and try stress reduction techniques. Low-dose beta-blockers may reduce PVC frequency and the perception of palpitations and can be used for symptom relief. In the setting of an acute MI or myocardial ischemia, PVCs may be precursors of more dangerous ventricular arrhythmias, especially when they occur near the apex of the T wave (Ron T PVCs). Unless PVCs result in hemodynamic instability or symptomatic VT, most physicians elect not to treat them. If PVCs are to be treated, IV lidocaine is usually the recommended drug. Other antiarrhythmic agents such as procainamide or amiodarone can be used IV for acute control. Beta-blockers are often effective in suppressing repetitive PVCs and have become the drugs of choice for treating post-MI PVCs that are symptomatic. Many other drugs effectively reduce the frequency of PVCs, including quinidine, disopyramide, flecainide, mexiletine, tocainide, moricizine, propafenone, and sotalol, but are rarely used for this purpose because of the potential for proarrhythmia and increased incidence of sudden death.

### **Ventricular Fibrillation**

Ventricular fibrillation (VF) is rapid, ineffective quivering of the ventricles and is fatal without immediate treatment. Electrical activity originates in the ventricles and spreads in a chaotic, irregular pattern throughout both ventricles. There is no cardiac output or palpable pulse with VF .

- Rate: Rapid, uncoordinated, ineffective
- Rhythm: Chaotic, irregular

**Treatment VF** requires immediate defibrillation. Synchronized cardioversion is not possible because there are no formed QRS complexes on which to synchronize the shock. Cardiopulmonary resuscitation (CPR) must be performed until a defibrillator is available, and then defibrillation at 360 J is recommended followed by CPR and drug therapy. Anti- arrhythmic agents such as lidocaine, procainamide,

amiodarone, or magnesium are commonly used in an effort to convert VF. Once the rhythm has converted, maintenance therapy with IV antiarrhythmic agents is continued. Beta-blockers and amiodarone appear to be the most effective agents for long-term drug therapy options. The implantable cardioverter defibrillator is becoming the standard of care for survivors of VF that occurs in the absence of acute ischemia<sup>(14)</sup>.

## **Ventricular Asystole**

Ventricular asystole is the absence of any ventricular rhythm: no QRS complex, no pulse, and no cardiac output. Ventricular asystole is always fatal unless treated immediately

Rate: None • Rhythm: Non

**Treatment** CPR must be initiated immediately if the patient is to survive. IV epinephrine and atropine may be given in an effort to stimulate a rhythm. If pacing is to be used, external pacing is instituted early in the resuscitation attempt. Asystole has a very poor prognosis despite the best resuscitation efforts because it usually represents extensive myocardial ischemia or severe underlying metabolic problems<sup>(15-16)</sup>.

Pulseless Electrical Activity(PEA) PEA is cardiac arrest with the presence of absence of adequate organ perfusion sufficient to maintain consciousness.

**Management** Cardiopulmonary resuscitation (CPR) with uninterrupted chest compressions and standard pharmacological interventions provide the basis of the treatment. Primary management involves treating the underlining cause (significant hypoxia, profound acidosis, severe hypovolemia, tension pneumothorax, Electrolyte imbalance, drug overdose, sepsis ,large myocardial infarction, massive pulmonary embolism, cardiac tamponade , hypoglycemia, hypothermia, etc.).Extracorporeal life support with prolonged failure of return to spontaneous circulation should also be considered.

## **ATRIOVENTRICULAR BLOCKS**

The term atrioventricular block is used to describe arrhythmias in which there is delayed or failed conduction of supraventricular impulses into the ventricles. A V blocks have been classified according to location of the block and severity of the conduction abnormality.

### **First-Degree Atrioventricular Block**

First-degree A V block is defined as prolonged A V conduction time of supraventricular impulses into the ventricles. This delay usually occurs in the A V node, and all impulses conduct to the ventricles, but with delayed conduction times. First-degree A V block can be due to coronary artery disease, rheumatic heart disease, or administration of digitalis, beta-blockers, or calcium channel blockers. First-degree A V block can be normal in people with slow heart rates or high vagal tone.

Rate: Can occur at any sinus rate, usually 60 to 100 beats/min • Rhythm: Regular.

**Treatment** Treatment of first-degree A V block is usually not required, but block should be observed for progression to more severe block.

**Second-Degree Atrioventricular Block** Second-degree A V block occurs when one atrial impulse at a time fails to be conducted to the ventricles. Second-degree A V block can be divided into two type :Mobitz type 1 (Wenckebach phenomenon):

There is progressive lengthening of the PR interval followed by a P wave, which is not conducted to the ventricle, and then repetition of the cycle. This is usually self-limiting (15 – 16).

### **Treatment**

Depends on the conduction ratio, the resulting ventricular rate, and the patient's tolerance for the rhythm. If ventricular rates are slow enough to decrease cardiac output, the treatment is atropine to increase the sinus rate and speed conduction through the A V node. At higher conduction ratios where the ventricular rate is



within a normal range, no treatment is necessary. If the block is due to digitalis or beta-blockers, those drugs are held. This type of block is usually temporary and benign, and seldom requires pacing, although temporary pacing may be needed when the ventricular rate is slow .

Mobitz type 2. The PR interval is constant but occasional P waves are not conducted to the ventricle. If high levels of block are present, e.g. 2:1 or 3:1 block, there is a significant risk that this will progress to complete heart block.

**Treatment** Treatment usually includes pacemaker therapy because this type of block is often permanent and progresses to complete block. External pacing can be used for treatment of symptomatic type II block until transvenous pacing can be initiated. Atropine is not recommended because it may result in further slowing of ventricular rate by increasing the number of impulses conducting through the A V node and bombarding the diseased bundles with more impulses than they can handle, resulting in further conduction failure <sup>(16)</sup>.

**Third-Degree (Complete) Atrioventricular Block** In third-degree (complete) heart block, the sinus node continues to fire normally, but the impulses do not reach the ventricles. The ventricles are stimulated by pacemaker cells either in the junction (at a rate of 40 to 60 beats/min) or in the ventricles (at a rate of 20 to 40 beats/min), depending on the level of the AV block. The causes of complete heart block are the same as for lesser degrees of AV block. Complete heart block is often poorly tolerated. If the rhythm is ventricular in origin, the rate is slow, and the pacemaker site is unreliable. The patient may be symptomatic because of a low cardiac output. A pacemaker site high in the bundle of His may provide an adequate rate to sustain cardiac output and is more dependable. A temporary pacing wire is usually inserted immediately, and when the patient is stabilized, a permanent pacemaker is implanted.

## 2.9 Complications of arrhythmia

- Stroke- fibrillation means that the heart is not pumping properly . this can cause blood to collect in pools and clots can form .if one of the clots dislodges it may

travel to a brain artery ,blocking it, and causing stroke . stroke can cause brain damage and can sometimes be fatal.

- Heart failure –prolonged tachycardia or bradycardiacan result in heart not pumping enough blood to the body and its organs–this is heart failure <sup>(16)</sup>.

## 2.10 Prevention

- adopting a heart healthy lifestyle can help prevent episodes of ventricular
- fibrillation primarily by reducing your risk of heart attack .a heart healthy lifestyle include:

**Not Smoking:** If patient smoke ,the single most important thing that can do to improve heart health is to stop .it is hard to smoking by patient himself ,so doctor to prescribe a treatment plan to help you kick the habit.

### Checking cholesterol

Have patient blood cholesterol levels checked regularly , through a blood test at doctor's office .if cholesterol levels are undesirably high ,the doctor can prescribe changes to the patient diet and medication to help lower the numbers and protect the cardiovascular health .

**Controlling blood pressure:** Have patient blood pressure checked every two years .the doctor may recommend more –frequent measurements if patient have high blood pressure or a history of coronary artery disease .

**Exercising regularly:** Regular exercise helps improve heart muscle function after heart attack .exercise does not have to be vigorous. For example, walking 30 minutes a day ,five days week , can improve patient health .

**Eating a heart-healthy diet:** Too much saturated fat and cholesterol in your diet can narrow arteries to your heart. Follow your doctors or dietitians advice on eating a heart –healthy diet . prepare heart –healthy meals together as a family .fish is part of a heart –healthy diet. It contains omega -3 fatty acids . which help improve blood cholesterol levels and prevent blood clots .eat plenty of fruits and vegetables <sup>(17)</sup>.

# **NURSING INTERVENTIONS FOR PATIENTS WITH ARRHYTHMIA**

Cardiac arrhythmias associated with altered myocardial automaticity ,conductivity or contractility can effect cardiac output .reduced cardiac output increases the risk of ineffective tissue perfusion .

Assess for sign of signs of ineffective tissue perfusion by system:

## **Renal**

- Oliguria or anuria

## **Gastrointestinal**

- Nausea
- Hypoactive or absent bowel sounds

## **Peripheral**

- Edema
- Altered skin color ,temperature ,sensation or integrity.
- Weak or absent pulse.

## **Cerebral**

- Dizziness
- Altered mental status(anxiety, confusion, syncope)
- Speech abnormality

## **Cardiopulmonary**

- Hypotension
- Abnormal respiratory rate
- Chest pain
- Dyspnea, crackles, wheezes
- Jugular vein distention

## **Nursing intervention for ineffective tissue perfusion:**

Assess for and report signs and symptoms of cardiac arrhythmias( e.g. irregular apical pulse , adult pulse rate below 60 or above 100beat /minute , radial pulse deficit ,syncope , palpitations)

- Reduce cardiac workload
- ✓ Position patient to minimizes discomfort and facilitate respiration.
- ✓ Minimizes anxiety with calm reassurance and education.
- ✓ Communicate rationale for monitoring and treatment.
- Initiate ECG monitor and pulse oximetry per policy
- IV access, oxygenation, medication, 12 lead –ECG as ordered , monitor vital signs.
- Positive inotropic agents (e.g. dobutamine , dopamine ) to increase myocardial contractility .
- Vasodilators (e.g. nitroglycerin) to decrease cardiac workload.
- Diuretics for elevated capillary wedge pressure.
- Morphine sulfate to reduce pain ,preload and anxiety.
- Anticipate the need to initiate cardiopulmonary resuscitation.
- Assess for contributing factors :pain , fluid and electrolyte imbalance , drug toxicity (digoxin),medication non-adherence.
- Provide psychosocial support for patient and family members.
- Patient teaching
- ✓ Importance of reporting chest pain, dyspnea, loss of consciousness ,ect.
- ✓ Educate and prepare patient for planned treatment such as:
- ✓ Echocardiogram
- ✓ Cardio version
- ✓ Catheter ablation
- ✓ Pacemaker insertion
- ✓ Centralvenouse catheter insertion <sup>(17)</sup>.

## **CHAPTER THREE**

### **Materials and Method**

#### **3.1 Study design**

The nature of the study is descriptive.

#### **3.2 Study area**

Omdurman is the second largest city in Sudan and Khartoum State ,lying on the western banks of the River Nile , opposite capital , Khartoum.

#### **3.3 Study setting**

Emergency and intensive care unit in military hospital . military hospital is located in baanet localization , lying on the western lie of white river Nile , it is a largest medical city in Khartoum state ,there are six department {medical, surgical, pediatric , obse and gyne ,psychiatric ,orthopedic department , coronary care unit , intensive care unit ,lab, nutrition department ,educational department and facilities ..other.....}

Trauma and emergency hospital located near the junction of blue and white Nile from western line and behind Alia hospital , limited by gasr of young and children from northern area , it is has triage, trauma unit ,asthma unit , {c1 –c2}, room A and B (resuscitation room), 2 critical care unit , 2 word VIP, and lab ..others.

#### **3.4 Study population**

nursing staff in emergency department and intensive care unit in military hospital .

#### **3.5 Inclusion criteria:**

Nurse work in emergency military hospital for at least one year and have university degree.

Nurses are a gree to be included in this study.

Nurses are available at the time of data collection.

#### **Exclusion criteria**

Nursing student.

Nurse not available at time of data collection.

### **3.6 Sampling technique**

Simple random sampling (SRS).

### **3.7 Sample size**

- Sample size was calculated using the formula :  $N/1+(d)^2$

Where N= the population under study.

D=degree of confidence- the researcher used 0,05

The selected sample size =90 subject

### **3.8 Data collection tools**

The data was collected using self administer questionnaire.

### **3.9 Data processing and analysis**

Computerized by using statistical package of social science(SPSS).

Descriptive statistic will be used for variables

P-value =0 .05.

Results will be show in tables.

### **Score system**

Score of questionair and interpretation of variables as the following  
weak, good, very good .

### **2.10 Ethical consideration**

- Letter was obtained from the university.
- Approval from military training manager.
- the participants was oriented by the aim of the study.
- verbal consent was obtained from participants.

## Chapter Four

### 4.1 Results

Table 1 . Distribution of study sample according to their gender, experience and educational level.

Categories	scale's	Frequency	Percent %
<b>Gender</b>	Male	24	27
	Female	66	73
	Total	90	100
<b>Experience</b>	1-5years	73	81
	5-10 years	14	16
	More than 10years	3	3
	Total	90	100
<b>educational level</b>	Diploma	1	1
	Bachaloria	77	86
	Master	12	13
	Total	90	100

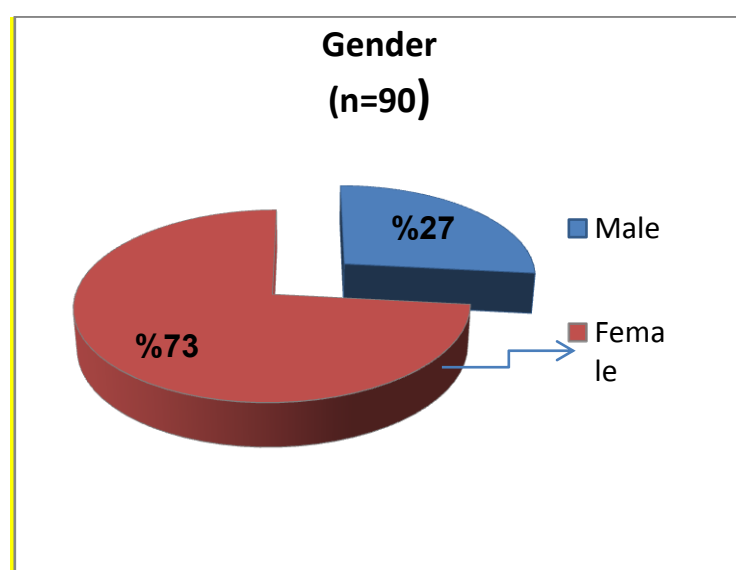


Figure (1) Shows that most of the nurses in this study are female with (73%) and the male are (27%)

### Educational level and experience

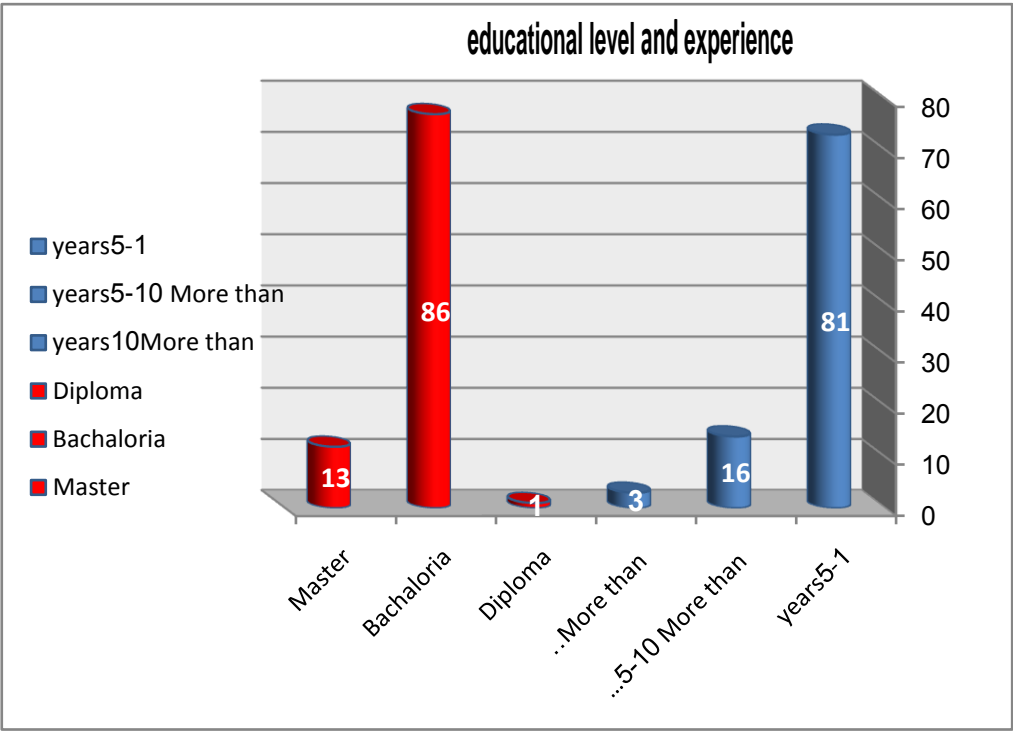


Figure (2) Distribution of the study sample according to qualification and years of experience.

Figure (2) shows that most of the nurses in this study are Bachelor 86% and master 13% from sample space then diploma 1%. and that most of the nurses in this study are (1-5) years' experience with 81% Then (more than 5-10 years) experience with 16% and finally (more than 10 years) experience with 3% .



Table 1 . Distribution of study sample according to their knowledge about training course in intensive care unit, meaning of arrhythmia and first part begin electrical

Categories	scale's	Frequency	Percent %
<b>treading about intensive care unit program</b>	Yes	45	50
	no	45	50
	Total	90	100
<b>Arrhythmia means</b> irregular heart beat (fast or low)	Yes	90	100
	Total	90	100
<b>the first part begins electrical pulsation from the heart is SA node</b>	Yes	88	98
	no	2	2
	Total	90	100

Table 1 show that 50% of the study sample were received training course in intensive care units and 50% didn't received, and all nurses are knowledgeable about meaning of arrhythmia and 98% know the first part begins electrical pulsation.

Table( 2): Distribution of study sample according to their knowledge about mechanism of arrhythmia ,and the main symptoms of tachycardia ,and the main symptom of AF ,and the first step when arrhythmia patient arrived in ER.

	Weak		Good		very good	
	Frequency	Percent %	Frequency	Percent %	Frequency	Percent %
the mechanisms of arrhythmia are	37	41%	3	3%	50	56%
the main symptoms of tachycardia are	74	82%	8	9%	8	9%
the main symptoms of bradycardia are	66	73%	18	20%	6	7%
the main symptoms of atrial fibrillation are	72	80%	14	16%	4	4%
the first step when arrhythmias patient arrived in emergency department is	56	63%	11	12%	23	26%

Table ( 2):show less than half of subjects( 41%)were are weak knowledge about the mechanism of arrhythmia and minimum ( 3%) of nurses are good knowledge regarding mechanism of arrhythmia , and more than half of nurses (56%) are very good knowledge about arrhythmia mechanism ,and the majority of the subject(82%) are weak knowledge about main symptoms of tachycardia , and minimum(9%) of sample study are very good knowledge about main symptoms of tachycardia , and more than half (73%) of nurses are weak knowledge regarding main symptoms of bradycardia , and the one quarter (20%) of sample study are good knowledge about main symptoms of bradycardia , and minimum (7%) of nurses are very good knowledge about bradycardia symptoms , and the majority of subjects (80%) are weak knowledge regarding main symptoms of atrial fibrillation , and less than one quarter (16%) are good knowledge about main symptoms of

atrial fibrillation , and minimum of sample study (4%) are very good knowledge about main symptoms of atrial fibrillation, and less than two third (63%) of nurses are weak knowledge regarding patients management in emergency , and minimum of subjects (12%) were are good knowledge about management of patients in emergency , and less than one third (26%) of nurses are very good knowledge regarding management of patients in emergency .

Table (3): Distribution of study sample according to their knowledge about risk factor of arrhythmia , and common causes of arrhythmia , and classification of arrhythmia , and type of atrial arrhythmia .

	Weak		Good		very good	
	Frequency	Percent %	Frequency	Percent %	Frequency	Percent %
predisposing factors of arrhythmia are	65	72%	18	20%	7	8%
what is the common causes of an arrhythmia	51	57%	21	23%	21	23%
what is the common causes of an arrhythmia	70	78%	13	14%	7	8%
arrhythmias is grouped according to	70	77%	6	7%	14	16%
the type of atrial arrhythmia	59	66%	16	18%	15	17%

Table (3) show most (72%) of sample study are weak knowledge about predisposing factor of arrhythmia , and minimum of nurses (8%) are very good knowledge regarding predisposing factor of arrhythmia ,and more than three quarters (78%) of sample study are weak knowledge about common causes of arrhythmia , and the minimum of nurses (8%) are very good knowledge about common causes of arrhythmia, and more than three quarters (77%) are weak knowledge about classification of arrhythmia , and less than one quarters of nurses (16%) are very good knowledge about classification of arrhythmia ,and two third (66%) of sample study are weak knowledge regarding type of arrhythmia ,and less than one quarter (17%) of nurses are very good knowledge about type of arrhythmia .

Table (4):Distribution of study sample according to their knowledge about common type of ventricular arrhythmia , and the effective management of atrial fibrillation , and the effective management of a systole patient .

	<b>Weak</b>		<b>good</b>		<b>very good</b>	
	<b>Frequency</b>	<b>Percent %</b>	<b>Frequency</b>	<b>Percent %</b>	<b>Frequency</b>	<b>Percent %</b>
the common type of ventricular arrhythmia	68	76%	12	13%	10	11%
The effective management of atrial fibrillation	64	71%	17	19%	9	10%
the effective management for a systole patient	54	60%	18	20%	18	20%

Table (4) show more than three quarters (76%) of nurses are weak knowledge about common type of ventricular arrhythmia , and minimum of nurses (13%) are very good knowledge regarding common type of ventricular arrhythmia , and minimum of nurses (11%) are very good knowledge about common types of ventricular arrhythmia , and less than three quarters (71%) of nurses are weak knowledge about effective management of atrial fibrillation , and less than one quarter (19%) of sample study are good knowledge about effective management of atrial fibrillation , and minimum of nurses are very good knowledge regarding effective management of atrial fibrillation , more than half (60%) of subjects are weak knowledge about effective management of a systole patient , and one quarter (20%) of study sample are good knowledge about effective management of a systole patient , and one quarter (20%) of nurses are very good knowledge about effective management of a systole patient.

Table (5): Distribution of study sample according to their knowledge regarding treatment of tachycardia , useful method of arrhythmia preventions ,nursing management of arrhythmia , and common complications .

	Weak		good		very good	
	Frequency	Percent %	Frequency	Percent %	Frequency	Percent %
the treatment of tachycardia a	73	81%	13	14%	4	4%
he useful method of arrhythmia prevention are	47	53%	19	21%	24	27%
the emergency nursing management of arrhythmia	59	65%	16	18%	15	17%
The common complication of arrhythmia is	20	23%	1	1%	69	77%

Table (5):show the majority of sample study (81%) are weak knowledge about treatment of tachycardia , and less than one fifth (14%) of nurses are good knowledge about treatment of tachycardia , and minimum (4%) of nurses are very good knowledge regarding treatment of patient with tachycardia . more than half(53%) of subjects are weak knowledge about useful method of preventions from arrhythmia , and more than one fifth (21%) of nurses are good knowledge about useful method of prevention from arrhythmia , and more than one quarter (27%) of nurses are very good knowledge about method of arrhythmia prevention. Less than two third (65%) of nurses are weak knowledge regarding nursing management of arrhythmia in emergency department , and less than one fifth (18%) of nurses are good knowledge about nursing management of arrhythmia in emergency , and less than one fifth (17%) of nurses are very good knowledge about nursing management of arrhythmia in emergency department . more than

one fifth of nurses (23%) are weak knowledge about common complication of arrhythmia , and more than three quarters (77%) of nurses are very good knowledge regarding the common complications of arrhythmia .

Table 6. Distribution of study sample according to correlation between knowledge and gender and experience and educational level and training about intensive care unit program.

**Correlations of Spearman's Test:**

	<b>Knowledge &amp; Gender</b>	<b>Knowledge &amp; experience</b>	<b>Knowledge &amp; educational level</b>	<b>Knowledge &amp; training about intensive care unit program</b>
<b>Spearman's</b>	-.185*	-.088	.219*	.074
<b>Sig. (2 – tailed)</b>	.040	.204	.019	.243

according to above table(6) we found the value of the Spearman's **Correlation between Knowledge and Gender** . is= (-.185\* ) and probability value. (p-value)= (.040) and we saw that it less than ( 0.05 ) and it lead to accept the Correlation is significant at the 0.05level (2- tailed). And the Spearman's **Correlation between Knowledge and experience**. is= (-.185\* ) and probability value. (p-value)= (.204) and we saw that it greater than ( 0.05 ) and it lead to accept the Correlation is not significant at the 0.05level (2- tailed . And the Spearman's **Correlation between Knowledge and educational level**. is= (.219\*) and probability value. (p-value)= (.019) and we saw that it less than ( 0.05 ) and it lead to accept the Correlation is significant at the 0.05level (2- tailed). And the Spearman's **Correlation between Knowledge and &training about intensive care unit program**. is= (.074) and

probability value. (p-value)= (.243) and we saw that it greater than ( 0.05 ) and it lead to accept the Correlation is not significant at the 0.05level (2- tailed).

Table 7 . Distribution of study sample to manage the knowledge in all question in the study

<b>One-Sample Statistics</b>						
	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>scale's direction</b>	<b>T</b>	<b>Sig. (2-tailed)</b>
<b>Knowledge</b>	90	2.2	.847	Weak	-13.32	.000

according to above table (7) we found the mean is (2.2) and the Std.Deviation is (0.847) and the value of the t test. is= (-13.32) and degree of freedom is (89) and the probability value.(p-value)= (0.000 ) and we saw that it less than ( 0.05 ) from p-value assigned and it lead to accept the alternative Hypothesis which say's.....

## Discussion

Disturbances in cardiac rhythm are common in the ICU, and this highlights the need for careful monitoring of all patients. The study was conducted during the period of the study from March to September 2017 in the emergency department and Intensive care unit in Military Hospital to assess nurses' knowledge regarding the care of patients with arrhythmia.

The study disclosed that half (50%) of nurses received training in ICU, and 100% of nurses are knowledgeable about the means of arrhythmia, and less than half of subjects (41%) have weak knowledge about the mechanism of arrhythmia, and a minimum (3%) of nurses have good knowledge regarding the mechanism of arrhythmia, and more than half of nurses (56%) have very good knowledge about the mechanism of arrhythmia, and the majority of subjects (82%) have weak knowledge about the main symptoms of tachycardia, and a minimum (9%) of the sample study have very good knowledge about the main symptoms of tachycardia, and more than half (73%) of nurses have weak knowledge regarding the main symptoms of bradycardia, and one quarter (20%) of the sample study have good knowledge about the main symptoms of bradycardia, and a minimum (7%) of nurses have very good knowledge about bradycardia symptoms, and the majority of subjects (80%) have weak knowledge regarding the main symptoms of atrial fibrillation, and less than one quarter (16%) have good knowledge about the main symptoms of atrial fibrillation, and a minimum of the sample study (4%) have very good knowledge about the main symptoms of atrial fibrillation, and less than two thirds (63%) of nurses have weak knowledge regarding patient management in the emergency, and a minimum of subjects (12%) have good knowledge about patient management in the emergency, and less than one third (26%) of nurses have very good knowledge regarding patient management in the emergency.



The result show most (72%) of sample study are weak knowledge about predisposing factor of arrhythmia , and minimum of nurses (8%) are very good knowledge regarding predisposing factor of arrhythmia ,and more than three quarters (78%) of sample study are weak knowledge about common causes of arrhythmia , and the minimum of nurses (8%) are very good knowledge about common causes of arrhythmia, and more than three quarters (77%) are weak knowledge about classification of arrhythmia , and less than one quarters of nurses (16%) are very good knowledge about classification of arrhythmia ,and two third (66%) of sample study are weak knowledge regarding type of arrhythmia ,and less than one quarter (17%) of nurses are very good knowledge about type of arrhythmia .

This study show more than three quarters (76%) of nurses are weak knowledge about common type of ventricular arrhythmia , and minimum of nurses (13%) are very good knowledge regarding common type of ventricular arrhythmia , and minimum of nurses (11%) are very good knowledge about common types of ventricular arrhythmia , and less than three quarters (71%) of nurses are weak knowledge about effective management of atrial fibrillation , and less than one quarter (19%) of sample study are good knowledge about effective management of atrial fibrillation , and minimum of nurses are very good knowledge regarding effective management of atrial fibrillation , more than half (60%) of subjects are weak knowledge about effective management of a systole patient , and one quarter (20%) of study sample are good knowledge about effective management of a systole patient , and one quarter (20%) of nurses are very good knowledge about effective management of a systole patient ,and the majority of sample study (81%) are weak knowledge about treatment of tachycardia , and less than one fifth (14%) of nurses are good knowledge about treatment of tachycardia , and minimum (4%) of nurses are very good knowledge regarding treatment of patient with tachycardia . more than half(53%) of subjects are weak knowledge about useful method of preventions from arrhythmia , and more than one fifth (21%) of nurses are good

knowledge about useful method of prevention from arrhythmia , and more than one quarter (27%) of nurses are very good knowledge about method of arrhythmia prevention. Less than two third (65%) of nurses are weak knowledge regarding nursing management of arrhythmia in emergency department , and less than one fifth (18%) of nurses are good knowledge about nursing management of arrhythmia in emergency , and less than one fifth (17%) of nurses are very good knowledge about nursing management of arrhythmia in emergency department . more than one fifth of nurses (23%) are weak knowledge about common complication of arrhythmia , and more than three quarters (77%) of nurses are very good knowledge regarding the common complications of arrhythmia .According to finding results there is significant correlation between knowledge and gender and not significant correlation between knowledge and experience and training in Intensive care unit , this finding similar to the study done by Samira HamadehKerbage in Australia at 2016 .

# **CHAPTER FIVE**

## **5.1 Conclusion**

### **5.2 Recommendations**

Recommendations for hospital manager , policy maker and other researcher:

- 1) Need for specialist arrhythmias nurses in Sudan as in UK , and USA.
- 2) Specific course about basic and advanced life support, and management must be established for nursing staff to enhance them to develop management of arrhythmias.
- 3) Improve nursing knowledge regarding care of arrhythmia patients.

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## Shandiuniversity

### Faculty of graduate studies and scientific research

Questionnaire about nurses knowledge regarding care of patients with arrhythmia in emergency department and intensive care unit in military hospital

Put mark (√) if answer is wright and ( X) if answer is wrong .

1- Gender :

a) Male ( ) Female ( )

2-experience:

- a) 1-5years ( )
- b) More than 5-10 years ( )
- c) More than 10years ( )

3-educational level

- a) Diploma ( )
- b) Bachelor ( )
- c) Master ( )
- d) BHD ( )

4-treaning about intensive care unit program:

Yes ( ) no ( )

5-Arrhythmia means:

Irregular heartbeats (fast or low)

Yes ( ) no ( )

6-the first part begins electrical pulsation from the heart is SA node

Yes ( ) no( )

7-the mechanisms of arrhythmia are:

- a) Automaticity ( )
- b) Re-entry ( )
- c) Trigger activity ( )
- d) all ( )

8-the main symptoms of tachycardia are:

- a) Breathlessness ( )
- b) Fluttering in chest ( )
- c) Lightheadedness ( )
- d) Sudden weakness ( )

9-the main symptoms of bradycardia are:

- a) Chest pain ( )
- b) Confusion ( )
- c) Diaphoresis ( )
- d) Fatigue ( )

10-the main symptoms of atrial fibrillation are:

- a) Palpitation ( )
- b) Chest pain ( )
- c) Weakness ( )
- d) Syncope ( )

11-the first step when arrhythmias patient arrived in emergency department is:

- a) Check electrolyte ( )
- b) Obtain 12 lead ECG ( )
- c) Apply A.B.C E approach ( )
- d) Check cardiac enzyme ( )

12-predisposing factors of arrhythmia are:

- a) heart problems ( )
- b) old age ( )
- c) inherited gene defects ( )
- d) hypo-hyperthyroidism ( )

13-what is the common causes of an arrhythmia?

- a) Alcohol abuse ( )
- b) Valvular heart disease ( )
- c) Hypertension ( )
- d) Diabetes mellitus ( )

14-the useful diagnostic method for diagnosis of arrhythmias are:

- a) Electrocardiography (EKG) (     )
- b) Event recorder (     )
- c) Medical –family history (     )
- d) Chest x-ray (     )

15- arrhythmias is grouped according to:

- a) Rhythms originating in sinus node (     )
- b) Rhythms originating in atria (     )
- c) Rhythms originating in junction (     )
- d) Rhythms originating in ventricle (     )

16-the type of atrial arrhythmia are:

- a) Premature atrial complexes (     )
- b) Atrial tachycardia (     )
- c) Atrial flutter (     )
- d) Atrial fibrillation (     )

17-the common type of ventricular arrhythmia:

- a) Torsade de pointes (     )
- b) Premature ventricular complexes (     )
- c) Ventricular tachycardia (     )
- d) A systole (     )

18-the common type of arrhythmias are:

- a) Atrial fibrillation ( AF) (     )
- b) Asystole (     )
- c) Ventricular tachycardia( VT) (     )
- d) Ventricular fibrillation( VF) (     )

19-the effective management of atrial fibrillation :

- a) Eliminating the cause (     )
- b) Controlling ventricular rate (     )
- c) Restoring and maintaining sinus rhythm (     )



d) Preventing thromboembolism ( )

20-the effective management for a systolepatient :

a) Cardiopulmonary resuscitation (CPR) ( )

b) Advanced life support (ALS) ( )

c) Defibrillation ( )

d) Antiarrhythmic medication ( )

21-the treatment of tachycardia are:

a) Vagal maneuvers ( )

b) Anticoagulants ( )

c) Cardiopulmonary resuscitation (CPR) ( )

d) Cardio version ( )

22-the usefulmethod of arrhythmia prevention are:

a) Stop smoking ( )

b) Checking cholesterol ( )

c) Controlling blood pressure ( )

d) Exercising regularly ( )

23-the emergency nursing management of arrhythmia:

a) Nursing assessment for signs of ineffective tissue perfusion ( )

b) Reduce cardiac workload ( )

c) Initiate electrocardiography monitor ( )

d) Intravenous access ,oxygenation ( )

24-The common complication of arrhythmia is:

a) Stroke ( )

b) Heart failure ( )

c) Sudden death ( )

d) All ( )