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knowledge of patient with mechanical valve replacement about oral anti co-agulant therapy in Sudan heart center in (2017)

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قال تعالى:

((اللَّهُ لاَ إِلَهَ إِلاَّ هُوَ الْحَيُّ الْقَيُّومُ لاَ تَأْخُذُهُ سِنَةٌ وَلاَ نَوْمٌ لَّهُ مَا فِي السَّمَاوَاتِ وَمَا فِي الأَرْضِ مَن ذَا الَّذِي يَشْفَعُ عِندَهُ إِلاَّ بِإِذْنِهِ يَعْلَمُ مَا بَيْنَ أَيْدِيهِمْ وَمَا خَلْفَهُمْ وَلاَ يُحِيطُونَ بِشَيْءٍ مِّنْ عِلْمِهِ إِلاَّ بِمَا شَاء وَسِعَ كُرْسِيُّهُ السَّمَاوَاتِ وَالأَرْضَ وَلاَ يَؤُودُهُ حِفْظُهُمَا وَهُوَ الْعَلِيُّ الْعَظِيمُ)).

صدق الله العظيم

سورة البقرة الاية الاية (255)

Dedication

To my dear mother

And my great father for their endless care, love and for what they taught me in life
TO my husband

To my brothers and sisters

To my friends and colleagues

Acknowledgement

The magnificent thanks for Allah liege lord

Who helped to present this Study.

To shandi university sciences

My sincere appreciation, thanks and respect provided to Dr/Higazi Mohammed Ahmed for his valuable and inspiring guidance and supervision.

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Abstract

Intrudiction:Oral anticoagulants are used to treat and prevent blood clots in blood vessels. Rheumatic heart disease is a chronic heart condition caused by Rheumatic fever that is caused by scaring and deformity of heart valves. Surgical interventions for valve disorders include valve repair or valve replacement with Mechanical prosthesis, Biological or Homograft valves. Valve replacement patients should know the important of anticoagulants therapy and prevention of complications. So, the study was conducted on assessment of knowledge on oral anticoagulation therapy among valve replacement patients in Sudan heart center.

Objective:The study objective was to assess the knowledge on oral anticoagulant therapy among patients with valve replacement surgery and to identify the association between the knowledge and demographic & clinical variables among patient with value replacement surgery.

Methodology: A cross sectional descriptive research study was conducted among 30 patients who underwent valve replacement surgery. The samples were selected on the basis of convenience sampling technique. The knowledge regarding anticoagulation therapy was assessed through validated questionnaire after informed consent.

Result : The study result show the patient had good knowledge(100%) about the time of taken drugs and about the adverse effect (46.6%) and satisfied knowledge relevant that the therapeutic level of INR and (53.3%) about the adverse effect of the drugs ,(16.6%) is poor about the complication of the drugs . According to finding of the current study ,it was concluded that ,good percentage of knowledge regarding of take the drugs dose ,also good about the sing and symptom of increase INR level ,also about how to avoid the risk of bleeding .Also show satisfied knowledge regarding the therapeutic level of INR ,also about when to stop the drug if under going to surgery ,also about what do if need any new medication Also show poor knowledge regarding the complication of drugs and sign and symptom of the drug ,and habit affected in the drug action

Recommendation

Educational session are necessary to improve patient awareness regardin the anticoagulant therapy .

There are should be awareness of the possibility of valve thrombosis if not compliance of anti coagulant therapy and awareness about diet , habit that affected the drug.

مستخلص الدراسة:

يتم استخدام مضادات التخثر عن طريق الفم لعلاج ومنع جلطات الدم في الأوعية الدموية. أمراض القلب الروماتيزمية هي حالة القلب المزمنة الناجمة عن الحمى الروماتيزمية التي تسببها ندبة وتشوه صمامات القلب. وتشمل التدخلات الجراحية لاضطرابات إصلاح صمام أو استبدال صمام مع الاصطناعية بدلة، البيولوجية أو طعم الصمامات. وينبغي أن يعرف المرضى استبدال صمام المهم من مضادات التخثر العلاج والوقاية من المضاعفات.لذلك، أجريت الدراسة على تقييم المعرفة عن العلاج عن طريق الفم منع تخثر الدم بين استبدال الصمام المرضى في مركز قلب السودان. وكان هدف الدراسة هو تقييم المعرفة حول العلاج المضاد للتخثر عن طريق الفم بين المرضى الذين يعانون جراحة استبدال صمام وتحديد الارتباط بين والمعرفة والمتغيرات الديموغرافية والسريرية بين المريض مع القيمة جراحة استبدال. وكانت دراسة بحثية وصفية مقطعية أجريت بين 30 مريضا خضعوا لعملية استبدال صمام. تم اختيار العينات على أساس تقنية أخذ العينات الملائمة. تم تقييم المعرفة بشأن العلاج منع تخثر الدم من خلال الاستبيان المصادق عليه بعد الموافقة المستنيرة. اظهرت نتائج الدراسة ان لدى المريض معرفة جيده (100٪) عن وقت تناول العقاقير، وعن التأثير السلبي (46.6٪) والمعارف ذات الصلة ان المستوى العلاجي INR (53.3٪) عن التأثير السلبي للأدوية ، (16.6٪) فقراء حول مضاعفات العقار . وفقا لإيجاد الدراسة الحالية، استنتج أن نسبة جيدة من المعرفة بشأن اتخاذ جرعة، وأيضا جيدة عن الغناء وأعراض زيادة مستوى إنر ، وأيضا حول كيفية تجنب خطر النزيف. تظهر أيضا معرفة راضية عن المستوى العلاجي من إنر، وأيضا عن متى لوقف الدواء إذا كان قيد الذهاب إلى الجراحة، وأيضا حول ما إذا كان بحاجة إلى أي دواء جديد تظهر أيضا ضعف المعرفة بشأن مضاعفات العقار من حيث علامات وأعراض الدواء، والعادات التي توثر علي العقار .

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List of Abbreviations

VKAs	**Vitamin k antagonist**
AMI	**Acute Myocardial Infarction**
INR	**International normalized ratio**
PT	**Prothrombin time test**

1-INTRODUCTION

valve replacement surgery is the replacement of one or more of the heart valve with either artificial heart valve or a bio-prosthesis. After valve replacement surgery, there is a risk for blood clot formation. The clots may dislodge and can travel any ever in the circulatory system results sever complication such arrhythmias, infarctions, stroke, pulmonary embolism, ischemia, cerebral ischemia, etc. To prevent all these complication anticoagulation therapy is important. Permanent anticoagulation therapy is justified by an increased risk of thromboembolic complications after replacement of any valve. Anticoagulants are medicines that prevent the blood from clotting.(1)

The major side effects of anticoagulant medication is bleeding. If patients discontinue anti-coagulations therapy, it leads to major complications such as stroke, thromboembolism, cardiovascular complications and sudden cardiac death. At the same time regular anticoagulation therapy will cause bleeding also. So, the patients should have knowledge on anticoagulation therapy and preventive measures of complications. The study demonstrated that discontinuing oral anticoagulant therapy within the first 3 months after surgery is associated with a significant increase in the risk of stroke, thromboembolic complications and cardiovascular death. After data collection, the patients were educated on oral anticoagulant therapy and precautions to be followed during the therapy to prevent complications.(2)

These things will help to the patients to gain adequate knowledge about oral anticoagulant therapy and prevent complications. The patients with valve replacement were not having adequate knowledge about importance of oral anticoagulants, diet to be followed during anti-coagulation therapy and how to prevent complications by following simple measures. Health education may improve knowledge on anti-coagulation therapy and its helps to prevent complications.(3)

12-Justification

Oral anticoagulants are used to treat and prevent blood clots in blood vessels. Rheumatic heart disease is a chronic heart condition caused by Rheumatic fever that is caused by scaring and deformity of heart valves. Surgical interventions for valve disorders include valve repair or valve replacement with Mechanical prosthesis, Biological or Homograft valves. Valve replacement patients should know the important of anticoagulants therapy and prevention of complications.So, the study was conducted on assessment of knowledge on oral anticoagulation therapy among valve replacement patients in sudan cardic center. The study objective was to assess the knowledge and comliance on oral anticoagulant therapy among patients with valve replacement surgery(4)

1:3Objective of the study

1:3:1General objective

Awareness of patient with mechanical valve replacement about oral anti co-agulant therapy

13:2:SPECIFIC Objectives:

- To assess the Awareness on oral anti-coagulation therapy among patients with valve replacement surgery.
  To identify the patient about sign and risk of bleeding.
- To assess knowledge of patient about dose and complication of warfarin .
- To assess knowledge of patient about therapeutic INR and when you need to do INR..

2-1: What are the heart valve:

Heart valves are like one-way doors that control the direction of blood flow between the four chambers of the heart. There are two upper chambers (the atria) and two lower chambers (theventricles) The atria receive blood from the body and pump it into the ventricles. The ventricles pump blood away from the heart to the rest of the body.

With each heartbeat, blood is squeezed from the atria into the ventricles, and then out of the ventricles to the rest of the body. After each contraction of the atria or the ventricles, the inner flaps of the valves (often called 'cusps' or 'leaflets') come together to seal off the chambers of the heart and make sure that the blood does not flow backwards. They are forced open again by the normal pumping action of the heart to allow forward blood flow.(5)

2-1-1 The four heart valves are:

- the tricuspid valve , on the right side of the heart, which controls the blood flow between the right atrium and the right ventricle.
- the mitral valve , on the left side of the heart, which controls the blood flow between the left atrium and the left ventricle.
- the pulmonary valve , on the right side of the heart, which separates the right ventricle and the pulmonary artery – the blood vessel that carries blood from the heart to the lungs.
- the aortic valve , on the left side of the heart, which separates the left ventricle and the aorta. (6)

Pulmonary artery:

Blood that has circulated through your body has had most of its oxygen and nutrients removed. It returns into the right atrium, passes through the tricuspid valve into the right ventricle, and is then pumped through the pulmonary valve into the vessels leading to your lungs.

The lungs add needed oxygen to the blood and remove carbon dioxide waste. Now the blood returns to your heart, flowing from the lungs into the left atrium. From the left atrium, the blood passes through the mitral valve into the left ventricle.

Finally, it's pumped through the aortic valve into blood vessels supplying the rest of your body.

2-1-2-What is heart valve Surgery:

Heart valve surgery is an operation to fix a damaged or faulty heart valve. It usually takes between four and six hours.

There are two main types of heart valve surgery that you can have: valve repair and valve replacement. Valve repair Sometimes a faulty valve can be repaired by cutting away excess tissue in the cusps of the valve and sewing the edges together. It can also be repaired by shortening or connecting the cords that act like hinges on the valve.(6)

Special rings called 'prosthetic rings' or 'annuloplasty rings' (see diagram below) can also be used to narrow an enlarged valve and strengthen the repair. Another method used to open a narrowed valve is called 'balloon valvotomy'. In this procedure, a small tube (a 'catheter') is inserted into an artery in your arm or groin and guided into your heart. Once it is positioned within the problem valve, a special balloon at the tip of the catheter is inflated to stretch open the valve. The catheter and balloon are then removed. An advantage of valve repair operations is that usually your own valve tissues are used in the repair.(6)

Valve replacement:

If a valve can't be repaired, it is sometimes removed and replaced with a new valve. The new valve is sewn onto a rim of tissue that is kept from the original valve. Several types of replacement valves are used. They fall into two groups.

Biological tissue valves:

These are human or animal valves. Animal valves (usually taken from a cow or pig) are mounted in a cloth-covered metal or plastic frame to make them easier to insert. Human valves are taken from donated human hearts and can be sewn directlyinto place.(6)

Mechanical valves:

These have some advantages over tissue valves because they last longer. However, blood clots can form on the synthetic material. To overcome this, anti-clotting medicine needs to be taken for life.(6)

2-1-3-What happens during heart valve surgery:

During the operation, your surgeon will cut down the midline of your chest, through your breastbone, to reach your heart. Your body will be kept cool to protect your vital organs by slowing down their working rate so that they need less oxygen. A heart-lung machine will take over the function of your heart and lungs. If you need a blood transfusion, all blood products used for transfusion in Australia are strictly screened to protect patients against viruses that can cause hepatitis and AIDS.

Sometimes you can arrange to donate some of your own blood before you have surgery, so that you can use it if you need a blood transfusion. However, this isn't always possible.(6)

2-1-4-Why do I need heart valve surgery:

You need heart valve surgery because your heart valves are not working properly and your doctor has diagnosed you with heart valve damage. Sometimes people are born with damaged valves, which may be fixed soon after birth or later in life.

Disease or infection can also damage your valves. Rheumatic fever is a frequent cause of valve damage. It makes a valve gradually become stiff so that it doesn't open and close properly. A damaged valve that limits forward blood flow by not opening properly is called a 'stenotic valve' (see diagram below). A damaged valve that doesn't close properly, allowing blood to flow back into the chamber, is called an 'incompetent valve' or a 'regurgitant valve'. Often both conditions are present.

When a valve is damaged, your heart cannot pump blood efficiently. It has to work harder to deliver oxygen-rich blood around your body. An overworked heart may begin to weaken, causing shortness of breath, pain, tiredness and a build-up of fluid in the body. If this happens, the valve may have to bereplaced or repaired(6)

2-1-5-What will happen after heart valve surgery:

After the operation, you will be taken to a recovery area or intensive care unit for close supervision until you wake up from the anaesthetic. You will probably stay in the intensive care unit for one or two days. After the intensive care unit, you will be moved to another ward until you are ready to go home. Before you leave hospital, your doctor will make follow-up appointments for you to discuss your medicines, wound care and activities with them. Your cardiologist will continue to oversee your general heart health. Your first outpatient appointment will

usually be two to four weeks after you leave hospital. About four to six weeks after leaving hospital, you will see your surgeon, or a member of the surgical team. Your doctor will check your wound and general progress, and you may also have an X-ray at this time.(7)

2-1-6-Will I feel pain after the operation?

You will probably feel quite sore, especially in the first few days after the operation. You will be given painkillers regularly to make sure that you don't feel severe pain. If the pain starts to build up, tell your nurse sooner rather than later. You and your nurse need to communicate and manage your pain together. Medicine won't get rid of all of your pain, but it can manage it. Stronger painkilling medicines are needed for only a few days, so there is very little risk of becoming addicted to them.(7)

2-1-7-How long will I have to stay in hospital:

This varies depending on your condition and your response to surgery. On average, after heart valve surgery, people stay in hospital for six to nine days. Normal recovery from heart surgery takes four to six weeks. During this time, you will begin to strengthen your muscles and return to your usual activities. Soon after your operation, your chest wound will be exposed to the air, allowing it to dry. After a few days, the wound can be cleaned.

Sometimes wire or special strips of tape are used to hold the breastbone together. These do not need to be removed. It takes about six to 12 weeks for the breastbone to heal completely. During that time you shouldn't lift anything heavy. After major surgery, such as heart valve surgery, recovery time may seem to pass slowly. Your

body has been slowed down by the lowered activity, lack of good sleep, medicines and the surgery itself. You may feel drained, physically and emotionally. Some hospitals run outpatient rehabilitation programs. These can be a very important part of your recovery and will help you to continue the gradual increase in activity you began in hospital.(7)

2-2-1-Oral Anticoagulation Therapies

Oral anticoagulants, also called vitamin K antagonists (VKAs), are used to prevent the occurrence or increase of unwanted blood clots. They inhibit enzymes called vitamin K epoxide reductase and vitamin K reductase. These enzymes are required for chemical reduction of oxidized vitamin K.[1]

The main VKAs are[3]:

- Warfarin/coumarin (Coumadin®)
- Nicoumalone/acenocoumarol (Sintrom®)
- Phenprocoumon (Marcumar®; Falithrom®)

Not a VKA, but same mode of action:

- Fluindione (Previscan®)

Relevant Indications for Oral Anticoagulation Therapy

While hemostasis is necessary for survival, the pathological formation of a blood clot, or thrombosis, poses significant health risks. The main indications for a patient to receive vitamin K antagonists (VKAs) are the following:[1, 2-4]

- Mechanical heart valves
- Atrial fibrillation
- Venous thromboembolism, i.e. deep vein thrombosis and pulmonary embolism
- Myocardial infarction
- Acute ischemic stroke

Oral anticoagulants are effective for primary and secondary prevention of venous thromboembolism; for prevention of systemic embolism in patients with prosthetic

heart valves or atrial fibrillation; for prevention of acute myocardial infarction (AMI) in patients with peripheral arterial disease and patients otherwise at high risk, for prevention of stroke, recurrent infarction and to reduce mortality in patients with AMI.

Physicians are reluctant to prescribe warfarin, in part because they fear that the drug will cause bleeding. Patients treated with warfarin do require close monitoring to avoid bleeding. It has been shown that the drug significantly reduces stroke rates and for these indications, a moderate anticoagulant intensity (range, INR 2.0-3.0) is recommended.[5]

New anticoagulants on the market:

In the last few years, several new drugs have been cleared for anticoagulation use that offer the following benefits:[2,3]

- Do not require monitoring
- Wider therapeutic index
- Simpler kinetics
- More rapid onset/offset
- Fewer or absent drug and food interactions

Dabigatrain, Rivaroxaban and Apixaban demonstrated non-inferiority with warfarin in prevention of stroke and systemic embolism. Secondary analyses demonstrated superiority for apixaban and dagibatran 150mg dose.

In each of these studies the warfarin group were monitored using the Usual Care model. As seen elsewhere in this site, warfarin patients that self-monitor once per week or every other week experience dramatic increases in TTR with decreases in adverse events compared to patients managed in under Usual Care.

Considerations for choosing an anticoagulant regimen:
The following patient related factors are important.

- Risk of bleeding[7,8]
    - HAS-BLED score ($\geq$ 3 points = high risk)[8]
- A mechanical heart valve or hemodynamically significant valve disease[6]

- Renal function[6,7]
- Advanced liver disease[6]
- Body weight[7]
- Risk of coronary events[7]
- Propensity to dyspepsia[7]
- Patient compliance and preferences[8]
- Ability to safely sustain adjusted chronic anticoagulation[8]
- Success on existing anticoagulation therapy[6]

For patients in the following sub-groups therefore, warfarin plus monitoring remains the standard of care:

- There is a risk of non-compliance[9,10,11]
- There are co-morbidities (hypertension, heart failure, diabetes)[11]
- Patients with renal impairment[10]
- Patients with a mechanical heart valve[11]
- Elderly patients (>75 years)[11]
- Patients with an increased risk of bleeding[12]
- Where cost is an issue[12]
- The patient is a child or adolescent[12]
- Patient is intolerant to the new drugs[13]

2-2-1-Warfarin:

Warfarin is an anticoagulant (blood thinner). Warfarin reduces the formation of blood clots.

Warfarin is used to treat or prevent blood clots in veins or arteries, which can reduce the risk of stroke, heart attack, or other serious conditions.

Warfarin may also be used for purposes not listed in this medication guide.

How Does Warfarin Work:

The formation of a clot in the body is a complex process that involves multiple substances called clotting factors. Warfarin decreases the body's ability to form blood clots by blocking the formation of vitamin K–dependent clotting factors.

Vitamin K is needed to make clotting factors and prevent bleeding. Therefore, by giving a medication that blocks the clotting factors, your body can stop harmful clots from forming and prevent clots from getting larger.

Monitoring and Dosing Tips:

The goal of warfarin therapy is to decrease the clotting tendency of blood, not to prevent clotting completely. Therefore, the effect of warfarin must be monitored carefully with blood testing. On the basis of the results of the blood test, your daily dose of warfarin will be adjusted to keep your clotting time within a target range. The blood test used to measure the time it takes for blood to clot is referred to as a prothrombin time test, or protime (PT). The PT is reported as the International Normalized Ratio (INR).

The INR is a standardized way of expressing the PT value. The INR ensures that PT results obtained by different laboratories can be compared. It is important to monitor the INR (at least once a month and sometimes as often as twice weekly) to make sure that the level of warfarin remains in the effective range. If the INR is too low, blood clots will not be prevented, but if the INR is too high, there is an increased risk of bleeding. This is why those who take warfarin must have their blood tested so frequently.

Unlike most medications that are administered as a fixed dose, warfarin dosing is adjusted according to the INR blood test results; therefore, the dose usually changes over time. Coumadin/ warfarin pills come in different colors, and each color corresponds to a different dose .

Difference Between Brand-Name and Generic Medications

Generic drugs are supposed to have the same dosage, therapeutic effects, route of administration, side effects, and strength as the original drug. The U.S. Food and Drug Administration requires that all generic drugs be as safe and effective as brand-name drugs.

Generic drugs are often less expensive than their brand-name counterparts, because the generic manufacturers have not incurred the expenses of developing and

marketing a new drug. In the United States, trademark laws do not allow generic drugs to look exactly like the brand-name drug; however, the generic drug must have the same active ingredients. In the case of Coumadin (a brand-name product) and warfarin (a generic product), the manufacturers attempted to keep the colors consistent with the strength of the pills. The goal is to allow the patient to identify the color-coded dose and prevent mix-ups or errors. Therefore, if the color or dose of the dispensed tablet appears different from the pill taken previously, the patient should immediately notify the dispensing pharmacist or healthcare provider.

Warfarin must be taken exactly as prescribed.

Never increase or decrease your dose unless instructed to do so by your healthcare provider. If a dose is missed or forgotten, call your healthcare provider for advice.

Important information

You should not take warfarin if you have a bleeding disorder, a blood cell disorder, blood in your urine or stools, stomach bleeding, very high blood pressure, an infection of the lining of your heart, bleeding in your brain, recent or upcoming surgery, or if you need a spinal tap or epidural. Do not take warfarin if you cannot take it on time.

Do not take this medicine if you are pregnant, unless your doctor tells you to.

Warfarin increases your risk of bleeding, which can be severe or life-threatening. You will need frequent tests to measure your blood-clotting time. Call your doctor or seek emergency medical attention if you have bleeding that will not stop, if you have blood in your urine, black or bloody stools, or if you cough up blood or vomit that looks like coffee grounds.

Many drugs can cause serious medical problems when used with warfarin. Tell your doctor about all medicines you have recently used.(8)

Before taking this medicine

You should not take warfarin if you are allergic to it, or if you have:

- hemophilia or any bleeding disorder that is inherited or caused by disease;
- a blood cell disorder (such as low red blood cells or low platelets);
- blood in your urine or stools, or if you have been coughing up blood;
- an infection of the lining of your heart (bacterial endocarditis);
- stomach or intestinal bleeding or ulcer;
- very high blood pressure;
- recent or upcoming surgery on your brain, spine, or eye;
- recent head injury, aneurysm, or bleeding in the brain; or
- if you undergo a spinal tap or spinal anesthesia (epidural).(9)

You should not take warfarin if you cannot be reliable in using it because of alcoholism, psychiatric problems, dementia, or similar conditions.

Warfarin can make you bleed more easily, especially if you have:

- a history of bleeding problems;
- high blood pressure or severe heart disease;
- kidney or liver disease;
- cancer;
- a disease affecting the blood vessels in your brain;
- a history of stomach or intestinal bleeding;
- a surgery or medical emergency, or if you receive any type of injection (shot);
- if you are 65 or older; or
- if you are severely ill or debilitated.

Do not take warfarin if you are pregnant, unless your doctor tells you to. Warfarin can cause birth defects, but preventing blood clots may outweigh any risks to the baby. You may be able to take warfarin during pregnancy if you have a mechanical heart valve. Use effective birth control to prevent pregnancy while using this medicine and for at least 1 month after your last dose. Tell your doctor right away if you become pregnant.

To make sure warfarin is safe for you, tell your doctor if you have:

- celiac sprue (an intestinal disorder);
- diabetes;
- congestive heart failure;
- overactive thyroid;
- a connective tissue disorder such as Marfan Syndrome, Sjögren syndrome, scleroderma, rheumatoid arthritis, or lupus;
- a hereditary clotting deficiency (warfarin may make your symptoms worse at first);
- if you use a catheter; or
- if you have ever had low blood platelets after receiving heparin.

It is not known whether warfarin passes into breast milk. Tell your doctor if you are breast-feeding a baby. Watch for signs of bruising or bleeding in the baby if you take warfarin while you are nursing.

How should I take warfarin:

Take warfarin exactly as prescribed by your doctor. Follow all directions on your prescription label. Your doctor may occasionally change your dose to make sure you get the best results. Do not take warfarin in larger or smaller amounts or for longer than your doctor tells you to.

Take warfarin at the same time every day. Never take a double dose.

You may take warfarin with or without food.

While taking warfarin, you will need frequent "INR" or prothrombin time tests (to measure how long it takes your blood to clot). Your blood work will help your doctor determine the best dose for you. You must remain under the care of a doctor while taking this medicine.

If you have received warfarin in a hospital, call or visit your doctor 3 to 7 days after you leave the hospital. Your INR will need to be tested at that time. Do not miss any follow-up appointments.(10)

Tell your doctor if you are sick with diarrhea, fever, chills, or flu symptoms, or if your body weight changes.

You may need to stop taking warfarin 5 to 7 days before having any surgery or dental work. Call your doctor for instructions. You may also need to stop taking this medicine if you need to take antibiotics, or if you have a spinal tap or spinal anesthesia (epidural).

Wear a medical alert tag or carry an ID card stating that you take warfarin. Any medical care provider who treats you should know that you are taking this medicine.

Store at room temperature away from heat, moisture, and light.

What happens if I miss a dose:

Take the missed dose as soon as you remember. Skip the missed dose if it is almost time for your next scheduled dose. Do not take extra medicine to make up the missed dose.

Warfarin dosing information:

Usual Adult Dose of Warfarin for Prosthetic Heart Valves -- Tissue Valves:

Initial: 2 to 5 mg orally or intravenously once a day for 1 to 2 days, then adjust dose according to results of the International Normalized Ratio (INR) or prothrombin time (PT).

Maintenance: the usual maintenance dose ranges from 2 to 10 mg orally or intravenously once a day.

The duration of anticoagulant therapy following tissue heart valve replacement surgery is usually 6 to 12 weeks. The duration of therapy may be longer in patients with a tissue valve in the mitral location, particularly in the presence of a large left atrium and/or atrial fibrillation. In patients who receive a mechanical heart valve, lifelong anticoagulant therapy is usually needed and low dose aspirin (80 to 100 mg/day) may be added in higher risk patients.

Usual Adult Dose of Warfarin for Prosthetic Heart Valves -- Mechanical Valves:

Initial: 2 to 5 mg orally or intravenously once a day for 1 to 2 days, then adjust dose according to results of the International Normalized Ratio (INR) or prothrombin time (PT).

Maintenance: the usual maintenance dose ranges from 2 to 10 mg orally or intravenously once a day.

The duration of anticoagulant therapy following tissue heart valve replacement surgery is usually 6 to 12 weeks. The duration of therapy may be longer in patients with a tissue valve in the mitral location, particularly in the presence of a large left atrium and/or atrial fibrillation. In patients who receive a mechanical heart valve, lifelong anticoagulant therapy is usually needed and low dose aspirin (80 to 100 mg/day) may be added in higher risk patients.

What happens if I overdose:

Seek emergency medical attention An overdose can cause excessive bleeding.

What should I avoid while taking warfarin:

Avoid activities that may increase your risk of bleeding or injury. Use extra care to prevent bleeding while shaving or brushing your teeth. You may still bleed more easily for several days after you stop taking warfarin.

Avoid drinking alcohol.

Grapefruit juice, cranberry juice, noni juice, and pomegranate juice may interact with warfarin and lead to unwanted side effects. Avoid the use of these juice products while taking warfarin.

Avoid making any changes in your diet without first talking to your doctor. Foods that are high in vitamin K (liver, leafy green vegetables, or vegetable oils) can make warfarin less effective. If these foods are part of your diet, eat a consistent amount on a weekly basis.

Ask your doctor before taking any medicine for pain, arthritis, fever, or swelling. This includes acetaminophen (Tylenol), aspirin, ibuprofen (Advil, Motrin), naproxen (Aleve), celecoxib (Celebrex), diclofenac, indomethacin, meloxicam, and others. These medicines may affect blood clotting and may also increase your risk of stomach bleeding.

Warfarin side effects:(11)

Get emergency medical help if you have signs of an allergic reaction to warfarin: hives; difficult breathing; swelling of your face, lips, tongue, or throat.

Warfarin may cause you to bleed more easily, which can be severe or life-threatening. Seek emergency medical attention if you have any unusual bleeding, or bleeding that will not stop. You may also have bleeding on the inside of your body, such as in your stomach or intestines. Call your doctor at once if you have blood in your urine, black or bloody stools, or if you cough up blood or vomit that looks like coffee grounds.

Also call your doctor at once if you have:

- pain, swelling, hot or cold feeling, skin changes, or discoloration anywhere on your body;
- sudden and severe leg or foot pain, foot ulcer, purple toes or fingers;
- sudden headache, dizziness, or weakness;
- easy bruising or bleeding (nosebleeds, bleeding gums), purple or red pinpoint spots under your skin;
- bleeding from wounds or needle injections that will not stop;
- pale skin, feeling light-headed or short of breath, rapid heart rate, trouble concentrating;
- dark urine, jaundice (yellowing of the skin or eyes);
- little or no urinating;
- numbness or muscle weakness; or
- pain in your stomach, back, or sides.

What other drugs will affect warfarin(11)

Many drugs (including some over-the-counter medicines and herbal products) can affect your INR and may increase the risk of bleeding if you take them with warfarin. Not all possible drug interactions are listed in this medication guide. It is very important to ask your doctor and pharmacist before you start or stop using any other medicine, especially:

- other medicines to prevent blood clots;
- medicine to treat any type of infection, including tuberculosis;
- supplements that contain vitamin K; or

an antidepressant - citalopram, duloxetine, fluoxetine, fluvoxamine, paroxetine, sertraline, venlafaxine, vilazodone, and others; seizure medicine - carbamazepine, phenobarbital, phenytoin; herbal (botanical) products

3. Methodology

3.1. Study design:
A descriptive cross-sectional hospital based study conducted in Khartoum state to assess patient awareness and knowledge, regarding oral anti coagulant theray.

3.2. Study period:
The study was being carried during the period (2017).

3.3 Study area:
Khartoum state is one of the eighteen states of Sudan. Although it is the smallest state by area (22,142 km^2), it is the most populous (5,274,321 in 2008 census). It contains the country's largest city by population, Omdurman, and the city of Khartoum. The capital city contains offices of the state, governmental and non-governmental organizations, cultural institutions, and the airport. The state lies between longitudes 31.5 to 34 °E and latitudes 15 to 16 °N.

3.4 Study setting:
This study was conducted in the sudan heart center

3.4.1 Sudan heart institute:

Is one of the biggest hospitals in the Sudan in Khartoum state (capital of Sudan) and is which established in 2002 located in arkaweet, it consists of:

Emergency and consultant's clinics department, Radiology department, laboratory and blood bank department, coronary care unit CCU, Cardiac catheterization department, Theater and recovery and intensive care unit, General cardiac word male and female, Providing medical and surgical care of patients with heart diseases; for both adult and pediatric clients. It has 124 registered nurses providing bed side nursing care, and 29 CCU nurses

3.5 Study population:
The populations of this study consisted of all Patient who came to out patient clinic.

3.5.1 Inclusion criteria:
. all patient who received anti co agulant therapy come to out patient

3.6 Sample size and Sampling technique:

3.6.1 Sampling technique:
Simple random sample to select sample size from determined study population.

3.6.2 Sample size:

The sample size was calculated according to use the all entire population

3.7 Variables under study:

3.7.1 Dependent variable:

Awareness of patient regarding oral anti co agulant

3.7.2 Independent variable:

Sociodemographic data.

3.8 Data collection technique and tools:

3.8.1 Data collection tools:

Data was collected by the researcher using structured closed ended questionnaire (composed of (19) questions part one 1-4 about social demographic data, part two 5-19 about knowledge questions).

Score of knowledge:

The full score was 3which calculated from frequency and percent as follows:

Score = percent

Evaluation was done according to Likert scale system

Evaluation Measure	Measurement Range
Good knowledge	≥ 75
Satisfied knowledge	(51- 74)
Poor knowledge	≤ 50

3.8.2 Data collection technique:

The data of the questionnaire was fulfilled by the participants, it was handled to the researcher, revised and coded before data entry

All data collection was managed by the researcher, the data was collected during the period of 4 weeks.

3.9 Data analysis:

Data was coded then analyzed by simple statistic method ,then different measure was used (frequency, percentage.

3.10 Ethical consideration:

- The privacy and dignity of patient was protected.
- The study was explained to the participants in clean simple words.

- The participants were notified by the aims, methods, expected outcome, benefits and result of the study.
- The participants in this study were assured confidentiality through identification coding and reports of data.
- Participants were participated voluntary and voluntary verbal consent was taken.
- Any participants had a right to ask, to discontinue, and to refuse to answer any question of the study.
- Letter from University was obtained to the study areas..
- Approval from administrative authorities of the study areas was obtained. .
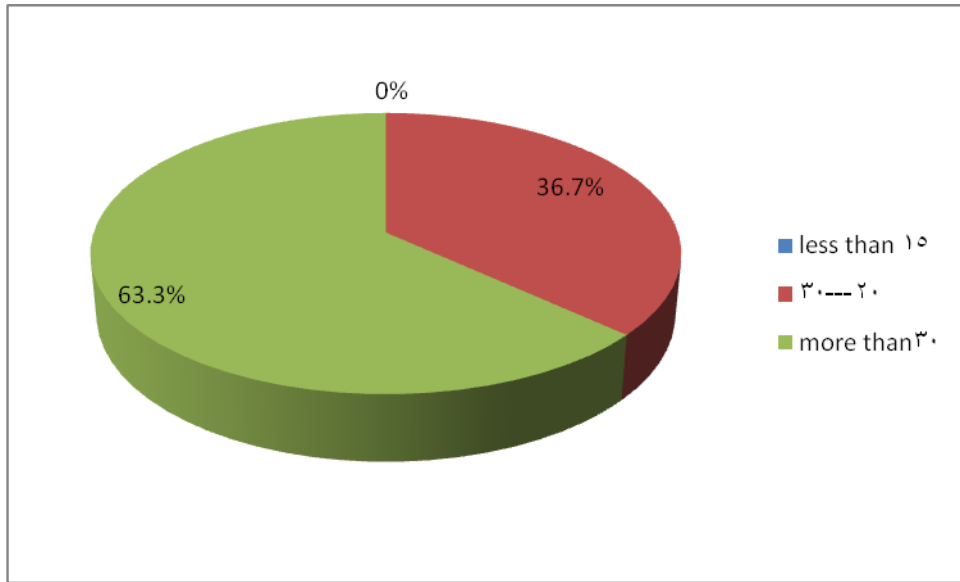
Figure (1) age distribution of patient

that above figure show that (63%) of patient were age of more than 30 ,(36.7%)were age 20-------30 ,and no patient less than 15 years.
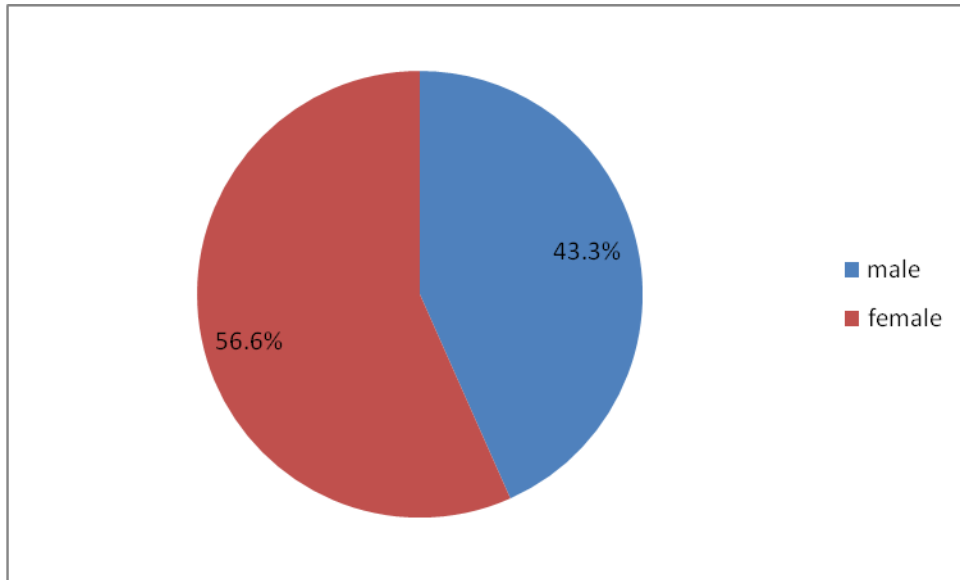
Figure (2) Gender distribution of patient

the above figure show that(43.3%) male and (56.6%) female
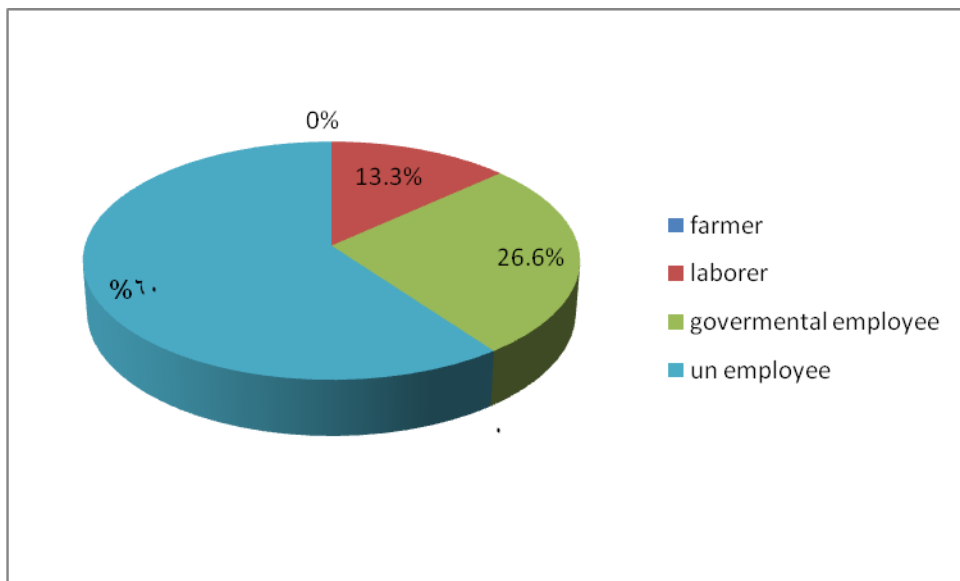
Figure (3) occupational distribution of patient

The above figure show that (60%) of patient was un employee ,(26.6%) governmental employee ,(13.3%) laborer ,(0%) percentage farmer.
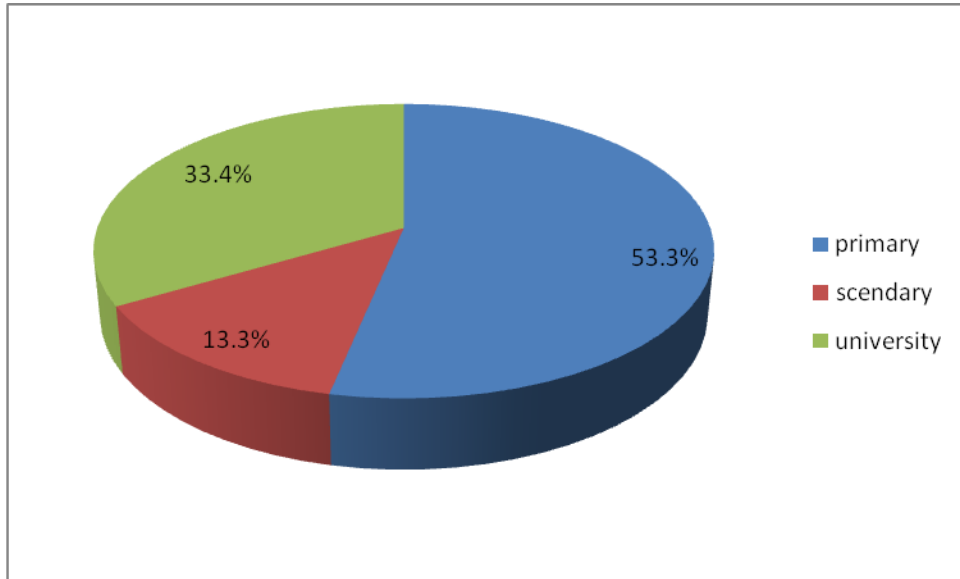
Figure (4) educational distribution of patient

The above figure show that (53.3%) of patient were is primary school ,
(33.4%)were secondary school , (13.3%) were university .

Table (1) Age

Age	Less than 15		20----------------30		More than 30	
	Frequency	percentage	frequency	percentage	frequency	Percentage
	0	0	11	36.3%	19	63.3%

 Table above show patient age less than 15 years zero   and who 20----------------30 are 36.6% ,more than 30 are 63.3% .

Table (2) Gender

Gender	Male		Female	
	Frequency	percentage	Frequency	Percentage
	13	43.3%	17	56.6%

Table above show the percentage of male patient 43.3% and female patient about 56.6% .

Table (3) Educational level

Educational level	Primary school		Secondary school		University	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
	16	53.3%	4	13.3%	10	33.4%

Table above illustrates the educational level of patient ,where are primary school 53.3%,secondary school 13.3% ,university 33.4%

Table (4) Occupational

Occupational	Farmer		laborer		Governmental employee		Un employee	
	frequency	Percentage	frequency	percentage	frequency	Percentage	frequency	percentage
	0	0	4	13.3%	8	26.6%	19	60%

Table above illustrates the occupational in patient where are farmer zero percentage ,laborer 13.3% ,governmental employee 26.6% ,un employee 60%.

Table (5) knowledge of patient regarding the therapeutic level of INR and when you need to do the INR test and change of the drug dose

Item	Level of knowledge					
	Good Knowledge		Satisfied knowledge		Poor knowledge	
	Frequency	percentage	frequency	percentage	frequency	Percentage
Therapeutic level of INR	3	10%	22	73.3%	5	16.6%
When do the INR test	10	33.3%	19	63.3%	1	3.3%
Change of the drug dose	6	20%	23	63.3%	1	3.3%

The above table showed that , theire knowledge toward the therapeutic level of INR (10%) is good knowledge ,(73%) satisfied ,(16.6) poor knowledge . more ever about when need to do the INR test (33.3%) good ,(63.3)satisfied ,(3.3)poor knowledge ,more ever about change the drug dose (20%)good knowledge ,(63.3)satisfied ,(3.3%)poor knowledge.

Table (6) knowledge of patient regarding the important of oral anti co-agulant and the time of taken the dose and what to do if you forget the dose

Item	Level of knowledge					
	Good knowledge		Satisfied knowledge		Poor knowledge	
	Frequency	percentage	Frequency	percentage	frequency	Percentage
Important of anti co – agulant	18	60%	12	40%	0	0%
Time of take the dose	30	100%	0	0%	0	0%
Change of the drugs dose	6	20%	23	76.6%	1	3.3%

The above table showed that ,,their knowledge toward the important of anti co-agulant therapy (60%)is good ,(40%)satisfied and (0 %) is poor ,more ever about the time of taking the dose (100%) is good knowledge ,more ever about the change of the drugs dose (20%) good ,(76%)satisfied ,(3.3%)is poor .

Table (7) knowledge of patient regarding the adverse effect of anti co-agulant and what do if you need new medication and when to stop the drugs if you have surgery

Item	Level of knowledge					
	Good knowledge		Satisfied knowledge		Poor knowledge	
	frequency	Percentage	frequency	percentage	Frequency	percentage
Adverse effect of anti coagulant	14	46.6%	16	53.3%	0	0%
What do if you do new medication	1	3.3	29	96.6%	0	0%
When to stop the drug if you have surgery	2	6.6%	28	93.3%	0	0%

The above table showed that their knowledge toward the adverse affect of anti coagulant (46.6%) is good ,(53%)is satisfied ,(0%)percentage is poor   ,more ever about the what do if need to use new medication (3.3) is good ,(96.6%)satisfied ,(0%) is poor ,more ever about when to stop the drugs if you have surgery (6.6%)is good ,(93.3%)satisfied ,(0%)is poor .

Table (8) knowledge of patient regarding the complication of anti co-agulant and sins and symptom of increase the level of INR and what to do to avoid the risk of bleeding

Item	Level of knowledge					
	Good knowledge		Satisfied knowledge		Poor knowledge	
	Frequency	percentage	Frequency	percentage	frequency	Percentage
Complication of anti co –agulant	13	43.3%	12	40%	5	16.6%
Sings and symptom of increase INR	24	80%	4	13.3%	2	16.6%
To avoid risk of bleeding	28	93.3%	1	3.3%	1	3.3%

The above table showed that their knowledge toward the complication of anti co –agulant (43.3%)is good ,(40%)satisfied ,(16.6%)poor ,,more ever about the sings and symptom of increase the INR level (80%)is good , (13.3%)satisfied,(12.6%)poor ,more ever about how to avoid risk of bleeding (93.3%)is good ,(3.3%)satisfied ,(3.3%)is poor .

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Table (9) knowledge of patient regarding the diet interfering with the drugs and habits that affect drugs action ,and when stopped   to taken the drugs .

Item	Level of knowledge					
	Good knowledge		Satisfied knowledge		Poor knowledge	
	frequency	percentage	Frequency	Percentage	frequency	Percentage
Diet interfering with drugs	18	60%	8	26.6%	4	13.3%
Habit that affect drugs action	25	83.3%	0	0%	5	16.6
When you stop the drugs	4	13.3%	26	86.6%	0	0%

The above table showed that their knowledge toward the diet interfering with drugs (60%)have good knowledge,(26.6%)is satisfied ,(13.3%)is poor ,more ever about habits that affect the drugs action (83.3%)is good ,(o%)is satisfied ,(16,6%)have poor knowledge ,more ever about w hen you stopped the (13.3%)is good ,(86.6%)satisfied ,(0%) is poor.

Discussion:

This study aimed to verify knowledge of the sue of choric oral ant-Cogulation in patent with mechanical valve prostheses.

demographic characteristics of the current study showed that , patient with age (20-30) year are (36.6%) and more than 30 years (63.3%), compared with another study they showed age (26-40) were (50.5%) that indicate the most patient in young age, Gender distribution revealed that most participant were female 56.6 and 43.3% were male, similar finding were reported study in India showed that most majority of patient are female . Educational level distraction revealed most patient were educational level is primary school that means the pt need more education about warfarin and 33.4% from the patient university level ,Occupational distribution showed that unemployed 26.6% and have governmental employee 13.3% laborer that showed the majority of participant had low monthly income.

Assessing patient knowledge regard therapeutic level of INR in current study and the change of the drug dose is satisfied knowledge in percentage (73.3%) , (63.3%) on other the studies on india (2015) by M.J.Kumari showed (39.4%) of the patients said therapeutic level of INR value , about (60%) of patient have good knowledge in the important of anticoagulant therapy and (100%) 0f patient know about the time of take warfarin dose, (76.6%) of patient have satisfied knowledge about change of the drug dose .

In regard the adverse effect of anticoagulant their knowledge of patient is satisfied in proportion (53.3%), and high score knowledge (96.6%) about what do if you do new medication and satisfied knowledge about when to stop the drug if you have surgery.

The study finding revealed that the participant rated their knowledge about the complication of anticoagulant as good to moderate (43.3%)(40%). The Majority (80%) of patient good knowledge about the signs and symptom of increase the INR level that indicated the patient receive health information from care giver and (93%) about how to avoid risk of bleeding and only (3.3%)poor knowledge. (60%) of patient have good knowledge about the diet interfering with drug this compare with studies in india (2015) by M.J.Kumari showed that patients had no adequate knowledge on diet, drug interaction and risk factors of bleeding when the patients on anti-coagulation therapy. (83.3%) has good knowledge about habits that affect drugs action, on other hand (86.6%) were satisfied knowledge , (13.3%) have good knowledge about when you stop the drugs.

CONCULUSION

- According to finding of the current study ,it was concluded that ,good percentage of knowledge regarding of take the durg s dose ,also good about the sing and symptom of increase INR level ,also about how to avoid the risk of bleeding .
- Also show satisfied knowledge regarding the therapeutic level of INR ,also about when to stop the the drug if under going to surgery ,also about what do if need any new medication
- Also show poor knowledge regarding the complication of drugs and sing and symptom of the drug ,and habit affected in the drug action

Recommendation

- Educational session are necessary to improve patient awareness regarding the anti coagulant therapy
- There are should be awareness of the possibility of valve thrombosis if not compliance of anti co agulant therapy
- Important of regular blood test for prothrombatic factor and INR level
- Awareness about the diet and habit that affected the drugs

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Knowledge of patient with mechanical valve replacement about oral anti co-agulant therapy in Sudan heart center 2017

Part (1)

1- Age
   a) Less than 15 year   (   )
   b) 20 ——30   (   )
   c) More than 30   (   )

2- Gender
   a) Male
   d) Female

3- Educational level :
   e) Primary school   (   )
   f) Secondary   (   )
   g) University   (   )

4- Occupational:
   a) Farmer   (   )
   b) Laborer   (   )
   c) Governmental employ   (   )
   d) Un employ   (   )

Therapeutic level of INR in valve replacement patient is :

   a) 2 - 2.5   (   )
   b) 2.5 - 3.5   (   )

c) I don't know   (   )

INR test need to do :

a) In emergency condition   (   )
b) On follow up   (   )
c) I don't know   (   )

The drugs dose should be change as :

a) In emergency   (   )
b) Per doctor advice   (   )
c) I don't know   (   )

Anti – coagulant is very important for valve replacement to :

a) Prevent blood clot formation   (   )
b) Prevent failure of valve by thrombosis   (   )
c) I don't know   (   )

When you need any new medication :

a) Consult the doctor   (   )
b) Stop warfarin   (   )
c) Take them with warfarin by doctor advice (   )

The adverse effect of anti co.agulant therapy:

a) Bleeding   (   )
b) Clot   (   )
c) I don't know   (   )

The drug dose should be take at :

a) Same time every day   (   )
b) Any time during the day   (   )
c) I don't know   (   )

If you forget to take warfaine dose :

a) The it when remember   (   )

b) Skip the missed dose   (   )

c) Dabble the dose   (   )

Complication of anti co agulation therapy :

a) Bleeding when increase the INR level   (   )

b) Clotting when decrease the INR level   (   )

c) Stuck valve   (   )

Sings and symptom of increase INR:

a) Bleeding from the gum   (   )

b) Bleeding from the nose   (   )

c) Blood in urine   (   )

To avoid risk of bleeding :

a) Using soft tooth brush   (   )

b) Avoid use sharp adjective   (   )

c) Avoid exercise that lead to fall down (   )

Diet interfering with anti co-agulat therapy one :

a) Green leafy vegetable   (   )

b) Grop juice   (   )

c) Jenjer   (   )

When you stop the anti- agulat therapy :

a) according to doctor advice   (   )

b) I don't know   (   )

c) Take it for life   (   )

Habit that effect warfarin action :

a) Alchol drink   (   )

b) Tobacco   (   )

c) Smoking   (   )

If your under going to surge when you stop warforine :

a) You never stopped   (   )
b) 5 – 7 day befar surger   (   )
c) For doctor advice or order   (   )