ADHERENCE TO HEAMODIALYSIS AND ASSOCIATED FACTORS AMONG END STAGE RENAL DISEASE PATIENTS IN NEPHROLOGY UNIT AT A TERTIARY HEALTH FACILITY, UBTH

BY

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MAT NUMBER: BMS1401950

DEPARTMENT OF NURSING SCIENCES

SCHOOL OF BASIC MEDICAL SCIENCES

COLLEGE OF MEDICAL SCIENCES

UNIVERSITY OF BENIN,

BENIN CITY, NIGERIA.

MARCH, 2021.

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IN FULL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF NURSING SCIENCES OF THE UNIVERSITY OF BENIN

MARCH, 2021.

CERTIFICATION

This is to certify that this work was carried out by **OMOKARO PRUDENCE OSAYINMA** with the Matriculation Number (**BMS1401950)**, a student in the Department of Nursing Science, School of Basic Medical Sciences College of Medical Sciences, University of Benin, Benin City, under the supervision of **MR TIMOTHY EHWARIEME**

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DEDICATION

This project is dedicated to Jehovah God Almighty whose profound grace and mercy kept me, made this work possible and has been seeing me through this programme.

Also to my beloved husband Mr Miracle Ogenyi for the love and support throughout my academic years.

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to God Almighty who by His grace has made this research project a reality.

My sincere appreciation goes to my amiable supervisor **MR TIMOTHY EHWARIEME** for his attention, time, supervision, and fatherly advice.

Special thanks go to **Dr. (Mrs.) C. E. OMOROGBE**, Head of the Department of Nursing Science for her leadership quality. My sincere gratitude goes to all my lecturers and staff of the department for their support and encouragement.

My utmost gratitude goes to my lovely my beloved husband Mr Miracle Ogenyi and my adorable parents Mr and Mrs Omokaro for their love, financial and moral support and also for their unending prayers.

May God Almighty bless you all and may you all continue to meet the favor of God in all your endeavors.

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ABBREVIATION

ESRD - End Stage Renal Disease

ESRF- End Stage Renal Failure

HD- Haemodialysis

CRF- Chronic Renal Failure

CKD- Chronic Kidney Disease

AKF- American Kidney Foundation

CCRT- continous renal replacement therapy

PTFE- polytetrafluoroethylene

UF-ultrafiltration

SPSS- Statistical Package for the Social Sciences

GR SMAQ-HD - GR-Simplified-Medication Adherence Questionnaire-Hemodialysis

COPD- consultant out patient department

GPC-General practice center

ESRD-AQ -End stage renal disease adherence questionaire

ABSTRACT

The study was conducted to assess the adherence to haemodialysis and associated factors among end stage renal disease patients in Nephrology unit in a tertiary facility in Benin. The objectives of the study were to ascertain the knowledge of the importance of haemodialysis among ESRD patients, to ascertain the level of adherence to haemodialysis and associated factors by ESRD patients. A descriptive cross sectional survey design was used for the study. The sample of the study consisted of the two hundred patients attending a nephrology unit in tertiary hospital in Benin. The researcher used a standardized instrument known as the End stage renal disease adherence questiinaire (ESRD-AQ) by Kim et al 2010, was administered to the patients and all (200) questionnaires were retrieved. Demographic data was analyzed using descriptive statistics – frequency and percentage, chi-square were used to test for relationship between level of adherence to haemodialysis and level of knowledge, independent samples t-test was used to test the significant difference been level of adherence and gender, multiple logistic regression was used to predict he association between the level of adherence and socio-demographic variables. Majority of the respondents have low knowledge on the importance of haemodialysis. The study showed that most of the respondents 73.5% have low level of adherence to haemodialsys, 20% have moderate level of adherence while 6% of the respondents have high level of adherence to haemodialysis. Factors associated with adherence to haemodialysis is lack of transportation, financial constraint,forgetfulness etc. There is an association ($p<0.05$) between the level of adherence and level of knowledge. There is no significant difference ($p<0.5$) between the level of adherence and gender. There is an association ($p<0.5$) between the level of adherence and socio-demographic characteristics. The study recommended that there is the need for structured teaching programme that will improve the knowledge of patients undergoing hemodialysis regarding dietary management and skin care in renal failure thereby preventing life threatening complication and prolonging their life.

Keywords: Adherence, Haemodialysis, End stage renal disease patients, Nephrology unit.

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND OF THE STUDY-lower case

Globally, an estimated 1.4 million patients received renal replacement therapy, including dialysis treatment, in 2001 (World Health Organization, 2017). In the U.S., approximately 680,000 patients are reported to have undergone dialysis or received a kidney transplant at the end of 2014 (United States Renal Data System, 2017). it is only through screening that individuals will know whether they have kidney disease because it has no signs or symptoms. irreversible advanced CKD leads to End Stage Renal Disease (ESRD) where there is permanent loss of kidney function causing extreme mortality rates among this people (Ramspek, Nacak & Van Diepen 2017).Driven by an aging population and increasing rates of obesity, diabetes and hypertension, approximately 1 in 8 adults globally are known to have CKD (Hill, Fatoba, Oke, Hirst Callaghan, Lasserson &Hobbs, 2017).

The increase of ESRD patients necessitates management on dialysis for better outcomes, thus making adherence to prescribed treatment essential (Deif, Elsawi Selim & NasrAllah,2015). The cost of caring for such people is very high .According to American kidney foundation [AKF] ,2018, treatment of end-stage renal disease (ESRD, or kidney failure) is demanding, multifaceted and complex, requiring strict patient adherence to treatment protocols to achieve favorable health outcomes and a satisfactory quality of life.

Providing treatment for ESRD patients is becoming more of a concern, especially since most treatment options are costly and would need to be balanced with provision of other health

services.(Yot,Teerawattananon,Alia,Luz,&Sripen,2016) Haemodialysis is one of the renal replacement therapy most commonly used worldwide including, Nigeria. Kidney transplantation is one of the best option that end stage renal disease patients can choose from although, financial incapacity and lack of kidney donors has become another problem affecting these population. Non-adherence to treatment regimens is a widespread problem of great clinical relevance among hemodialysis patients (Kustimah, Gimmy , Siswadi, Djunaidi, & Iskandarsyah,2019).Patients on long-term Haemodialysis are considered partially responsible for the success of their therapy. Renal nurses provide care to patients with end stage kidney disease (ESKD) who require renal replacement therapy, that is Haemodialysis.

Non adherence to hemodialysis on the other hand remains a major obstacle in the management of ESRD population and also, it is associated with increased morbidity and mortality .Numerous studies have also revealed that non adherence is the cause of mortality, frequent hospitals visits, and hospital admissions(Chironda & Bhengu 2016) .

. Factors, which influence HD patient adherence, vary and may be treatment-related, condition-related, health system-related or socioeconomic (Chironda &Bhengu,2016). Hemodialysis (HD) three times per week is the conventional standard method to treat patients with end stage renal failure (ESRF) in whom uremia can no longer be managed conservatively irrespective of their financial capabilities. One session of HD for ESRD patients can remove excess body fluids and decrease accumulated metabolites to near normal levels. Patients with ESRD undergoing haemodialysis are prone to several complications such as depression, inflammation, and malnutrition or even death(Yang , Griva Lau , Vathsala , Lee , Mooppil Foo,Newman &chia, (2015).Therefore, the aim of this study is to determine the level of

adherence to hemodialysis and the associated factors among ESRD patients in nephrology unit attending a tertiary institution in Edo state.

1.1 STATEMENT OF THE PROBLEM-lower case

Non-adherence to heamodialysis is an area of concern internationally in Chronic kidney disease population(Chironda, Geldine, Bhengu, & Manwere,2017) Chronic kidney disease (CKD), a major public health problem, is especially challenging for patients and healthcare personnel in Africa, a region with poor economic resources and a massive shortage of health-care workers. The burden of kidney disease is increased in poorly-resourced regions due to increased exposure to infections, poverty, poor access to healthcare, and genetic predisposition to kidney disease, contributing further to the problems when managing CKD and acute kidney injury. Challenges of renal replacement therapy is overwhelming in Nigeria (Samuel, Ajite, Funmilayo, Ibitoba, Thomas, &Dada,2017) .Also, the mortality rate has increased, despite the increase in the number of dialysis centers in Nigeria. However, this has brought an impact on the patient and family members psychologically, what could be the reason for the increased mortality and morbidity rate?. While working as a student nurse in the renal unit at university of Benin teaching hospital, I observed that patients who came for hemodialysis didn't comply with the therapy. Despite the fact that more people are aware that end stage renal disease is ranked one of the leading cause of death among kidney disease population and that the way forward is renal replacement therapy (haemodialysis) but adherence is still a big challenge. Hence the need for urgent appraisal.

1.2 OBJECTIVE OF THE STUDY

The objectives of this study are;

1. To ascertain the level of knowledge of the importance of heamodialysis among ESRD patients.
2. To determine the level of adherence to hemodialysis by ESRD patients.
3. To identify factors associated with adherence to hemodialysis by ESRD patients.

1.3 RESEARCH QUESTIONS

2. What is the level of knowledge of the importance of heamodialysis among ESRD patients?
3. What are the possible ways to find out the adherence level among patients undergoing haemodialysis?
4. What are those factors that may influence adherence to hemodialysis by ESRD patients?

1.4 HYPOTHESES

1-There is no association between socio-demographic characteristics and level of adherence

2-There is no significant relationship between the level of knowledge and level of adherence.

3-There is no significant difference between level of adherence and gender.

1.5 SIGNIFICANCE OF THE STUDY

The study will be of benefit to renal disease patients because it will assess their adherence level to heamodialysis at nephrology unit in the university of Benin Teaching hospital Edo state. This study will reveal those factors that could affect their adherence to the treatment regimen and consequences of not adhering and benefits of adhering to heamodialysis in improving their health preventing untimely death. It will also be of benefit to renal nurses, family members of these patients, my lecturers, my colleagues and the country as a whole to create awareness and knowledge on the importance of adhering to hemodialysis by renal disease patients before other modalities can be taken.

1.6 SCOPE OF THE STUDY

This study is delimited to renal disease patients who are on hemodialysis attending nephrology unit at a tertiary facility , UBTH. The variables in this study are independent Variables such as (end stage renal disease, patients,age, and gender) and the dependent variable (heamodialysis).

1.7 OPERATIONAL DEFINITION OF TERMS

Keyword: adherence, hemodialysis, end stage renal disease, Patient, nephrology unit.

Hemodialysis: This is a diagnostic therapy that uses a dialyzer to filter nitrogenous waste products from the blood of an individual.

Knowledge of the importance of heamodialysis treatment regimen : This refers to the ability of the respondents to have an understanding of the need to adhere to hemodialysis regimen and how it affects their health and well-being and in this study as it classified as Poor level of knowledge with a score range of (1-3), fair level of knowledge with a score range of (4-6) and good level of knowledge with a score range of (7-10).

Factors associated with end stage renal disease patients: They refer to those perceived factors that that hinder patient modalities toward ESRD.It is measured using 4 point likert scale of an average mean greater than 2.5 is considered a factor.

Level of adherence: This refers to degree to which end stage renal disease patients comply with heamodialysis regimen as it is considered as either poor, moderate or high level of adherence towardsheamodialysis treatment poor level of adherence score range (0-50%), moderate level of adherence (51-100%),high level of adherence (101-150%),under medication poor level of adherence score range(0-50%),moderate level of adherence (51-100%),high level of adherence (101-150%) under fluid poor level of adherence score range (0-49%),moderate level of

adherence (50-84%)and high level of adherence (85-125%) and under diet regimen poor level of adherence range score (0-39%),moderate level of adherence (39-69%),and high level of adherence (70-100%).

End stage renal disease: It is the last stage of long standing renal disease that leads to kidney failure.

ESRD Patient: is any patient that are constantly on heamodialysis in a tertiary facility.

Nephrology unit: It is the unit that focuses on the treatment and management of diseases affecting the kidney.

CHAPTER TWO

LITERATURE REVIEW

The literature was reviewed under the following subheadings: Conceptual review, empirical review and theoretical review.

2.0 OVERVIEW OF KIDNEY FAILURE (END STAGE RENAL DISEASE)

Kidney failure, also called end-stage renal disease (ESRD), is the last stage of chronic kidney disease. When your kidneys fail, it means they have stopped working well enough for you to survive without dialysis or a kidney transplant. Most cases, kidney failure is caused by other health problems that have done permanent damage (harm) to your kidneys little by little, over time. When your kidneys are damaged, they may not work as well as they should. If the damage to your kidneys continues to get worse and your kidneys are less and less able to do their job, you have chronic kidney disease. Kidney failure is the last (most severe) stage of chronic kidney disease. This is why kidney failure is also called end-stage renal disease, or ESRD for short

2.1 CAUSES OF KIDNEY FAILURE

.Diabetes is the most common cause of ESRD. High blood pressure is the second most common cause of ESRD. Other problems that can cause kidney failure include:

Autoimmune diseases, such as lupus and IgA nephropathy

Genetic diseases (diseases you are born with), such as polycystic kidney disease

Nephrotic syndrome

Urinary tract problems

Sometimes the kidneys can stop working very suddenly (within two days). This type of kidney failure is called acute kidney injury or acute renal failure. Common causes of acute renal failure include:

Heart attack

Illegal drug use and drug abuse

Not enough blood flowing to the kidneys

Urinary tract problems

2.2 SIGNS AND SYMPTOMS OF KIDNEY FAILURE

Itching

Muscle cramps

Nausea and vomiting

Not feeling hungry

Swelling in your feet and ankles

Too much urine (pee) or not enough urine

Trouble catching your breath

Trouble sleeping

2.3 TREATMENT OF KIDNEY FAILURE

If you have kidney failure (end-stage renal disease or ESRD), you will need dialysis or a kidney transplant to live. There is no cure for ESRD, but many people live long lives while on dialysis or after having a kidney transplant.

Dialysis: Dialysis is used to remove fluid and uremic waste products from the body when the kidneys cannot do so. It may also be used to treat patients with edema that does not respond to treatment, hepatic coma, hyperkalemia, hypercalcemia, hypertension, and uremia. Methods of therapy include hemodialysis, continuous renal replacement therapy (CRRT), and various forms of peritoneal dialysis. The need for dialysis may be acute or chronic. Acute dialysis is indicated when there is a high and rising level of serum potassium, fluid overload, or impending

pulmonary edema, increasing acidosis, pericarditis, and severe confusion. It may also be used to remove certain medications or other toxins (poisoning or medication overdose) from the blood. Chronic or maintenance dialysis is indicated in chronic renal failure, known as end-stage renal disease (ESRD), in the following instances: the presence of uremic signs and symptoms affecting all body systems (nausea and vomiting, severe anorexia, increasing lethargy, mental confusion), hyperkalemia, fluid overload not responsive to diuretics and fluid restriction, and a general lack of well-being. An urgent indication for dialysis in patients with chronic renal failure is pericardial friction rub. Patients with no renal function can be maintained by dialysis for years. Although the costs of dialysis are usually reimbursable, limitations on the patients ability to work resulting from illness and dialysis usually impose a great financial burden on patients and family members.

2.4 OVERVIEW OF HEAMODIALYSIS

Hemodialysis (HD) is a treatment option for kidney failure. When confronted with the seriousness of renal or kidney failure, most patients find it difficult to understand all of the various aspects of their treatment. The word hemo means blood, and dialysis refers to the removal of wastes and fluid from the blood using a special filter known as a semi-permeable membrane.

A semi-permeable membrane is a thin sheet of protein material that has microscopic holes or pores. These holes allow for the movement of small particles to pass from the blood into a chemical solution known as dialysate. Large particles or objects such as blood cells are too large to pass through these pores.

Blood is taken from the patients blood stream by a tube and brought into the artificial kidney or dialyzer by a pump. Clean filtered blood is brought back to the patient through another tube. The

process of HD may take between 2-5 hours. During this time, blood is continuously flowing through the tubing and artificial kidney.

All the cleaning of the blood occurs inside the hemodialyzer. It acts just like the kidneys. As blood passes through the hemodialyzer, wastes and fluid will be removed. In addition, salts in the blood are balanced and acids are regulated.

The kidneys function is replaced by the hemodialyzer, but not all the kidneys functions are replaced! In addition to filtering waste products and fluid removal, the kidneys act as an endocrine organ. In other words, an organ that secretes hormones (special chemicals in the body used for specific body functions). HD cannot replace these hormones. Instead, nurses and doctors will provide medications during the dialysis treatment that will substitute for these hormonal functions. To provide HD, the patient first must have a vascular access. This is a surgically created device placed in the patients arm or other location that allows the nursing staff to attach the HD circuit to the patient. The circuit consists of these basic parts:

A patient in renal failure with a working access;

Arterial line;

Hemodialyzer;

Venous line;

Dialysis machine with delivery system; and

Water and electricity

2.5 **THE WORKING ACCESS**

Depending on the specific needs of the renal failure patient, one of the following accesses will be placed:

A central venous catheter;

An arteriovenous fistula; or

A graft.

The purpose of each access is to provide a means to extract and return blood rapidly from the blood stream and bring it to the hemodialyzer. Without a functioning access, HD cannot occur. A central venous catheter is a long slender tube placed in a vein, either in the chest or neck. (subclavian, internal, jugular, and femoral catheters) are examples of catheters. Immediate access to the patients circulation for acute hemodialysis is achieved by inserting a double-lumen or multilumen catheter into the subclavian, internal jugular, or femoral vein. Although this method of vascular access involves some risk (eg, hematoma, pneumothorax, infection, thrombosis of the subclavian vein, and inadequate flow), it can be used for several weeks. The catheters are removed when no longer needed, because the patients condition has improved or another type of access has been established. fistula is the surgical connection of an artery to a vein, allowing for the vein to enlarge for use as a continuous site for HD needle insertion .Needles are inserted into the vessel to obtain blood flow adequate to pass through the dialyzer. The arterial segment of the fistula is used for arterial flow and the venous segment for reinfusion of the dialyzed blood. The fistula takes 4 to 6 weeks to mature before it is ready for use. This gives time for healing and for the venous segment of the fistula to dilate to accommodate two large-bore (14or 16-gauge) needles. The patient is encouraged to perform exercises to increase the size of these vessels (ie, squeezing a rubber ball for forearm fistulas) and thereby to accommodate the large-bore needles used in hemodialysis. A graft is the connecting of an artery to a vein using a surgically placed graft material. The HD needles are inserted into the graft material instead of the vein. The physician and the patient make a choice of one of these accesses. The most commonly used synthetic graft material is expanded

polytetrafluoroethylene (PTFE). Usually, a graft is created when the patients vessels are not suitable for a fistula. Patients with compromised vascular systems (eg, from diabetes) often need to have a graft to undergo hemodialysis. Grafts are usually placed in the forearm, upper arm, or upper thigh. Infection and thrombosis are the most common complications of arteriovenous grafts.

Arterial Line

A tube known as the arterial line is attached to the access to take blood away from the body and bring it to the hemodialyzer. The blood is "milked" out of the blood stream by a pump containing two rollers that glide along the arterial line tubing on the HD machine. As these rollers rotate around in a circle, they gently compress on the tubing, creating a pulling force. This pulling force brings blood into the line, and then pushes it into the hemodialyzer that is attached to the end of the arterial line.

Hemodialyzer

In the US, hollow-fiber dialyzers are primarily used. Hollow-fiber dialyzers consist of a plastic casing filled with approximately 10-20 thousand "straws," each the size of human hair. Blood is directed downward as it travels inside these straws.

These straws or fibers are the semi-permeable membrane. They act as thousands of filters allowing for blood to stay inside the fibers while wastes and fluid seep out. While the blood travels inside the fibers, a cleaning solution (dialysate) is brought through a side port known as the dialysate port. This cleaning solution surrounds the fibers, but blood and dialysate do not mix! A special plastic resin acts as a cap on the top and bottom of the dialyzer, keeping blood inside the fibers and dialysate out. The dialysate travels upward as it fills the spaces around the outside

of the fibers, but remains within the casing of the dialyzer. A counter-current flow is created, as dialysate is brought in going up, and blood is pushed into the dialyzer going down.

The principles of heamodialysis -Diffusion, Ultrafiltration, and Solvent Drag

Blood is cleaned inside the dialyzer by the processes of diffusion, ultrafiltration (UF), and solvent drag. Particles are removed from the blood using diffusion into the dialysate. Diffusion is the movement of particles from an area of high concentration (an area of lots of particles) to an area of lesser concentration (an area with few or no particles) through a semi-permeable membrane. Diffusion allows for waste particles to be taken out of the blood, which is then transferred into the dialysate through the pores of the fibers. Water is both pushed and pulled off the blood inside the fibers by the process of UF.

Ultrafiltration is the removal of fluid using a pushing and pulling pressure at the same time. The blood pushes down from the top of the dialyzer through the fibers. Similar to pushing down on an orange on an orange grinder, water is “squeezed” off the blood. The dialysate is pulled through the dialyzer by pumps on the machine. Combined, these two forces push and pull fluid through the holes of the semi-permeable membrane. Particles are also removed with the fluid using the forces of UF in a process known as solvent drag.

Venous Line

At the bottom of the dialyzer is the venous line, which returns cleaner blood to the patient. Blood that was pushed through the fibers by the blood pump on the machine is now brought back the patient via a tube that is connected to either the central venous catheter, or another dialysis needle of a graft or fistula.

Dialysis Machine

The dialysis machine contains alarms for safety and is the vehicle to deliver blood and dialysate to the hemodialyzer. Along the blood tubing are pressure monitors, clamps, and an air detector that monitors the presence of air in the blood. If air is present in the blood, the dialysis machine clamps the venous bloodline shut, the blood pump automatically shuts, and the machine gives an audible and visual alarm to alert the nursing staff. The machine also carries dialysate (once it has been specially mixed and prepared) to the dialyzer. This solution is proportioned out by the machine in precise amounts to ensure safety and to effectively remove wastes and water from the blood. Machine monitors protect the patient from dialysate that is not properly mixed or prepared. If an alarm sounds, the problem is corrected by the nursing staff that is monitoring the entire dialysis treatment

Water and Electricity

Dialysate consists of salts and specially cleaned water. Tap water that is used for HD must be purified to prevent harmful contaminants such as chlorine, chloramines, and minerals from entering the patients bloodstream. Water treatment facilities exist inside dialysis units to provide purified water to each dialysis machine at that facility. Using semipermeable membranes, dionizing tanks, and carbon filters, tap water is passed through a series of water treatment components before it is brought to the dialysis machine. Electricity is needed to run the machine and the water treatment facility. When a power failure occurs, the patients blood must be manually cranked back by the patient or nursing staff. Dialysis will either resume when the power returns, or it will be rescheduled.

2.6 COMPLICATIONS OF HEMODIALYSIS

Hypotension (Low blood pressure)

This is related to the speed and amount of fluid removed from your blood. Giving you some intravenous fluids can easily reverse this. Symptoms can vary. Tell the nurse if you experience dizziness, nausea, cramps in legs or any 'funny feeling'. The best way to prevent this is for you to stick to the fluid restrictions that are set for you so that you avoid gaining too much fluid/weight between dialysis sessions.

Fluid Overload

Between sessions, patients can some times develop a condition called fluid overload. This is due to excess fluid building up in your body. Fluid overload can be mild and manifest itself as swollen ankles, or high blood pressure, or severe breathlessness. Constantly becoming fluid overloaded is not good for you, as it causes the blood pressure to rise and eventually damage the heart. If you think you are overloaded, contact the dialysis unit to organise extra dialysis to remove the fluid. If you are breathless or unwell, do not delay in contacting the dialysis unit.

Bleeding From Access Point

After dialysis, the needles will be removed from your fistula or graft. Your nurse will take every care to ensure that bleeding has stopped before you leave the unit. If you should develop further bleeding, from your access site, apply a dry dressing to the site, apply gentle pressure to the area, and return to the unit immediately. If possible, call the unit to let them know.

Infection

High PotassiumIn medical terms, this is known as hyperkalaemia. This means that there is too much potassium in the blood. This can be dangerous and life-threatening. High potassium can

affect the muscles of the body including the heart, which could stop beating. By sticking to the diet, that the dietician has prescribed for you, you can avoid this serious complication

Painful muscle cramping may occur, usually late in dialysis as fluid and electrolytes rapidly leave the extracellular space.

Exsanguination may occur if blood lines separate or dialysis needles accidentally become dislodged.

Dysrhythmias may result from electrolyte and pH changes or from removal of antiarrhythmic medications during dialysis.

Air embolism is rare but can occur if air enters the vascular system.

Chest pain may occur in patients with anemia or arteriosclerotic heart disease.

2.7 NURSING MANAGEMENT OF A PATIENT ON HEMODIALYSIS

The nurses responsibilities and management of a patient undergoing heamodialysis, this include: checking the patients' vital signs and talking with them to assess their condition teaching patients about their disease and its treatment and answering any questions overseeing the dialysis treatment from start to finish making sure patients are given the correct medications ordered by their doctors evaluating patients' reaction to the dialysis treatment and medications reviewing the patients' lab work, home medications and activities and letting the doctors know about changes in their patients' conditions.

MEETINGPSYCHOSOCIALNEEDS: Dialysis alters the lifestyle of the patient and family. The amount of time required for dialysis and physician visits and being chronically ill can create conflict, frustration, guilt, and depression. It may be difficult for the patient, spouse, and family to express anger and negative feelings. The nurse needs to give the patient and family the opportunity to express feelings of anger and concern over the limitations that the disease and

treatment impose and over possible financial problems and job insecurity. If anger is not expressed, it may be directed inward and lead to depression, despair, and attempts at suicide (suicide is more prevalent in dialysis patients); however, if anger is projected outward to other people, it may destroy already threatened family relationships. Although normal in this situation, these feelings are often profound and overwhelming. Counseling and psychotherapy may be necessary. Depression may require treatment with antidepressant agents. Referring the patient and family to a mental health provider with expertise in the care of patients receiving dialysis may also be helpful. Clinical nurse specialists, psychologists, and social workers may be helpful in assisting the patient and family to cope with the changes brought about by renal failure and its treatment. The nurse helps the patient to identify safe, effective coping strategies to cope with these ever-present problems and fears.

PROMOTING HOME AND COMMUNITY-BASED CARE: Preparing a patient for hemodialysis is challenging. Often the patient does not fully comprehend the impact of dialysis, and learning needs may go unrecognized. Good communication between the dialysis staff (in the hospital and outpatient clinic), unit staff, and home care nurses is essential for providing sound, continuous care.

Teaching Patients Self-Care: Assessment helps identify the learning needs of the patient and family members. In many cases, the patient is home before learning needs and readiness to learn can be thoroughly evaluated; therefore, hospital-based nurses, dialysis staff, and home care nurses must work together to provide appropriate teaching that meets the patients and family's changing needs and readiness to learn. The diagnosis of chronic renal failure and the need for dialysis often overwhelm the patient and family. In addition, many patients with ESRD have depressed mental state, a shortened attention span, a decreased level of concentration, and altered

perceptual states. Therefore, teaching must occur in brief, 10- to 15-minute sessions, with time added for clarification, repetition, reinforcement, and questions from the patient and family. The nurse needs to convey a nonjudgmental attitude to enable the patient and family to discuss options and their feelings about those options. Team conferences are helpful for sharing information and providing every team member the opportunity to discuss the needs of the patient and family.

Teaching Patients About Hemodialysis: Although most patients who require hemodialysis undergo the procedure in an outpatient setting, home hemodialysis is an option for some. Home hemodialysis requires a highly motivated patient who is willing to take responsibility for the procedure and is able to adjust each treatment to meet the body's changing needs. It also requires the commitment and cooperation of a family member to assist the patient. Many patients, however, are not comfortable imposing on others in that way and do not wish to subject family members to the feeling that their home is being turned into a clinic. The health care team should never force a patient into using home hemodialysis. Because this treatment requires many significant changes in the home and family, home hemodialysis must be the patients and familys decision. The patient undergoing home hemodialysis and the caregiver assisting that patient must be trained to prepare, operate, and disassemble the dialysis machine; maintain and clean the equipment; administer medications (eg, heparin) into the machine lines; and handle emergency problems (hemodialysis dialyzer rupture, electrical or mechanical problems, hypotension, shock, and seizures). Because home hemodialysis places primary responsibility for the treatment on the patient and the family member, they must understand and be capable of performing all aspects of the hemodialysis procedure. Before home hemodialysis is initiated, the home environment, household and community resources, and ability and willingness of the patient and family to

carry out this treatment are assessed. The home is surveyed to see if electrical outlets, plumbing facilities, and storage space are adequate. Modifications may be needed to enable the patient and assistant to perform dialysis safely and to deal with emergencies. Once home dialysis is initiated, the home care nurse must visit periodically to evaluate compliance with the recommended techniques, to assess the patient for complications, to reinforce previous teaching, and to provide reassurance.

Continuing Care: The health care teams goal in treating patients with chronic renal failure is to maximize their vocational potential, functional status, and quality of life. To facilitate renal rehabilitation, appropriate follow-up and monitoring by members of the health care team (physicians, dialysis nurses, social workers, psychologist, home care nurses, and others as appropriate are essential to identify and resolve problems early on. Many patients with chronic renal failure can resume relatively normal lives, doing the things that are important to them: traveling, exercising, working, or actively participating in family activities. If appropriate interventions are available early in the course of dialysis, the potential for better health improves, and the patient can remain active in family and community life. . Outcome goals for renal rehabilitation include employment for those able to work, improved physical functioning of all patients, improved understanding about adaptation and options for living well, increased control over the effects of kidney disease and dialysis, and resumption of activities enjoyed before dialysis.

EMPIRICAL REVIEW

Some previous researchers have carried out various studies on ascertaining the knowledge of the importance of adherence to heamodialysis, their level of adherence and factors associated with adherence to heamodialysis.

Empirical Review on Ascertaining the knowledge of the importance of adherence to heamodialysis among ESRD patients. Lower cases everything

de-Araújo-Ferreira,Pessoa,Pereira-Pôrto,Mendes-Santos,Carvalho-Lira&de-Queiroz-Frazão(2016) on Knowledge: disease process in patients undergoing hemodialysisin Brazil, carried out a descriptive study involving 51 patients male and female undergoing hemodialysis at a public nephrology hospital in a city in northeastern Brazil using questionnaire covering sociodemographic information and the 15 nursing outcome indicators Knowledge: disease process - was used. Data collection occurred by means of an interview with the patients during hemodialysis sessions. A form was used in the interview and was applied by two resident nurses of nephrology and two nursing undergraduate students from the Federal University of Pernambuco, who had been previously trained. The results from the survey were entered into the Statistical Package for the Social Sciences (SPSS) version 20.0 to create a database. The results the mean age of CKD patients was 50.1±15.2 years (minimum = 20, maximum = 89), 62.7% were male (62.7%), from the Metropolitan Region of Recife (100%), 70.6% lived with a partner, had 9 ± 3.3 years of schooling, and family income of 1.7±1.1 minimum wages. Regarding religious belief, 84.3% practiced some religion. As for occupation, 60.8% were Retired/Receiving benefited (60.8%), 9.8% were unemployed and 29.4% had other non-listed occupation.A statistically significant but weak correlation was found between age and the indicators Specific process of the disease (r =-0.28), Cause and contributing factors (r=-0.36), Signs and symptoms of the disease (r=0.30), Signs and symptoms of complications of the disease (r=-0.37), Precautions to prevent complications of the disease (r=-0.35); number of years of schooling and the indicators Specific process of the disease (r=0.29), Cause and contributing factors (r=0.28), and Signs and symptoms of the disease (r=0.34). There were significant and

moderate correlations of age with the indicator Psychosocial effect of the disease in the individual (r=-0.41), in the family (r=-0.44) and benefits of disease control (r=-0.48). Sex was related only to the indicator Specific process of the disease (p=0.03). The sample was found to be predominantly adult, male and with complete primary education. These variables (age, sex and schooling) had a statistically significant association with eight of the indicators on the knowledge about chronic kidney disease. Knowledge of self-management among CKD patients showed a significant deficit in the recognition of the symptoms of the disease in advanced stages and revealed ignorance about the asymptomatic form of the pathology.

Alikari,Maria,Tsironi,Matzito,Babatsikou,Psillakis,Fradelos,Zyga(2018) Adherence to Therapeutic Regimen in Adults Patients Undergoing Hemodialysis: The Role of Demographic and Clinical Characteristic Conducted a study in Greece, to measure the adherence levels among patients undergoing hemodialysis and correlate the adherence levels with demographic and clinical characteristics using a descriptive and analytic study . All 371 patients on maintenance HD from these Hemodialysis Units were asked to participate in this study. To conduct the study, 350 patients undergoing hemodialysis completed the GR-Simplified-Medication Adherence Questionnaire-Hemodialysis (GR-SMAQ-HD). Demographic and clinical data were recorded. Statistical data analysis was performed using the IBM SPSS Statistics Version 19. Multiple linear regression test, stepwise method and logarithmic transformations were used . Results of the study The mean age of patients was 56.5 years (SD = 10.0 years). The whole score of GR-SMAQ-HD was 6.05 (SD = 1.54) while for the dimensions of "Medication Adherence" was 3.01 (SD = 1.01), for "Attendance at HD Session" 1.75 (SD = 0.51) and for "Diet/Fluid Restrictions" was 1.3 (SD = 0.70). The educational level and the absence of children were independently associated with the "Attendance at HD Session" (P = 0.001 and P = 0.007, respectively). The

daily number of pills was independently associated with "Attendance at HD Session" (P = 0.020) and "Medication Adherence" score (P = 0.026). Vascular access site was independently associated with the total score of adherence scale (P < 0.001) and the "Medication Adherence" score (P < 0.001).This shows that high school graduates had significantly higher score in all domains of adherence in comparison to the illiterate and primary school graduates. Similarly, University students and graduates had a significantly higher score compared to the illiterate and primary school students .Therefore, high level of education can lead to better adherence rates . The higher the educational level, the higher the level of knowledge and adherence.

Aghakhani & Habibzadeh (2018) carried out a study on Self-care at home education impression on the quality of life in hemodialysis patients treated in Ardebil,Iran on 60 patients who were both male and female of age range (18-65) Undergoing heamodialysis. quasi-experimental study, was used to determine the self-care education at home impression on the quality of life in the heamodialysis patients .The data collection tools included a questionnaire about their demographic characteristics and another questionnaire about quality of life of the Kidney Disease Quality of Life Short Form of renal disease that was obtained by trained staffs. Data were analyzed using Statistical Package for the Social Sciences (SPSS) software.The findings The patients with lower level of education and economic status, long duration of illness, poor adherence of diet and drugs, having overweight and edema, and other diseases such as hypertension or diabetes suffered from a weak quality of life.Also,positive effect of self-care education at home in improving the quality of life for heamodialysis patients. After the intervention, all dimensions of quality of life except social protection, patient satisfaction, and employment were significantly increased in the experimental group (P <0.005). Furthermore, the

total mean of quality of life was promoted from 43.9% to 53.77% after self-care education at home and showed significant meaningfulness .

Kana, Miyata, Shen, James & Winchester(2017) carried out a comparative study on Patient knowledge and adherence to maintanance heamodialysis in United States and Japan using cross-sectional study evaluation was carried out on 100 U.S. and 116 Japanese patients on maintenance HD. Patient knowledge was scored based on the identification of their vascular access, dry weight, cause of kidney disease, and ≥3 phosphorus and potassium rich foods. Patients were considered non-adherent if they missed >3% of HD sessions in 3 months.23% of the U.S. and none of the Japanese patients were non-adherent. Using logistic regression, Result found out that in the U.S. non-adherence was more common in black patients , while high school graduates and those on the transplant waiting list were less likely to miss their treatments. 23% of the U.S. and none of the Japanese patients were non-adherent. Using logistic regression, we found that in the U.S. non-adherence was more common in black patients [Odds ratio (OR), 3.98; 95% confidence interval (CI), 1.42–11.22)], while high school graduates (OR, 0.20; 95%CI, 0.05–0.81) and those on the transplant waiting list (OR, 0.25; 95% CI, 0.083–0.72) were less likely to miss their treatments. There was no significant association between knowledge and non-adherence in the U.S. However, Japanese patients had significantly higher levels of HD knowledge than U.S. patients after adjusting for age ($p<0.001$).

Alikari, Tsironi, & Zyga (2018)carried out a study on the impact of education on knowledge, adherence and quality of life among patients on haemodialysis in west Attica, Greece using quasi-experimental interventional study, 50 patients undergoing heamodialysis. Knowledge, adherence and quality of life were measured pre- and post-intervention using the Kidney Disease Questionnaire, the GR-Simplified Medication Adherence Questionnaire-HD and Missoula Vitas

Quality of Life Index—15, respectively. The statistical analysis of the data was performed with the help of the Statistical Program SPSS .The results The mean age of patients was 56.5 years (SD =10.0 years). The whole score of GR-SMAQ-HD was 6.05 (SD = 1.54) while for the dimensions of "Medication Adherence"was 3.01 (SD = 1.01), for "Attendance at HD Session" 1.75 (SD = 0.51) and for "Diet/Fluid Restrictions" was 1.3 (SD = 0.70). The educational level and the absence of children were independently associated with the "Attendance at HD Session" (P = 0.001 and P = 0.007, respectively). The daily number of pills was independently associated with "Attendance at HD Session" (P = 0.020) and "Medication Adherence" score (P = 0.026). Vascular access site was independently associ-ated with the total score of adherence scale (P < 0.001) and the "Medication Adherence" score (P < 0.001).From this study shows that increase of knowledge, adherence and quality of life levels in the intervention group was significantly higher compared to the control group. There was no significant correlation between knowledge and adherence scores after the intervention. However, a significant positive correlation was found between the change in the overall quality of life and the changes in the total adherence score as well as the adherence to the fluids and dietary behaviour.

Ebrahimi, Sadeghi, Amanpour & Dadgari(2016) carried out a study on Influence of nutritional education on hemodialysis patients' knowledge and quality of life Iran. 99 patients undergoing heamodialysis treatment at the Imam Hossein Hospital in Shahroud, Iran were employed using quasi experimental study design .The instrument used in this study was a questionnaire regarding patients' knowledge and the standard questionnaire to assess QOL for end-stage renal disease (ESRD) patients. The result of the study comparison of the results pertaining to patients' knowledge indicated that there were no significant differences between pre-and post-results in the control group (P = 0.22); however, in the experimental group, the comparison showed a

significant difference between the pre-and post-results (P = 0.00). Furthermore, the comparison of patients' knowledge between the two groups after the intervention, indicated a significant difference between the experimental and control groups (P = 0.00) .The comparison of the mean QOL score in the two groups before the intervention showed no significant difference (P = 0.24) whereas after the intervention, the mean QOL score significantly increased in the experiment group compared with the control group (P = 0.00) [Table 3]. In addition, the QOL score showed no significant difference before and after the intervention in the control group (P = 0.43). However, a significant difference was observed in the experimental group before and after the intervention (P = 0.00).these findings supported the positive effects of educational program on patients' knowledge and quality of life among ESRD patients.

Karam , Naalweh, Mohammad & Zyoud(2017) carried out a research on treatment adherence and perception in patients on maintenance hemodialysis: a cross – sectional study in Palestine. A Self-reported adherence behavior was obtained using a valid and reliable questionnaire to conduct the study with a total of 220 patients which were recruited and interviewed with age range of 18–85 years. The result total of 220 patients answered all questions pertaining to ESRD-AQ. The mean age ± standard deviation of participants was 56.82 ± 14.51 years. Dietary adherence was observed in 24% while that of fluid restriction adherence was observed in 31% of studied patients. Reported adherence to HD sessions was 52% while that for medications was 81%. Overall, 122 (55.5%) patients had good adherence, 89 (40.5%) had moderate adherence, and 9 (4.1%) had poor adherence behavior. Male patients had significantly higher overall adherence scores than females (p = 0.034). A significant correlation between reported diet adherence and serum pre-HD potassium level (p < 0.01) was observed. A significant correlation between reported fluid restriction adherence and IDW (p < 0.01) was also found. However, no

significant correlation between reported adherence and pre-HD phosphate level. There was significant correlation between overall perception and overall adherence score ($p < 0.001$). Counselling of patients regarding importance of adherence modalities was lowest for "staying for the entire dialysis time". Multivariate analysis indicated that elderly male patients who were city residents had higher odds of having higher adherence score.The findings showed that the perception of studied patients toward various HD treatment modalities : Perception toward HD sessions had the highest score with 96.4% of studied patients believe that it is highly/very important to follow the dialysis schedule. Perception toward diet restriction was the lowest with 77.7% of studied patients believe that it is highly/ very important to watch the type of food taken daily. The perception of importance toward medication adherence and fluid restriction were comparatively fair with 85.5% and 88.6% of the studied patients believe that it is highly/very important to adhere to medications and restrict fluid intake respectively.

Level of adherence and associated factors to heamodialysis among end stage renal disease patients

Dada, Ajite, Ibitoba, Thomas, & Deji-Dada (2019)carried out a study on Challenges of haemodialysis: A single centre experience in South West Nigeria. Reviewing of 101 patients for 2years. Unstructured proforma was designed and used to extract data such as the socio demographic characteristic, aetiology of acute kidney injury and chronic kidney disease, type of vascular access, intradialytic complication and outcome of treatment. The data was analyzed with SPSS version 20. Continuous and categorical variables were analyzed with chi-square and student's T-test respectively. Results gotten Males constituted a higher proportion (64.4%) and were found to be older than female patients 49.8 vs 42.8 years (P=0.001).Also, Almost all patients paid out of pocket while few benefitted from only six sessions paid for through their

National Health Insurance Scheme (NHIS). Only 2(1.98%) patients were able to undergo 3 sessions of dialysis per week for up to 1 month while 19(18.8%) could only do at most 2 sessions per week for the first 3 months. Majority (89.1%) had chronic kidney disease while chronic glomerulonephritis was the main cause of CKD as seen in about 45% of the patient. Due to the cost implication, only 2(1.98%) were able to undergo 3 sessions of dialysis per week for up to 1 month. Vascular access was femoral (66.3%), internal jugular vein (25.7%), while only 2% used Artero-venous-fistula and one patient had femoral vessel pseudoaneurysm from frequent cannulation.

Mukakarangwa, Chironda, Katende(2018) carried out a study to determine the level of adherence to hemodialysis and the associated factors among End Stage Renal Disease (ESRD) patients in selected nephrology units in Rwanda. descriptive cross-sectional design involving 41 participants. Participants were recruited using a purposive sampling technique. Demographic and adherence to hemodialysis data were collected with the use of structured interview schedules. Descriptive statistics were used to describe the demographic variables and the level of adherence to hemodialysis. Inferential statistics of chi-square was used to establish factors associated with adherence to hemodialysis. Twenty-one (51%) of ESRD participants adhered highly (scores < 80%) to HD. Seventeen (42%) adhered moderately (70–79%) to HD while three (7%) had low level of adherence to HD (below 70%). The factors associated with adherence to hemodialysis were age (mean = 27; 95% CI 26.76–29, 17; p = 038) and religion (95% CI 26.29–60.12, p = 003). Frequencies of education of health care workers about the importance of not missing dialysis (95% CI 26.71–42.56, p = .000), perceived relative importance of hemodialysis (95% CI 20.44–27.76, p = .020), and experiencing difficulties during the procedure (95% CI 20.80–28.36, p = .004) were significantly associated with adherence to hemodialysis. Findings from this study

it was revealed that low adherence in 49% of ESRD participant. thirty-nine percent of the study population missed their dialysis sessions at least once the shortening dialysis session in the present study was observed among 5% of the participants, which was related to the technical problems faced by the dialysis machines since they needed constant servicing .the findings of the study also showed that age was statistically significantly associated with adherence to hemodialysis religion was significantly associated with adherence to hemodialysis Varying levels of education were not significantly associated with the level of adherence to hemodialysis among ESRD population. This shows that ESRD affects both educated and noneducated people meaning that knowledge alone is not a predictor of adherence to hemodialysis .there was no significant association between occupation, income, and adherence to hemodialysis among ESRD patients.Also, high cost for hemodialysis treatment and lack of adequate health insurance for some patients ended up with missing or withdrawing from the treatment.

American Kidney Fund (2018) on Barriers to Treatment Adherence for Dialysis Patients conducted surveys of dialysis patients and renal professionals to identify the most significant challenges related to adherence to dialysis treatment in America. A 33-question survey was developed and mailed to 3,001 randomly selected patients from AKFs Grants Management System, a database of more than 100,000 primarily low-income dialysis patients in all 50 states who qualify for the organizations financial grants. Nearly 1,200 patients responded a response rate of nearly 40%. An electronic survey was emailed to 14,216 renal professionals; 374 responded, for a response rate of 2.6%. The survey also found: Over 30% of patients reported leaving dialysis sessions early, while 18% said they skipped sessions altogether More than half (58%) of patients reported non-adherence to diet recommendations.50% of patients between the ages of 18 and 39 reported leaving dialysis sessions early, compared to 24% of patients aged 60

and over. Patients in the 18 to 39 age group reported medication non-adherence at a higher rate (38%) than patients 60 or over (21%). Patients aged 18 to 39 reported the highest rate of diet non-adherence (71%) compared to patients aged 60 and over (51%). Therefore, older people adhere to medication and dialysis compared to younger people.

Chironda & Bhengu (2016) Ccontributingfactors to Non-Adherence among Chronic Kidney Disease (CKD) patiet-A systemic Review of literature Carried out a comprehensive search to identify articles which highlight the factors contributing to non-adherence in CKD patients and Articles were identified from online data bases namely Medline, PubMed, Cinahl, Google scholar and Grey literature. The following words were used for this search: Adherence & non-adherence, factors contributing to non-adherence to dialysis, medication, diet and fluid, CKD patients. 96 of them were identified. The results gotten Six categories of factors contributed to non adherence were identified these were patient related socioeconomic factors, psychological factors, therapy related factors, pathophysiological related factors and health care system related factor.

Nakao, Gorayeb & Costa (2016) on Factors Associated with Treatment Adherence of Brazilian Patients Undergoing Hemodialysis Carried out a research on quantitative descriptive cross-sectional study which included a convenience sample of ESRD patients (64 adult) undergoing HD in a public university hospital in the interior of São Paulo state, Brazil. The instrument used was a semi-structured interview script to assess factors associated with adherence to dialysis and treatment regimen. The result findings were that 44 patients (68.7%) were found to be generally non-adherent (Overall adherence). Nonetheless, observing each aspect of the treatment separately, a prevalence of adherent patients was found, except for the Fluid Restrictions aspect, in which the number of non-adherent patients was higher (51.6%; n = 33). The adherent and non-

adherent groups werealso compared in terms of sociodemographic characteristics, a significant difference in regard to ages in the groups was verified concerning fluid management and the treatment as a whole, indication shows that adherent patients were older than those who do not adhere to these aspects of the treatment. There was also evidence of association between sex and heamodialysis adherence. Descriptive data suggest that male patients are more likely to adhere to HD than females. Women, however, seem to be more likely to adhere to diet and medication when compared to men. In regard to education, data also suggest that individuals with lower educational levels (from eight to ten years of schooling) more frequently adhere to treatment than those with more than ten years of schooling.In regard to knowledge about the disease and treatment, association was found between explanation regarding treatment and adherence to fluidrestriction ($p = .01$); the participants who provided satisfactory explanation less frequently adhered to this aspect of treatment. When associations among depression and anxiety and treatment adherence were verified, evidence of association was found between depression and adherence to fluid restrictions . Interestingly, contrary to what was hypothesized, a significantly higher percentage of patients who are non-adherent to this aspect of treatment did not present depression symptoms. In regard to perception of social support, a significant difference between groups was observed only in regard to HD adherence; i.e., the adherent patients presented higher scores of general support compared to the non-adherent group (Median 96.84 versus 81.05; $p< .05$).

Seshasai, Mitra , Chaknos, Wirtalla , Negoianu & Glickman (2016) on Factors Associated With Discontinuation of Home Hemodialysis, carried out a cohort study to describe the rate and timing of home heamodialysis therapy discontinuation, or technique failure, and identify contributing factorsin the United States of America. . The cohort comprised all adult patients

who initiated home hemodialysis therapy at DaVita dialysis facilities in the United States during the 3-year period from January 1, 2007, to December 31, 2009.Competing-risk models were used to produce cumulative incidence plots and identify socio-demographic and clinical variables associated with home hemodialysis therapy discontinuation. The results was that 1-year incidence of discontinuation was 24.9%, and the 1-year mortality estimate was 7.6%. Substantial proportion of patients discontinues home hemodialysis therapy within the first 12 months of use of the modalityThe 1-year incidence of discontinuation was 24.9% and the 1-year mortality estimate was 7.6%. Median ESRD duration prior to initiating HHD was 2.1 years. Diabetes and smoking/alcohol/drug use were associated with increased risk of HHD discontinuation (HRs of 1.34 [95% CI, 1.07–1.68] and 1.34 [95% CI, 1.01–1.78], respectively). Listing for kidney transplant and rural residence (rural-urban commuting area ≥ 7) were associated with decreased risk of HHD discontinuation (HRs of 0.73 [95% CI, 0.61–0.87] and 0.78 [95% CI, 0.59–1.02], respectively). Patients with diabetes, substance use, non-listing for kidney transplantation, and urban residence were at greater risk for discontinuation.

Duong, Olszyna, McLaws (2015) on Challenges of hemodialysis in Vietnam: experience from the first standardized district dialysis unit in Ho Chi Minh City, conducted a 1-year cross-sectional study to measure the prevalence of blood-borne infection and factors associated with non-compliant behaviors in hemodialysis patients. All patients aged 18 years and older, were treated at the District-6 Hospital Hemodialysis Unit in Ho Chi Minh City, Vietnam were invited to participate in our cross-sectional study. One hundred forty-two patients were assessed for Non-compliant behaviors were obtained from their medical records. The results Overall, 99 % of patients reused their dialyzers and 46 % had arteriovenous fistula on admission. Both HBV and HCV equally accounted for 8 % of patients and concurrent infection accounted for 1 %. Non-

compliance rates of dietary and medication were 39 and 27 % respectively. 42 % of patients missed hemodialysis session, 8 % were verbally or physically abusive and 9 % were non-cooperative. Of the 54 % catheterized patients, 7 % improperly cared for their dialysis access. Dietary non-adherence was associated with male patients ($p = 0.03$) and medication non-adherence was associated with younger age ($p = 0.05$). Duration between diagnosis of chronic kidney disease and initiation of hemodialysis was associated with improper care of dialysis access ($p = 0.04$). Time on hemodialysis was associated with missed hemodialysis session ($p = 0.007$) and verbal or physical abuse ($p = 0.01$).The findings showed that were that duration of hemodialysis of patients missing dialysis sessions was lower than that for patients who did not miss any sessions while age and gender were not related to missing sessions. Patients new to dialysis were not always compliant with their treatment plan. The reason for non-compliance was not examined but personal observations suggested that this may be due to lack of mental and physical preparation and the discomfort derived from the first hemodialysis sessions.

Hammad, Qazi (2018)on Factors Associated with Dialysis Withdrawal in Chronic Dialysis Patients carried out a research (retrospective study) and extracted patient information from the electronic renal patient management system Nephrocare, and Clinical Connect at the Grand River Hospitalin Canada. A total of (N=723) patients who initiated chronic renal dialysis therapy (>30 days of duration) in renal dialysis program at Grand River Hospital (GRH), Ontario, during the period from 1st January, 2012 to 30th September, 2017 were consecutively included in the study. Patients with acute dialysis or patients receiving dialysis before the start of the study were excluded. Age, sex, modality, comorbidities such as diabetes, cardiac disease, hypertension, vascular disease, lung disease, malignancy, dementia, depression and bipolar disorder and aetiology of kidney disease were selected as hypothesis variables and duration of dialysis was the

controlled.The resultss: The mean age of the sample was 64.86 years (±14.89) with 62.8% (n=454) males. The most common cause of renal disease was diabetes (33.6%) and the most common comorbidity was hypertension (94.5%). The mean duration of dialysis was 544.80 days (±486.83) days. The prevalence of dialysis withdrawal was 9.41% (n=68) with psychosocial (n= 16; 23.5%) being themost common reason. The final logistic regression model showed that cardiac disease, [= 0.6530; p=0.016], hypertension [= 1.7421; p=0.019], dementia [=1.1125; p=0.008] and age [=0.0342; p=0.002] were significantly associated with dialysis withdrawal, with significant influence of duration of dialysis [=-0.000841; p=0.0092] as a confounder on the above relationship.The study showed age, cardiac disease, hypertension and dementia are significant predictors related to dialysis withdrawal in chronic dialysis population.

Ozen, Cinar & Turker (2019) carried out a study on Nonadherence in Hemodialysis Patients and Related Factors: A Multicenter Study .A descriptive study was conducted on 274 patients who were being treated at four HD centers in Turkey. Morisky Green Levine Medication Adherence Scale was performed to determine nonadherence to medication treatment. The result revealed The nonadherence rate was 39.1% for dietary and fluid restrictions, 33.6% for HD, and 20.1% for medication. The risk of nonadherence to dietary and fluid restriction was found to be 4 times higher in high school graduates The risk of nonadherence to heamodialysis treatment was 2 times higher in men and 2.5 times higher in patients with a central venous catheter. Longer duration in HD resulted in decrease in risk of nonadherence to treatment .Therefore having a central venous catheter, and having a short HD duration were found to be associated factors for nonadherence to heamodialysis.

Arjunan, Arulappan, Kurup, Subramaniam & Venkatasalu (2018)carried out a study on Medication, Diet, Fluid and Treatment Adherence Behavior among Patients Subjected to

Hemodialysis in Selected Hospital in India .A cross sectional descriptive research design was adopted. 100 patients subjected to hemodialysis were recruited and End stage renal disease adherence questionnaire was used to evaluate the adherence behavior and perception towards HD treatment among patients subjected to hemodialysis at territory University teaching 3500 bedded hospital in Chennai, South India. All (100 %) patients were adherent to dialysis treatment. The patient were administered with the questionnaire by face to face method. Collected data were analyzed using the Statistical Package for the Social Sciences (SPSS, IBM, California, California State, USA) for Windows Version 20.0. The investigators used descriptive statistics to assess the adherence of advised behavior changes (medication intake, fluid restriction, dietary modification and regular hemodialysis attendance) and patients knowledge on their disease management. The results showed that most of the study participants had better adherence behavior towards medication, diet and treatment.

Kustimah, Gimmy Siswadi, Djunaidi, & Iskandarsyah (2019) carried out a study on Factors Affecting Non-Adherence to Treatment in End Stage Renal Disease (ESRD) Patients Undergoing Hemodialysis in Indonesia. The study was conducted using qualitative methods at a hemodialysis unit in a private hospital in Bandung. A total of 23 respondents (11 patients, 3 caregivers, 7 nurses, 2 general practitioners and 1 nephrologist) were interviewed in this study. All participants were selected through purposive sampling and invited to participate in semi-structured interviews with open-ended questions. The data obtained were written in verbatim and analyzed using thematic analysis. Results found out that six main themes related to non-adherence emerged. These themes were categorized into two clusters namely: (1) factors related to patient (patient related factors) (negative perception and treatment belief, denial, lack of awareness and knowledge and negative feelings) and (2) factors related to the treatment

(treatment burden and financial problems) all these factors were identified as associated with non adherence to heamodialysis by hemodialysis patients.

Nagasawa, Tachi, Sugita, Esaki, Yoshida Kanematsu, Noguchi, Kobayashi, Ichikawa & Tsuchiya(2018) carried out a study on the Effect of Quality of Life on Medication Compliance Among Dialysis Patients in Japan.A cross-sectional survey study was implemented using a self-administered questionnaire.92 patients who self-managed their medication were selected as study participants .Participants' mean (± standard deviation was 67.0 ± 11.6 years, 21 were female (22.8%), and the median dialysis period was 81.5 months. Causative diseases are diabetes mellitus (50.0%) and kidney disease (50.0%).The result revealed that high sleep related quality of life is associated with better medication compliance and adherence compliance therefore sleep is a factor associated with adherence to medication treatment and heamodialysis.

Agustina, Yetti & Sukmarini(2019)carried out a study on Contributing factors to hemodialysis adherence in Aceh, in Indonesia. The study used a cross-sectional method with 110 respondents who underwent hemodialysis treatment in Aceh Hospital of Indonesia. The samples were chosen using consecutive sampling. The questionnaires and Medical Record documents were used as instruments to obtain the data for this study. The data were analyzed using the chi-square test and logistic regression. Results revealed that the percentage of patients who adhered to hemodialysis was 60%. There were significant relationships between hemodialysis adherence and satisfaction, self-efficacy , acceptance and social support .So patients with higher level of satisfaction, self efficacy and acceptance adhere more to heamodialysis sessioncompared to those who are not satisfied with their life.

Opiyo, Nyasulu & Were(2019) carried out a study on factors associated with adherence to dietary prescription among adult patients with chronic kidney disease on hemodialysis in

national referral hospitals in Kenya: a mixed-methods survey. There were 333 participants in this study, of which 59.8% were males while 41% were females. Adult patients with chronic kidney disease on hemodialysis without kidney transplant were purposively sampled for the quantitative survey. A sub-sample of adult patients and their caregivers were purposively sampled for the qualitative survey. Numeric data were collected using a structured, self-reported questionnaire using Open Data Kit "Collect software" while qualitative data were collected using in-depth interview guides and voice recording. Analysis on STATA software for quantitative and NVIV0 12 for qualitative data was conducted. Results revealed that adherence to diet prescription was low among these patients who were all aware of the recommended foods for their health condition. Awareness of the foods and preparation methods was equally high among the family caregivers. Being aware of the right foods to consume as well as the right preparation methods for the CKD patients on hemodialysis did not translate into adherence to the dietary prescription. This relatively affected their quality of life.

2.9 THEORETICAL FRAMEWORK

The Theory of Planned Behavior (TPB) is a framework for understanding, predicting, and changing human behaviour. The Theory appears to have application in addressing Adherent and non-adherent behavior in difficult populations. TBP is a general model that can be utilized when observing any behavior. Ajzen is the leading scholar in the field, and he and his colleagues point out: According to the theory, intention is the immediate antecedent of behavior and is itself a function of attitude toward behavior, subjective norm, and perceived behavioral control; and these determinants follow, respectively, from beliefs about the behaviors likely consequences, about normative expectations of important others, and about the presence of factors that control behavioral performance. (Ajzen, 2012) Ajzen argues that thoughts and feelings lead up to

decisions and therefore are helpful in explaining behavior, and that behaviors performed come from reasonable consideration of behavior-relevant information available to the individual.

Ajzen believes that peoples intentions should be sufficient to predict behavior when control of behavior was high and that intention and control interact to affect performance of behavior. Attitudes toward the behavior, subjective norms with respect to the behavior, and perceived control over the behavior are usually found to predict behavioral intentions with a high degree of accuracy. In turn, these intentions, in combination with perceived behavioral control, can account for a considerable proportion of variance in behavior. (Ajzen, 1991,) Therefore, intentions, subjective norm, and perceived behavioral control guide volitional human behavior. The concept of perceived behavioral control is interactive with the individuals intentions such that individuals who believe they can accomplish a given behavior will have higher intention to do so, and those uncertain of their capability to perform a given behavior will be unlikely to have intention to do so (Ajzen, 2012). Perceived behavioral control can thus influence behavioral performance indirectly by its effects of intentions to engage in the behavior and on perseverance in the face of difficulties encountered during execution. (Ajzen, 2012)Ajzen also believed that often in social sciences measures of actual control are not available and that perceived behavioral control can serve as a proxy and aid in the prediction of behavior. Individuals form perceived behavioral control from their beliefs about resources available, obstacles that may be present or arise, and their ability to perform. To summarize briefly, according to the TPB, human action is guided by three kinds of considerations: readily accessible beliefs about the likely outcomes of the behavior and the evaluations of the outcome (behavioral beliefs), readily accessible beliefs about the normative expectations and actions of important referents (normative beliefs), and readily accessible beliefs about the presence of factors that may facilitate or impede performance of the

behavior and the perceived power of these factors (control beliefs). (Ajzen, 2012,)Behavioral beliefs create an attitude toward a given behavior, normative beliefs are developed based on perceived social pressures, and behavioral control is a perception based on control beliefs. As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger the persons intention to perform the behavior in question. (Ajzen, 2012) While TBP adheres to the idea that behavior is guided by beliefs and intentions, it does not assume that an individuals beliefs are rational, unbiased, or representative of reality. Beliefs reflect the information people have in the relation to the performance of a given behaviour, but this information is often inaccurate and incomplete; it may rest on faulty or irrational premises, be biased by self-serving motives, or otherwise fail to reflect reality. (Ajzen, 2012)

With direct application to end-stage renal disease, TPB definitely highlights the demanded behavior changes of the individual in order to maximize his or her health and quality of life. Any behaviour, such as medication compliance, that works to improve, maintain, or diminish one's health in relation to ones illness could be viewed through the lens of TPB. According to the Theory, an individuals beliefs and intentions guide behavior. Therefore, as healthcare professionals work with individuals regarding behaviors that need to be changed or modified, beliefs and intentions are important to discuss and consider for the greatest success in behavioral change. Information and education alone may not be sufficient for individuals to make needed changes in their routines and lives TPB can prove useful in working with individuals to identify beliefs that may be hindering them from successful behavioral change. Perceived control of behavior, perceived obstacles, and beliefs about rewards or consequences of a given behavior can all be discussed, reviewed, supported, and/or challenged. The TPB supports that beliefs guide intentions, which in turn guide behavior. Therefore, healthcare professionals need not

assume that the need to change behavior or the fear of declining health is sufficient for behavioral change. TPB offers more in terms of describing an individual's cognition about behaviors than interventions that may be used. Healthcare professionals are left with a framework for understanding key components to behavioral change but no specific interventions to utilize. In The Theory of Planned Behavior aligns well with social work values and ethic. The individual is the expert on his life and situation. Only the individual can paint a picture of what he believes, feels capable of, considers obstacles, fears happening, is motivated to do, and his level of concern with social pressures or norms around a given behavior. Likewise, the goal of the healthcare professional is to empower clients to understand and describe their beliefs, overcome obstacles, acknowledge their strengths and networks, and assist them in the change process. Social workers advocate for clients regarding obstacles created by policies or the healthcare system and link clients to available resources that would aid in overcoming obstacles.

2.10 APPLICATION OF THEORY OF PLANNED BEHAVIOUR

The theory has been applied to a broad range of health behavior and it appears to have application in addressing Adherent and non-adherent behavior in difficult populations for example the renal disease patients behavior towards their adherence to heamodialysis. intentions, subjective norms, and perceived behavioral control are the three broad areas identified by Azjen.

Intentions of the individual: This reflects his personal attitudes or the individual perception on the extent of favorability of an act. In like manner end stage renal disease patients who have the adequate knowledge and information about how his or her condition will be managed by hemodialysis and has perceived that adhering to the treatment regimen will improve his or her health and considering the consequences of not adhering will have positive attitude towards hemodialysis and may likely not default.

Subjective norms: The individual will likely carry out the actor the society demonstrates general favorability towards the act. The individual will think the same way if the act would favor him but if not, may not carry out the act that is his or her intentions are largely shaped by the degree of approval by friends, family and coworkers. In the same vein, a patient with renal disease who needs to go for hemodialysis in order to promote his health will likely adhere if the society accept or approved that the treatment regimen will improve his health, the society here could be family members, friends, health workers (doctors and nurses).

Perceived behavioural control: The intentions and the resulting behaviors of the individual are affected by their perceived behavioral control, or what they think and believe to be their ability to actually perform or engage in the said behaviors. perceived behavioral control is interactive with the individuals intentions such that individuals who believe they can accomplish a given behavior will have higher intention to do so, and those uncertain of their capability to perform a given behavior will be unlikely to have intention to do so. Azjen, (2012). For the renal disease patients who have the intention of improving their health through adherence to heamodialysis and considering those factors that could affect the treatment having the (financial, psychological, physical) power and ability to carry out this treatment regimen will likely comply and adhere to hemodialysis but with the right intentions and subjective norms, uncertain capability to perform or carry out this treatment regimen may lead to not adhering to heamodialysis.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discusses the methodology and design of the research study. The study evaluates the adherence to heamodialysis and associated factors among end stage renal disease patients at nephrology unit in university of Benin Teaching hospital.

3.1 RESEARCH DESIGNLower cases everything

The researcher adopted a descriptive cross sectional design for the correspondents over a period of time, to determine the level of adherence to hemodialysis and associated factors among End Stage Renal Disease patients.Data collected from the correspondents was analysed accordingly.

3.2 AREA OF STUDY -SETTING

The study was carried out in University of Benin teaching hospital: a tertiary facility located in Egor local government area of Edo state, Nigeria. .It shares boundary with main campus of University of Benin to the east federal road to the west. It is an institution which serves as a referral, diagnostic, teaching and research centre in the government health care delivery system.

The hospital is made up of different sections and units which includes the consultant out patient department (COPD) General practice center(GPC), male and female medical and surgical wards,

antenatal clinic, Renal unit, Intensive care unit, Theatre, pediatric wards, maternity sections, geriatric ward, opthalmic complex and many others. Renal unit is the focus setting for this research in into. It shares building with theatre and intensive care unit. At renal unit patients come here for hemodialysis.

3.3 TARGET POPULATION

The target population for this study was renal disease patients attending renal unit for hemodialysis in UBTH Benin City. Nephrology unit has an average of 200 patients every 2-3 times a week in a month coming for heamodialysis. In the patient register at the renal unit, patients who came for hemodialysis within 6 months from January to June 2019,(200,205,200,170,205,220) which gives a total of 1200 patients, and there is an average of 200 patients who visit the unit for dialysis every 2-3 times a week. The accessible population for this study were those who were adult conscious patients who agreed to participate and had been on hemodialysis for more than 2 months

as well as available at the time of the study.

Months during 2019	Numberofpatientswhocamefor heamodialysis
January	200
Febuary	205
March	200
April	170
May	205
June	220
Total Average	1200/6=200

3.4 SAMPLING TECHNIQUEs

The sampling technique adopted for this study was non probability, (accidental sampling technique).This was used because most patient are not seen daily just 3 times a week they come for hemodialysis, the correspondents who were available at the different times in a week were considered for this study.

3.5 Sampling size

The sample size is the average number of renal disease patients who came for hemodialysis during the 6 months period at the renal unit at UBTH which is an average of 200.

3.6 Instruments for data collection

The researcher adapted a standardized instrument known as the End stage renal disease adherence questiinaire (ESRD-AQ) by Kim et al 2010.This is a 46 item questionnaire with five sections. The questions were carefully constructed to give an in depth understanding of the topic and relevant study. The questionnaire were divided into (4) sections A,B,C,D,In section A, the respondents provided personal /demographic data. Section B, part was on knowledge of the importance of adherence to hemodialysis which comprises of 10 questions a score of (1-3)was considered poor knowledge, a score of (4-6) was considered fair knowledge and a score of (7-10) was considered good level of knowledge of the importance adherence to hemodialysis. Section C, was on Level of adherence to hemodialysis towards hemodialysis treatment, fluid, diet and medication and results from correspondents were classified as either low level, moderate or high level of adherence to hemodialysis, while section D, was on factors associated with adherence to

heamodialysis among ESRD patients, mean score greater than or equal to 2.5 is considered a factor.

3.7Validity of the Instrument

The instrument was developed and was given to the project supervisor for screening and modification so that questionnaire was free from bias and have the ability to get the information to meet answer to the formulated research question. Thus, content and face validity were satisfied.

3.8RELIABILITY OF THE INSTRUMENT

The reliability of the instrument was determined by using pilot study. The questionnaires were administered to 10% of the target population patients who came for hemodialysis at the renal unit in lily hospital Benin City,Edo state, another area of study, who were not part of the study sample. Data was collected and analysed using split half reliability using cronbach Alpha and a value of 0.81 which shows the instrument was reliable. State for the 3 sections

3.9 METHOD OF DATA COLLECTION

Letter of approval and identification was sought. Two hundred questionnaires were administered. With the help of the assistance of 2 nurses who were trained to give questionnaires before the correspondents undergo dialysis, they had the questionnaire filled for 25-30mins, people who could not read were read to and the time frame for data collection was up to 4 weeks. They were administered after consent have be given and time were allocated for filling the questionnaires. The correspondents were informed that they can leave at any point and information were kept confidential. They were allowed to only share what they fill, as long as they are comfortable discussing it in front of others.

3.10 METHOD OF DATA ANALYSIS

The collected data from responses to questions contained in the questionnaire were coded into statistical package for the social sciences (SPSS) version 21.0 and the result was analyzed using descriptive and inferential statistics. Values were put in tables. The hypotheses were tested using inferential statistics eg frequency and percentage, chi-square were used to test for relationship between level of adherence to haemodialysis and level of knowledge with ($p>0.05$), independent samples t-test was used to test the significant difference been level of adherence and gender with a ($p=0.000$), multiple logistic regression was used to predict the association between the level of adherence and socio-demographic variables with ($p<0.05$).

3.11ETHICAL CONSIDERATION

Ethical approval for the study was sought for and obtained from the research ethics committee, with a protocol number ADM/E/VOL VIII/ 14831026 University of Benin teaching hospital .Before data collection commenced careful explanation of the purpose content and implication were made known to the respondents. Informed consent was duly sought. Assurance and adherence of confidentiality of information was maintained throughout the study. Participation in the study was on voluntary basis and also, anonymity was maintained throughout the study. Results were not falsified, none of the respondents were made to answer question under duress. The researcher ensured that standardethical principles used was upheld and no information obtained were used against the respondents.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

This chapter presents the results of the study. Two hundred (200) copies of questionnaires were administered and all (100%) were returned, completely and correctly filled.

4.1 Sociodemographic characteristics of respondents

Table 4.1 Sociodemographic characteristics of respondents

	Frequency	Percentage
Age		
18-30years	22	11.0

31-40years	56	28.0
41-50years	35	17.5
51-60years	63	31.5
Greaterthan60years	24	12.0
Gender		
Male	125	62.5
Female	75	37.5
Marital Status		
Married	75	37.5
Single	41	20.5
Separated	46	23.0
Widowed	38	19.0
Level of education		
Not educated	40	20.0
Primary	45	22.5
Secondary	87	43.5
College/university	28	14.0
Occupation		
Self-employed	95	47.5
Public servant	51	25.5
Unemployed	54	27.0
Monthly income		
Lessthan50000	148	74.0
50000-100000	36	18.0
Morethan100000to200000	6	3.0
Morethan200000	10	5.0
Religion		
Christian	162	81.0
Muslim	38	19.0

Table 4.1 shows socio-demographic characteristics of respondents. Twenty-two (11%) were within 18-30 years, 56(28%) were 31-40 years, 35(17.5%) were 41-50 years, 24(12%) were above 60 years. Majority 125(62.5%) were males, 75(37.5%) were females. Majority 75(37.5%) were married, 41(20.5%) were single, 46(23%) were separated, 38(19%) were widowed. Forty (20%) were not educated, 45(22.5%) had primary education, majority 87(43.5%) had secondary education, 28(14%) had college/university education. Majority 95(47.5%) were self-employed, 51(25.5%) were public servant, 54(27%) were unemployed. Majority 148(74%) earned less than 50,000, 36(18%) earned between 50000-100000, 6(3%) earned more than 100,000 to 200,000, 10(5%) earned more than 200,000. Majority 162(81%) were Christians, 38(19%) were Muslims.

Table 1b: Haemodialysis Regimen and its cost

	Frequency	Percentage
Duration of ESRD		
3monthsto1year	113	56.5
Morethanayearto2years	61	30.5
Morethan2yearsto3years	17	8.5
Morethan3yearsto5years	5	2.5
Morethan5years	4	2.0
Mode of payment for hemodialysis		
Self-sponsored	159	79.5
Government assisted	25	12.5
Private medical insurances	9	4.5
Community based Health Insurance	7	3.5
How many days a week do you receive hemodialysis treatment		
2 days or less	164	82.0
3 days	13	6.5
4 days	6	3.0
More than 4 days	5	2.5
More than 5 days	12	6.0
How many hours are you treated for each hemodialysis		
Less than 3 hours	154	77.0
3 hours	12	6.0
3 hours and 15 minutes	8	4.0
3 hours and 30 minutes	11	5.5
3 hours and 45 minutes	6	3.0
4 hours	6	3.0
More than 4 hours	3	1.5

Data in Table 1b. revealed that majority 113(56.5%) that their ESRD lasted 3 months to 1 year, 61(30.5%) reported theirs was more than a year to 2 years, 17(8.5%) reported theirs was more

than 2 years to 3 years, 5(2.5%) reported that theirs was more than 3 years to 5 years, 4(2%) reported theirs was more than 5 years. It was reported by majority 159(79.5%) that their haemodialysis payment was self-sponsored, 25(12.5%) reported their payment was government assisted, 9(4.5%) reported their payment was private medical insurances, 7(3.5%) reported their payment was community-based health insurance. It was reported by majority 164(82%) that they received hemodialysis 2 days or less, 13(6.5%) reported they treatment was 3 days a week, 6(3%) reported their treatment was 4 days a week, 5(2.5%) reported their treatment was more than 4 days, 12(6%) reported their treatment was more than 5 days. Majority 154(77%) reported they were treated for each hemodialysis less than 3 hours, 12(6%) reported they were reported for 3 hours, 8(4%) reported they were treated for 3 hours and 15 minutes, 11(5.5%) reported they were treated for 3 hours and 30 minutes, 6(3%) each reported their treatment was 3 hours and 45 minutes and 4 hours, 3(1.5%) reported their treatment was more than 4 hours.

Table 4.2: Knowledge of the importance of adherence to hemodialysis ***correct response at the top and wrong responses below and the percentage and it will reduce the long table

	Frequency	Percentage
What do you understand by the word Hemodialysis?		
It is a therapy for treating cancer	1	0.5
It is a diagnostic therapy for treatment of kidney failure	193	96.5
it is used for preventing malaria	4	2.0
none of the above	2	1.0
Hemodialysis is for management of		
genetic disease patients	3	1.5
HIV patients	13	6.5
acute and chronic kidney diseases	181	90.5
Meningitis	3	1.5
Without hemodialysis a renal disease patient can		
survive the disease	43	21.5
cannot survive the disease	137	68.5
option A and B	0	0.0
none of the above	20	10.0
What type of vascular access do you use for hemodialysis		
Fistula	72	36.0
Catheter	33	16.5
AV graft	5	2.5
None	90	45.0
Which of the following is considered a better option than hemodialysis		
blood transfusion	2	1.0
peritoneal dialysis	4	2.0
kidney transplant	91	45.5
none of the above	103	51.5
How many times a week can one go for adequate		

hemodialysis treatment?		
once a week	5	2.5
10 times a week	7	3.5
3 times weekly	28	14.0
none of the above	160	80.0
Hemodialysis treatment is good for		
children with kidney	61	30.5
The elderly	72	36.0
young ones	48	24.0
All ages with kidney failure	19	9.5
It is very important to stay for the entire dialysis time during your dialysis treatment?		
True	25	12.5
False	175	87.5
How important do you think it is to follow your dialysis schedule?		
Highly important	21	10.5
Very important	15	7.5
Moderately important	12	6.0
A little important	152	76.0
Why do you think it is important to follow your dialysis schedule?		
Because I fully understand that my kidney condition requires dialysis as scheduled	21	10.5
Because medical professional (my doctor, nurse, or dietitian) told me to do so	3	1.5
Because I had an experience that I was hospitalized after I missed dialysis	82	41.0
all of the above	94	47.0

Table 4.2 shows knowledge of importance of adherence to hemodialysis. It was reported by 1(0.5%) that they understand hemodialysis was a therapy for treating cancer, majority 193(06.5%) reported it was a diagnostic therapy for treatment of kidney failure, 4(2%) reported it was used for preventing malaria, 2(1%) reported it was none of the above. It was reported by 3(1.5%) that hemodialysis is for management of genetic disease patients, 13(6.5%) reported it was for HIV patients, majority 181(90.5%) reported it was for acute and chronic kidney diseases, 3(1.5%) reported it was for meningitis. It was reported by 43(21.5%) that without hemodialysis a renal disease patient can survive the disease, majority 137(68.5%) reported they cannot survive the disease, 20(10%) reported none of the above. It was reported by 72(36%) that vascular access they used for hemodialysis was fistula, 33(16.5%) reported it was catheter, 5(2.5%) reported it was AV graft, 90(45%) reported none. It was reported by 2(1%) that blood transfusion is considered a better option than hemodialysis, 4(2%) reported it was peritoneal dialysis, 91(45.5%) reported it was kidney transplant, 103(51.5%) reported none of the above. It was reported by 5(2.5%) that one can go for adequate hemodialysis treatment once a week, 7(3.5%) reported it was 10 times a week, 28(14%) reported it was 3 times a week, majority 160(80%) reported it was none of the above. It was reported by 61(30.5%) that hemodialysis treatment is good for children with kidney, 72(36%) reported it was for the elderly, 48(24%) reported it was for young ones, 19(9.5%) reported it was for all ages with kidney failure. It was reported by majority 175(87.5%) that it wasn't very important to stay for the entire dialysis time during your dialysis treatment, 25(1.5%) reported it was very important. It was reported by 21(10.5%) that it is highly important to follow dialysis schedule, 15(7.5%) reported it was very important, 12(6%) reported it was moderately important, majority 152(76%) reported it was a little important. It was reported by 21(10.5%) that they thought it was important to follow their dialysis schedule

because they fully understand that their kidney condition requires dialysis as scheduled, 3(1.5%) reported it was because medical professional (doctor, nurse or dietitian) told them to do so, 82(41%) reported it was because of their experience that they were hospitalized after they missed dialysis, 94(47%) reported all of the above.

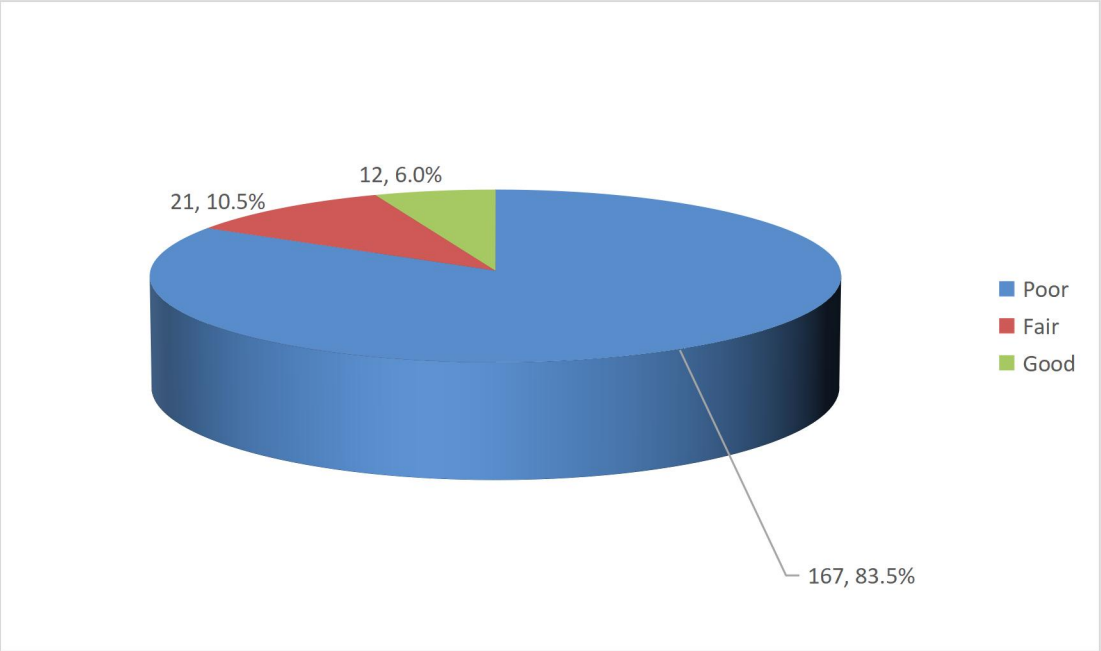

Figure 4.1: Level of knowledge* state the criteria for grouping it into poor**

Figure 4.1 shows the level of knowledge of the importance of adherence to hemodialysis. It shows that 167(83.5%) have low level of knowledge, 21(10.5%) have moderate level of knowledge, while the remaining 12(6.0%) have high level of knowledge.

Table 4.3: **Level of adherence to hemodialysis treatment-scale this item**

	Frequency	Percentage
Is your dialysis schedule convenient for you?		
Yes	71	35.5
No, because I have to come to the dialysis center too early	2	1.0
No, because I have to come to the dialysis center too late	43	21.5
No, because of my work schedule	3	1.5
No, because it is my meal time and I get hungry during dialysis treatment	41	20.5
No, because it is my medication time and I have to take medicines/insulin	36	18.0
No, because of (Other)	4	2.0
How much difficulty have you had staying for your entire dialysis treatment as ordered by your doctor?		
No difficulty	26	13.0
A little difficulty	3	1.5
Moderate difficulty	91	45.5
A lot of difficulty	61	30.5
Extreme difficulty	19	9.5
During the last month, how many dialysis treatments did you miss completely?		
None (I did not miss any treatments)	30	15.0
Missed one dialysis treatment	16	8.0
Missed two dialysis treatments	1	0.5
Missed three dialysis treatments	2	1.0
Missed four or more dialysis treatments	151	75.5
What was the main reason you missed your dialysis treatment last month?		
Not applicable: I did not miss any treatment	27	13.5
Transportation problems	17	8.5

I had other things to do	2	1.0
Hemodialysis access (graft, fistula, or catheter) clotted	2	1.0
Physician (medical or surgical) appointment	90	45.0
I had to go to the emergency room	42	21.0
I was hospitalized	13	6.5
Forgot	0	0.0
Didn't want to go or Couldn't go	7	3.5
During the last month, how many times have you shortened your dialysis time?		
Not applicable: I have not shortened my dialysis time	17	8.5
Once	4	2.0
Twice	12	6.0
Three times	84	42.0
Four to five times	31	15.5
Other	52	26.0
During the last month when your dialysis treatment was shortened, what was the average number of minutes?		
Not applicable: I have not shortened my dialysis time	16	8.0
Less than 10 minutes or 10 minutes	28	14.0
11 to 20 minutes	77	38.5
21 to 30 minutes	24	12.0
More than 31 minutes	55	27.5

Table 4.3 shows level of adherence to hemodialysis treatment. It was reported by 71(35.5%) that their dialysis schedule is convenient for them, 2(1%) reported it wasn't because they have to come to the dialysis center too early, 43(21.5%) reported it wasn't because they have to come to the dialysis center too late, 3(1.5%) reported it wasn't because of their work schedule, 41(20.5%) reported it wasn't because it was their meal time and they get hungry during dialysis treatment, 36(18%) reported it wasn't because it was their medication time and they had to take

medicines/insulin, 4(2%) reported it wasn't because of their reasons. It was reported by 26(13%) that they had no difficulty staying for their entire dialysis treatment as ordered by their doctor, 3(1.5%) reported a little difficulty, majority 91(45.5%) reported moderate difficulty, 61(30.5%) reported a lot of difficulty, 19(9.5%) reported extreme difficulty. It was reported by 30(15%) that they didn't miss any dialysis treatments during the last month, 16(8%) reported they missed one dialysis treatment, 1(0.5%) reported they missed two dialysis treatments, 2(1.0%) reported they missed three dialysis treatments, majority 151(75.5%) reported they missed four or more dialysis treatments. It was reported by 27(13.5%) that they didn't miss any treatment, 17(8.5%) reported they missed their dialysis treatment because of transportation problems, 2(1%) each reported they missed treatment because they had other things to do and because of hemodialysis access respectively, majority 90(45%) reported they missed because of physician appointment, 42(21%) reported they had to go to the emergency room, 13(6.5%) reported they were hospitalized, 7(3.5%) reported they didn't want to go or couldn't go. It was reported by 17(8.5%) that they never shortened their dialysis time, 4(2%) reported they did once, 12(6%) reported they did twice, 84(42%) reported they did thrice, 31(15.5%) reported they did four to five times, 52(26%) reported other number of times they shortened their dialysis time. It was reported by 16(8%) that they never shortened their dialysis time, 28(14%) reported they shortened their dialysis time by less than 10 minutes or 10 minutes, majority 77(38.5%) reported they shortened it by 11 to 20 minutes, 24(12%) reported 21 to 30 minutes, 55(27.5%) reported more than 31 minutes.

Table 4.4A Level of adherence to hemodialysis medication

	Frequency	Percentage
When was the last time a medical professional (your doctor, nurse, dietician or other medical staff) spoke to you about your medicines?		
This week	46	23.0
Last week	11	5.5
One month ago	13	6.5
More than a month ago	62	31.0
When I first began dialysis treatment	20	10.0
Never	48	24.0
How often does a medical professional (your doctor, nurse, dietician or other medical staff) talk to you about the importance of taking medicines as ordered?		
Every dialysis treatment	47	23.5
Every week	23	11.5
Every month	3	1.5
Every 2 to 3 months	6	3.0
Every 4 to 6 months	66	33.0
When I have abnormal blood or other (for example, blood pressure) test results	25	12.5
Rarely	30	15.0
How important do you think it is to take your medicines as scheduled?		
Highly important	31	15.5
Very important	4	2.0
Moderately important	73	36.5
A little important	37	18.5
Not important	55	27.5
Why do you think it is important to take you medicines as scheduled?		

Because I fully understand that my kidney condition requires to take medicines as scheduled	43	21.5
Because taking medicines is important to keep my body healthy	47	23.5
Because a medical professional (my doctor, nurse, dietician, or other medical staff) told me to do so	12	6.0
Because I had an experience that I was sick after I missed medicines	31	15.5
Because I had an experience that I was hospitalized after I missed medicines	38	19.0
I don't think taking medicines is very important to me	29	14.5
Have you had any difficulty with taking your medicines?		
No	92	46.0
Yes	108	54.0
During the past week, how often have you missed your prescribes medicines?		
None of the time: I did not miss my medicines	41	20.5
Very seldom	7	3.5
About half of the time	75	37.5
Most of the time	22	11.0
All of the time	55	27.5

Table 4.4 shows level of adherence to hemodialysis medication. It was reported by 46(23%) that a medical professional spoke to them about their medicines this week, 11(5.5%) reported it was last week, 13(6.5%) reported it was one month ago, 62(31%) reported it was more than a month ago, 20(10%) reported it was when they first began dialysis treatment, 48(24%) reported there was never a time. It was reported by 47(23.5%) that a medical profession talk to them about the importance of taking medicines as ordered every week, 3(1.5%) reported it was every month, 6(3%) reported it was every 2 to 3 months, 66(33%) reported it was every 4 to 6 months,

25(12.5%) reported it was when they had abnormal blood or other test results, 30(15%) reported medical professional rarely did. It was reported by 31(15.5%) that it is highly important to take medicines as scheduled, 4(2%) reported it was very important, 73(36.5%) reported it was moderately important, 37(18.5%) reported it was a little important, 55(27.5%) reported it was not important. It was reported by 43(21.5%) that they think it is important to take their medicines as scheduled because they fully understand that their kidney condition requires to take medicines as scheduled, 47(23.5%) reported because taking medicines is important to keep their body healthy, 12(6%) reported because a medical professional told them to do so, 31(15.5%) reported because they had an experience that they were sick after they missed medicines, 38(19%) reported because they had an experience that they were hospitalized after they missed medicines, 29(14.5%) reported they don't thing taking medicines is very important to them. It was reported by 92(46%) that they didn't have any difficulty with taking their medicines, 108(54%) reported they did. It was reported by 41(20.5%) that they never missed prescribed medicines during the past week, 7(3.5%) reported they very seldom did, 75(37.5%) reported it was about half of the time, 22(11%) reported it was most of the time, 55(27.5%) reported it was all of the time.

Table 4.5: C-**Level of adherence to fluid restrictions**

	Frequency	Percentage
When was the last time a medical professional (your doctor, nurse or dietician or other medical staff) spoke to you about your fluid restrictions?		
This week	88	44.0
Last week	3	1.5
One month ago	19	9.5
More than a month ago	4	2.0
When I began dialysis treatment	43	21.5
Never	43	21.5
How often does a medical professional (your doctor, nurse, dietician or other medical staff) talk to you about the importance of fluid restriction?		
Every dialysis treatment	15	7.5
Every week	7	3.5
Every month	14	7.0
Every 2 to 3 months	65	32.5
Every 4 to 6 months	36	18.0
When I have abnormal blood or other (for example, blood pressure) test results	43	21.5
Rarely	20	10.0
During the past week, how often have you followed the fluid restrictions recommendations?		
All of the time	16	8.0
Most of the time	23	11.5
About half of the time	25	12.5
Very seldom	54	27.0
None of the time	82	41.0
How important do you think it is to limit your fluid intake?		

Highly important	16	8.0
Very important	1	0.5
Moderately important	40	20.0
A little important	53	26.5
Not important	90	45.0
Why do you think it is important for you to limit your fluid intake?		
Because I fully understand that my kidney condition requires limiting fluid intake	15	7.5
Because limiting fluid intake is important to keep my body healthy	1	0.5
Because a medical professional (my doctor, nurse, dietician, or other medical staff) told me to do so	19	9.5
Because I got sick after I drank lots of fluid	82	41.0
Because I was hospitalized after I drank lots of fluid	41	20.5
I don't think limiting fluid is very important to me	42	21.0

Table 4.5 shows the level of adherence to fluid. It shows that 88(44.0%) of the respondents reported that the last time a medical professional spoke to them about their fluid restriction was the week they were assessed, 3(1.5%) reported the week before, 19(9.5%) reported one month ago, 4(2.0%) reported more than a month ago, 43(21.5%) reported when they began dialysis treatment, while 43(21.5%) have never been spoken to on it. Fifteen (7.5%) of the respondents reported that when undergoing every dialysis treatment the medical professional talked to them about the importance of fluid restriction, 7(3.5%) reported every week, 14(7.0%) were talked to every month, 65(32.5%) were talked to every 2 to 3 months, 36(18.0%) were talked to every 4 to 6 months, 43(21.5%) were talked to when they have abnormal blood or test results, while 20(10.0%) were rarely talked to about it. Sixteen (8.0%) reported that they follow the fluid

restriction recommendations all the time, 23(11.5%) most of the times, 25(12.5%) about half of the time, 54(27.0%) very seldom, while 82(41.0%) none of the time. Sixteen (8.0%) of the respondents reported that it is highly important to limit fluid intake, 1(0.5%) reported it is very important, 40(20.0%) reported it is moderately important, 53(2.5%) reported a little important, while 90(45.0%) reported not important.

Fifteen (7.5%) of the respondents reported that because they fully understand their kidney condition requires limiting fluid intake that is why they limit fluid intake, 1(0.5%) reported it is because limiting fluid intake is important to keep their body healthy, 19(0.5%) reported because a medical professional told them to do so, 82(41.0%) reported it is because they got sick after they drank lots of fluid, 41(20.5%) reported because they were hospitalized after they drank lots of fluid, 42(21.0%) reported they don't think limiting fluid is very important to them.

Table 4.4D: **Level of adherence to hemodialysis diet**

	Frequency	**Percentage**
How important do you think it is to watch the types of food you eat each day?		
Highly important	55	27.5
Very important	2	1.0
Moderately important	50	25.0
A little important	75	37.5
Not important	18	9.0
Why do you think it is important for you to watch your diet daily?		
Because I fully understand that my kidney condition requires to watch my diet	12	6.0
Because watching my diet is important to keep my body healthy	56	28.0
Because a medical professional (my doctor, nurse, or dietician)	39	19.5

told me to do so		
Because I got sick after eating certain food that I was not supposed to eat	28	14.0
Because I was hospitalized after eating certain food that I was not supposed to eat	44	22.0
I don't think watching my diet is important to me	21	10.5
Have you had any difficulty following your dietary recommendations?		
No	15	7.5
Yes	185	92.5
During the past week, how many times have you followed the diet recommendations?		
All of the time	58	29.0
Most of the time	18	9.0
About half of the time	11	5.5
Very seldom	53	26.5
None of the time	60	30.0

Table 4.6 shows level of adherence to hemodialysis diet. It was reported by 88(44%) that a medical professional spoke to them about fluid restrictions this week, 3(1.5%) reported it was last week, 19(9.5%) reported it was one month ago, 43(21.5%) each reported it was when they began dialysis treatment and there was never a time. It was reported by 15(7.5%) that at every dialysis treatment a medical professional talked to them about the importance of fluid restrictions, 7(3.5%) reported it was every week, 14(7%) reported it was every month, majority 65(32.5%) reported it was every 2 to 3 months, 36(18%) reported it was every 4 to 6 months, 43(21.5%) reported it was then they had abnormal blood or other test results, 20(10%) reported a medical professional rarely did. It was reported by 16(8%) that they have followed fluid restrictions recommendations all the time, 23(11.5%) reported they did most of the time, 25(12.5%) reported

they did about half of the time, 54(27%) reported they very seldom did, majority 82(41%) reported none of the time. It was reported by 16(8%) that they think it is highly important to limit their fluid intake, 1(0.5%) reported it is very important, 40(20%) reported it was moderately important, 53(26.5%) reported it was a little important, majority 90(45%) reported it was not important. It was reported by 15(7.5%) that they think it is important for them to limit their fluid intake because they fully understand that their kidney condition requires limiting fluid intake, 1(0.5%) reported because limiting fluid intake is important to keep their body healthy, 19(9.5%) reported because a medical professional told them to do so, 82(41%) reported because they got sick after they drank lots of fluid, 42(21%) reported they don't think limiting fluid is very important to them. It was reported by 55(27.5%) that they think it is highly important to watch the types of food they eat each day, 2(1%) reported it was very important, 50(25%) reported it was moderately important, 75(37.5%) reported it was a little important, 18(9%) reported it was not important. It was reported by 12(6%) that they think it is important to watch their diet daily because watching their diet is important to keep their body healthy, 39(19.5%) reported because a medical professional told them to do so, 28(14%) reported because they got sick after eating certain food that they were not supposed to eat, 44(22%) reported because they were hospitalized after eating certain food that they were not supposed to eat, 21(10.5%) reported they don't think watching their diet if important to them. It was reported by 15(7.5%) that they had no difficulty following their dietary recommendations, majority 185(92.5%) reported they had difficulty. It was reported by 58(29%) that during the past week they had followed diet recommendations all the time, 18(9%) reported the followed it most of the time, 11(5.5%) reported they followed it about half of the time, 53(26.5%) reported they followed it very seldom, 60(30%) reported they never followed it.

Table 4.4E Perceived factors affecting adherence to hemodialysis

	Disagree	Strongly disagree	Agree	Strongly agree	Mean	St.Dev
Financial constraints	2(1.0)	22(11.0)	28(14.0)	148(74.0)	3.61	0.72
lack of transportation	2(1.0)	21(10.5)	29(14.5)	148(74.0)	3.62	0.71
Forgetfulness	2(1.0)	21(10.5)	29(14.5)	148(74.0)	3.62	0.71
Lack of improvement	2(1.0)	21(10.5)	29(14.5)	148(74.0)	3.62	0.71
Long waiting time	2(1.0)	21(10.5)	29(14.5)	148(74.0)	3.62	0.71
Advancing age	2(1.0)	21(10.5)	29(14.5)	148(74.0)	3.62	0.71
lack of counseling from health care professional	2(1.0)	21(10.5)	28(14.0)	149(74.5)	3.62	0.71
Busy schedule	2(1.0)	21(10.5)	28(14.0)	149(74.5)	3.62	0.71
attitude of medical personnel	2(1.0)	21(10.5)	28(14.0)	149(74.5)	3.62	0.71

The items in table 4.7 were constructed in such a way that a mean score of ≥ 2.5 indicates that a particular item is a factor. List all the factors associated. The mean scores of all the items in the table above is ≥ 2.5 which shows that they were considered to be factors affecting adherence to hemodialysis.

Table 4.8: Level of adherence come before 4.4E

	Poor	Moderate	High
Treatment	166(83.0)	22(11.0)	12(6.0)
Medication	126(63.0)	22(11.0)	52(26.0)
Fluid	171(85.5)	15(7.5)	14(7.0)
Diet	103(51.5)	81(40.5)	16(8.0)
Composite adherence	147(73.5)	40(20.0)	13(6.5)

Table 4.8 shows the level of adherence by the respondents. It reveals that for level of adherence to treatment, 166(83.0%) have poor level, 22(11.0%) have moderate level, while 12(6.0%) have high level of adherence. One hundred and twenty six (63.0%) have poor level of adherence to medication, 22(11.0%) have moderate, while 52(26.0%) have high adherence. One hundred and seventy one (85.5%) have poor level of adherence to fluid, 15(7.5%) have moderate level of adherence, while 14(7.0%) have high adherence level. One hundred and three (51.5%) have poor level of adherence to diet, 81(40.5%) have moderate, while 16(8.0%) have high adherence level. On the overall level of compliance 147(73.5%) have poor level of adherence, 40(20.0%) have moderate level, while 13(6.5%) have high level of adherence.

Hypothesis One:chi square

Table 4.9: Association between sociodemographic characteristics and level of adherence

	Level of Adherence			
	Poor	**Good**	χ^2	**P**
Age				
18-30years	15(68.2)	7(31.8)	8.168	0.086
31-40years	37(66.1)	19(33.9)		
41-50years	25(71.4)	10(28.6)		
51-60years	47(74.6)	16(25.4)		
Greaterthan60years	23(95.8)	1(4.2)		
Gender				
Male	92(73.6)	33(26.4)	0.002	0.967
Female	55(73.3)	20(26.7)		
Marital Status				
Married	50(66.7)	25(33.3)	7.226	0.065
Single	27(65.9)	14(34.1)		
Separated	38(82.6)	8(17.4)		
Widowed	32(84.2)	6(15.8)		
Level of education				

Not educated	31(77.5)	9(22.5)	2.943	0.400
Primary	34(75.6)	11(24.4)		
Secondary	59(67.8)	28(32.2)		
College/university	23(82.1)	5(17.9)		
Occupation				
Self-employed	66(69.5)	29(30.5)	1.529	0.466
Public servant	39(76.5)	12(23.5)		
Unemployed	42(77.8)	12(22.2)		
Monthly income				
Lessthan50000	109(73.6)	39(26.4)	1.847	0.605
50000-100000	25(69.4)	11(30.6)		
Morethan100000to200000	4(66.7)	2(33.3)		
Morethan200000	9(90.0)	1(10.0)		
Religion				
Christian	115(71.0)	47(29.0)	2.763	0.096
Muslim	32(84.2)	6(15.8)		

Table 4.9 shows the association between socio-demographic characteristics and level of adherence. It showed that the age with the highest proportion with good level of adherence is 31 – 40years, while the least is those greater than 60years. The association is not significant. The proportion of males with good level of adherence, is 33(26.4%), while female is 20(26.7%). This difference in proportion is not statistically significant ($p>0.05$). Single patients reported higher proportion of good level of adherence, while those separated reported lowest proportion with good level of adherence. Respondents with secondary level of education reported highest proportion with good level of adherence, while those in college/university reported the least proportion with good level of adherence. Unemployed reported lowest proportion of good adherence, while the highest level of adherence was observed among self-employed. Patients

who earned more than 100000 to 200000 had the highest level of adherence, with the least among those earning more than 200,000. This association is not statistically significant. Christians reported higher proportion with good level of adherence than Muslims. This association is also not statistically significant.

From the table above, the socio-demographic variables (age, gender, marital status, level of education, occupation, monthly income and religion) have no significant relationship with level of adherence.

Table 4.10: Multivariate logistic regression associating socio-demographic characteristics and level of adherence

	p	O.R	95% C.I.for O.R
Age			
18-30years	0.057	9.23	0.94-90.92
31-40years	0.038	9.83	1.14-85.03
41-50years	0.076	7.42	0.81-68.09
51-60years	0.062	7.70	0.90-65.84
Greaterthan60years		1.00	
Gender			
Male	0.742	0.88	0.40-1.90
Female		1.00	
Marital Status			-
Married	0.219	2.04	0.65-6.39
Single	0.137	2.75	0.72-10.44
Separated	0.821	0.86	0.24-3.12
Widowed		1.00	
Level of education			-
Not educated	0.772	0.80	0.19-3.49
Primary	0.672	1.37	0.32-5.87
Secondary	0.219	2.18	0.63-7.53

College/university		1.00	
Occupation			-
Self-employed	0.458	1.42	0.57-3.54
Public servant	0.641	0.79	0.29-2.16
Unemployed		1.00	
Monthly income			-
Lessthan50000	0.666	1.67	0.16-17.22
50000-100000	0.382	2.95	0.26-33.32
Morethan100000to200000	0.358	3.94	0.21-73.23
Morethan200000		1.00	
Religion			
Christian	0.046	2.97	1.02-8.67
Muslim		1.00	

Table 4.10 shows the multivariate logistic regression associating sociodemographic characteristics and level of adherence. It shows that respondents 18 – 30years are nine times (O.R. = 9.23; C.I. = 0.94-90.92) more likely to adhere than those who are greater than 60years, those 31 – 40years are ten times (O.R.=9.83; C.I. = 1.14 – 85.03) more likely to adhere than those greater than 60years and it is statistically significant ($p<0.05$), respondents 41 – 50years are seven times (O.R.=7.42; CI = 0.81-68.09) more likely to adhere than those patients greater than 60years. Males are 12% less likely to adhere than females. Married patients are twice more likely to adhere than widows, singles are thrice more likely to adhere than widows, while those separated are 14% less likely to adhere than those who are widow. Respondents who are not educated are 20% less likely to adhere than those with college/university certificate, those in primary school are 37% more likely to adhere than those who have college/university qualifications, secondary school respondents are twice more likely to adhere than those who have college/university qualifications. Self-employed are 42% more likely to adhere than unemployed

patients, those who are public servant are 79% less likely to adhere than those who are unemployed. Patients receiving Less than 50000 are 67% more likely to adhere than those that earn more than 200,000, those earning 50,000 – 100,000 are three times more likely to adhere than those who are more than 200000, those earning more than 100,000 to 200,000 are four times more likely to adhere than those earning more than 200,000. Christians are three times more likely to adhere than Muslim, which is statistically significant ($p<0.05$).

Hypothesis Two:T test

Table 4.11:Association between level of knowledge and level of adherence

	Poor	**Moderate**	**High**	χ^2	**p**
Level of Knowledge					
Poor	128(76.6)	37(22.2)	2(1.2)	36.290	0.000
Fair	13(61.9)	3(14.3)	5(23.8)		
Good	6(50.0)	0(0.0)	6(50.0)		
Total	147(73.5)	40(20.0)	13(6.5)		

Table 4.11 shows the association between level of knowledge and level of adherence. It shows that there is a significant association between level of knowledge and level of adherence. As the level of knowledge increases, the proportion of respondents with high level of adherence increases also.

Hypothesis Three

Table 4.12: Mean comparison of knowledge and adherence scores by gender of respondents

	Male	Female	t	p
Knowledge Score	34.27±16.91	33.67±17.30	0.241	0.810
Total adherence	36.27±22.19	35.67±21.55	0.186	0.853

Table 7 shows a mean comparison of knowledge and adherence scores by gender of respondents. The mean knowledge score for males is higher than that of females. This difference in mean is not statistically significant ($p>0.05$). The mean total adherence score for males is higher than that of female, however this difference in mean is not statistically significant ($p>0.05$).

Table 4.13: ANOVA Mean comparison of knowledge and adherence scores by Mode of payment for hemodialysis

	Self-sponsored	Government assisted	Private medical insurances	Community based Health Insurance	F	p
Knowledge Score	34.01±17.01	37.00±19.85	31.48±12.34	27.38±10.45	0.674	0.569
Total adherence	36.11±22.15	35.28±24.37	37.14±15.44	35.92±17.19	0.018	0.997

Table 4.13 shows the mean comparison of knowledge and adherence scores by mode of payment for hemodialysis. The knowledge score for government assisted is highest followed by those who self-sponsored them, while the least is among community-based health insurance. This difference in knowledge is not statistically significant ($p>0.05$). The adherence score for

respondents who made payment from private medical insurance is highest, followed by those who self-sponsored, while the least adherence score is for government assisted. This difference in mean is also not statistically significant (p>0.05).

Table 4.14: Mean comparison of knowledge and adherence scores by number of days a week do received hemodialysis treatment anova

	2 days or less	3 days	4 days	More than 4 days	More than 5 days	F	P
Knowledge Score	34.60±17.46	36.54±15.42	27.78±15.52	41.67±20.41	23.61±4.81	1.721	0.147
Total adherence	36.50±23.20	38.32±16.61	37.94±15.16	40.00±19.00	24.68±2.38	0.911	0.459

Table 4.14 shows the mean comparison of knowledge and adherence scores by number of days a week they received hemodialysis treatment. The knowledge score was highest for those who spent more than 4 days, followed by those who have spent 3 days, the least was recorded among those who spend more than 5 days. This difference in mean is not statistically significant (p>0.05). The mean total adherence score was highest among those who have spent more than 4 days, followed by those who spent 3days, the least was recorded among those who have spent more than 5 days.

CHAPTER FIVE

DISCUSSION OF FINDINGS

This chapter provides the discussion of findings in accordance to the stated objectives and hypothesis, implications for nursing, summary, conclusion, recommendation and suggestion for further studies.

5.1 Discussion of Findings

Level of Knowledge of the importance of adherence to hemodialysis

Findings from this study revealed that the participants have low knowledge of the importance of adherence to hemodialysis. This may be as a result of older age, ethnicity and fewer years of education,transportation and financial constraints. The fact that these patients had inadequate knowledge despite receiving care in the medical and nephrology outpatients' clinics shows that physicians' current education strategies do not meet the needs of the large number of patients with CKD. This finding may reflect a gap in patient–provider communication. It is either that these patients may not be receiving adequate education from the physicians or that they did not understand the information that was provided. Health care professionals' understanding of a patient's level of health literacy is crucial to improving the quality of their communication experience. This finding demonstrates the need for a change of education strategies and the provision of additional resources and health care personnel to support patient education in kidney disease (Okoro, et al., 2020).

Contrary to our findings, previous studies conducted in the United States, the United Kingdom, and Australia had reported moderate knowledge (Wright, et al., 2015; Welch, 2016; Wembenyui, 2017). This difference could be attributed to wide variations in the operation of the health care

system in developing countries compared to the developed ones. This is also in contrast to a study by Kana, Miyata, Shen, James & Winchester(2017) on Patient knowledge and adherence to maintanance heamodialysis which reported high level of knowledge of hemodialysis,reasons for this.

Level of adherence to hemodialysis

The findings from this study revealed low level of adherence among the participants as over 70% reported overall poor level of adherence. The findings are consistent with findings from other studies that estimated 50% of patients on hemodialysis not adhering to at least part of their dialysis regimen (Clark, Farrington & Chilcot, 2014; Geldine, Bhengu& Manwere, 2017). This is also similar to the findings of Duong et al. (2015) who revealed 42% of ESRD patients that missed their dialysis sessions, respectively. Contrarily, a study done by Tamie Nakao et al. (Nakao, Gorayeb& Da Costa, 2016) highlighted non adherence rate of only 15 % among ESRD patients. It cannot be overstated that non adherence has significant poor health outcomes and therefore patients with ESRD and undergoing hemodialysis should be encouraged to complete their dialysis sessions as prescribed. Findings of our study differ considerably from the findings of developed countries such as Japan and Sweden, where the missed dialysis sessions were nearly zero (Geldine, Bhengu& Manwere, 2017). It is also noted that the shortening dialysis session in the present study was observed above 90% of the participants. This may be related to the technical problems faced by the dialysis machines since they need constant servicing.

Perceived factors affecting adherence to hemodialysis

Findings from this study shows that financial constraint, lack of transportation, forgetfulness, advancing age etc are identified as perceived factors affecting adherence to haemodialysis. This

is supported by Gerard et al. (2016) and Chironda et al. (2014) which identified age, religion etc as factors affecting adherence to hemodialysis.

There is no association between socio-demographic characteristics and level of adherence

The findings of the study showed that age was not statistically significantly associated with adherence to hemodialysis. Age group 31 – 40years reported proportion of good level of adherence. In this regard, participants of the ages of 51-60 years were observed to be the majority. The results slightly deviates from the findings of Gerard et al. (2016) and Chironda et al. (2016), who revealed the average age of their patients as 45 and 46 years, respectively. The results are not surprising as it is important to note that individuals at this stage of life are beginning to make a significant impact of their lives; some of them have families and adherence is paramount to be able to support their families. Also, in developing countries, ESRD affects the population of under 50 years who are economically productive. Consistent with other studies, the mean age of patients with ESRD was 53 (Zyoud, *et al*., 2016), whereas in the USA ESRD is more frequent in adult above 70 years, mainly due to longer survival rates among ESRD patients (Saran, Li & Robinson, 2016).

Again, the study results revealed that religion was also not significantly associated with adherence to hemodialysis. This deviates from a prospective study conducted by Freire de Medeiros et al. (2017) that established religiosity to be associated with adherence to dialysis. The majority of ESRD participants were males rather than females. This is similar to the study findings by Chironda et al. (2014) who revealed that the males were representing 57% and 43% were females. Contrary to these findings are the findings of Burkhalter et al. (2014) that showed the predominance of females (65%). Yet for Duong et al. (2015) study the males represented 47%. Gender was not associated with adherence to hemodialysis. However, this is in contrary to

study done by Naalweh et al. (2017) where male patients had significantly higher overall adherence scores than females ($p = 0.034$).

Varying levels of education were not significantly associated with the level of adherence to hemodialysis among ESRD population. This shows that ESRD affects both educated and noneducated people meaning that knowledge alone is not a predictor of adherence to hemodialysis (Ibrahim, Hossam &Belal, 2015; Nakao & Gorayeb R., Da Costa, 2016). However, a decreased level of education can contribute to reduced levels of understanding leading to nonadherence and poor level of following medical instructions in favor of ESRD treatment (Chironda &Bhengu, 2016). On the contrary, increased level of education facilitates capturing and conveyance of information regarding concerns of the disease ESRD as well as importance of hemodialysis treatment.

A little above One-quarter of the participants were unemployed meaning that they did not have any monthly income. Moreover, there was no significant association between occupation, income, and adherence to hemodialysis among ESRD patients. However, dialysis in low income countries is an expensive procedure (Mushi, Marschall &Fleßa, 2015) and it is more likely that patients from low and middle income countries who cannot afford the dialysis sessions will have to skip some sessions of dialysis due to low economic status, considering, presently, that in Nigeria one session costs approximately over ₦100,000 where only few Nigerian in need can afford hemodialysis treatment. This is the likely cause of non adherence of hemodialysis among ESRD patients in Nigeria. Because of the high cost for hemodialysis treatment and lack of adequate health insurance (Jha, Arici &Collins, 2016), some patients ended up with missing or withdrawing from the treatment.

There is no the association between level of knowledge and level of adherence.

Findings shows that there is a significant association between level of knowledge and level of adherence (χ^2 =36.290, p=0.000). As the level of knowledge increases, the proportion of respondents with high level of adherence increases also. This is in contrast by Kana, Miyata, Shen, James & Winchester (2017) on Patient knowledge and adherence to maintenance heamodialysis which reported that there is no significant relationship between knowledge and adherence to maintenance hemodialysis.

There is no significant difference between level of adherence and gender.

Findings from this study shows that the mean total adherence score for males is higher than that of female, however this difference in mean is not statistically significant (p>0.05)(t=0.186, p=0.853). This is supported by Karam , Naalweh, Mohammad & Zyoud(2017) on treatment adherence and perception in patients on maintenance hemodialysis which reported that male patients who were city residents had higher odds of having higher adherence score. This is in contrast with Ozen, Cinar & Turker (2019) on Non adherence in Hemodialysis Patients and Related Factors which reported that the risk of non adherence to heamodialysis treatment was 2 times higher in men than females.

5.2 IMPLICATION TO NURSING

Dialysis nursing training should be given as a formal course and the duration of it should be standardized and course of the study should be prepared in consensus.Renal nurses should try to incorporate into their nursing care plan Health education of all patients on the importance of adherence to hemodialysis to all patients both old and new ones. Nephrology be recognized as a specialized field in nursing sector. Every HD unit should have a standard of protocol so that the patients under dialysis will be benefited.nurses can advocate for tools and services that can aid and emotionally support patients on heamodialysis.

5.3 SUMMARY

This study seeks to assess the level of adherence to heamodialysis and associated factors among end stage renal disease patient in nephrology unit at a tertiary facility , UBTH**.** The study was outlined into five chapters. Chapter one of this study dealt with the introduction of the topic, statement of problem, objectives of the study, were to ascertain the knowledge of the importance of haemodialysis among ESRD patients, to ascertain the level of adherence to haemodialysis and associated factors by ESRD patients. research questions, hypotheses and scope of study, the significance of the study and relevant terms were operationally defined, relevant literatures were reviewed in chapter two on the subject under discourse, theoretical framework used was theory of reasoned action by Azjen and empirical review of related studies were also discussed in this chapter. Chapter three dealt with research methodology which adopted the survey research design and non probability technique was employed,The researcher used a standardized instrument known as the End stage renal disease adherence questiinaire (ESRD-AQ) by Kim et al 2010, was administered to the patients and all (200) questionnaires were retrieved. In chapter four, Demographic data was analyzedand interpreted using descriptive statistics – frequency and percentage, chi-square were used to test for relationship between level of adherence to haemodialysis and level of knowledge, independent samples t-test was used to test the significant difference been level of adherence and gender, multiple logistic regression was used to predict he association between the level of adherence and socio-demographic variables., while chapter five gave the discussion of findings majority of the respondents(83.5%) have low knowledge on the importance of haemodialysis. The study showed that most (73.5%) of the respondents have low level of adherence to haemodialsys, (20%)have high level of adherence while (6%) of the respondents have low level of adherence to haemodialysis. Factors associated with adherence to

haemodialysis were lack of transportation, financial constraint,forgetfulness,improved condition, etc. There is an association ($p<0.05$) between the level of adherence and level of knowledge. There is no significant difference ($p<0.5$) between the level of adherence and gender. There is an association ($p<0.5$) between the level of adherence and socio-demographic characteristics. conclusion and recommendations were also made.

5.4 CONCLUSION

This study assessed the level of adherence to heamodialysis and associated factors among end stage renal disease patient in nephrology unit at a tertiary institution, UBTH**.**The result shows that majority of the participants had low level of knowledge as well as low adherence and factors such as lack of transportation, financial constraint,forgetfulness,improved condition,long waiting time etc

5.5 RECOMMENDATIONS

1. Government should create policies that can help subsidize hemodialysis therapy so that ESRD patients can regularly go for each of their dialysis schedule thereby increasing their lifespan.
2. There is the need for structured teaching programme to motivate individuals who have CKD and improve the knowledge of patients undergoing hemodialysis regarding dietary managementand skin care in renal failure thereby preventing life threatening complication and prolonging their life.
3. There should be government and stakeholders awareness for establishing more dialysis centers in the community and country, for ESRD patients accessbility and affordability.

4. Further evaluation of the impact of patient dialysis knowledge and the improvement in knowledge level in larger studies is needed to better understand its relationship with clinical measures and to provide guidance for improved patient education.

5.6 Suggestions for further studies

It would be worthwhile to replicate this study using a larger sample including patients from other parts of the country, particularly rural areas where there is limited availability of treatment. This will broaden the overall understanding of the phenomena. Further research may increase the understanding concerning this population and strengthen the professionals, enabling them to give better service both to patients and their relatives.

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DEPARTMENT OF NURSING SCIENCE
SCHOOL OF BASIC MEDICAL SCIENCES
UNIVERSITY OF BENIN
EDO STATE

A RESEARCH WORK ON :ADHERENCE TO HEAMODIALYSIS AND ASSOCIATED FACTORS AMONG END STAGE RENAL DISEASE PATIENT IN NEPHROLOGY UNIT AT A TERTIARY INSTITUTION, UBTH BY
OMOKARO PRUDENCE.

Dear correspondents, Your information given will be treated with utmost confidentiality, thanks for your cooperation.

SECTION A: SOCIO-DEMOGRAPGHIC DATA

1. Age: □18-30years □31-40years □41-50years □51-60years □Greaterthan60years
2. Gender: □ Male □Female
3. Marital status: □Married □Single □Separated □Widowed
4. Level of education: □ Not educated □Primary □Secondary □College/university
5. Occupation: □Self-employed □Public servant □Unemployed
6. Monthly income: (Nigerian naira) □ Lessthan50000 □ 50000-100000 □ Morethan100000to200000 □ Morethan200000
7. Religion: □ Christian □Muslim
8. Duration of ESRD: □ 3monthsto1year □Morethanayearto2years □Morethan2yearsto3years □Morethan3yearsto5years □Morethan5years
9. Mode of payment for hemodialysis: □ Self-sponsored □ Government assisted □Private medical insurances □Community based Health Insurance
10. How many days a week do you receive hemodialysis treatment? □ 2 days or less □ 3 days □ 4 days □ More than 4 days □ More than 5 days
11. How many hours are you treated for each hemodialysis? □ Less than 3 hours □ 3 hours □ 3 hours and 15 minutes □ 3 hours and 30 minutes □ 3 hours and 45 minutes □ 4 hours □ More than 4 hours □ Other (Specify the hours) _____

SECTION B: knowledge of the importance of adherence to hemodialysis

1. What do you understand by the word "Hemodialysis "?
(a) It is a therapy for treating cancer (b) It is a diagnostic therapy for treatment of kidney failure (c) it is used for preventing malaria (d) none of the above
2. Hemodialysis is for management of; (a) genetic disease patients (b) HIV patients (c) acute and chronic kidney diseases (d) meningitis
3. without hemodialysis a renal disease patient can: (a) survive the disease (b) cannot survive the disease (c) option A and B (d) none of the above
4. What type of vascular access do you use for hemodialysis (a) fistula (b) catheter (c) AV graft (d) none
5. Which of the following is considered a better option than hemodialysis?
(a) blood transfusion (b) peritoneal dialysis (c) kidney transplant (d) none of the above
6. How many times a week can one go for adequate hemodialysis treatment?
(a) once a week (b) 10 times a week (c) 3 times weekly (d) none of the above

7. Hemodialysis treatment is good for : (a) children with kidney (b) The elderly (c) young ones (d) All ages with kidney failure

8. It is very important to stay for the entire dialysis time during your dialysis treatment?
True or false

9. How important do you think it is to follow your dialysis schedule? (a) Highly important (b) Very important (c) Moderately important (d) A little important(4)

10. Why do you think it is important to follow your dialysis schedule? (Please choose one best answer that applies to you.)
(a) Because I fully understand that my kidney condition requires dialysis as scheduled (b)Because medical professional (my doctor, nurse, or dietitian) told me to do so (c) Because I had an experience that I was hospitalized after I missed dialysis(5) (c) all of the above

SECTION C: Level of adherence to hemodialysis

I. Hemodialysis Treatment

1. Is your dialysis schedule convenient for you? (Please choose one best answer that applies to you.) □ Yes(1) □ No, because I have to come to the dialysis center too early(2) □ No, because I have to come to the dialysis center too late(3) □ No, because of my work schedule(4) □ No, because it is my meal time and I get hungry during dialysis treatment(5) □ No, because it is my medication time and I have to take medicines/insulin(6) □ No, because of (Other)(7): _____

2. How much difficulty have you had staying for your entire dialysis treatment as ordered by your doctor? □ No difficulty(1) □ A little difficulty(2) □ Moderate difficulty(3) □A lot of difficulty(4) □ Extreme difficulty(5)

3. During the last month, how many dialysis treatments did you miss completely?
□ None (I did not miss any treatments)(1) □ Missed one dialysis treatment(2) □ Missed two dialysis treatments(3) □ Missed three dialysis treatments(4) □ Missed four or more dialysis treatments(5)

4. What was the main reason you missed your dialysis treatment last month?
□ Not applicable: I did not miss any treatment(1) □ Transportation problems(2) □ I had other things to do (Please explain)(3): □ Hemodialysis access (graft, fistula, or catheter) clotted(4) □ Physician (medical or surgical) appointment(5) □ I had to go to the emergency room(6) □ I was hospitalized(7) □ Forgot(8) □ "Didn't want to go" or "Couldn't go(9)

5. During the last month, how many times have you shortened your dialysis time?
□ Not applicable: I have not shortened my dialysis time(1) □ Once(2) □ Twice(3) □ Three times(4) □ Four to five times(5) □ Other (Specify frequency)(6): ----------

6. During the last month, when your dialysis treatment was shortened, what was the average number of minutes? □ Not applicable: I have not shortened my dialysis time(1) □ Less than 10 minutes or 10 minutes(2) □ 11 to 20 minutes(3) □ 21 to 30 minutes(4) □ More than 31 minutes(5)

II. Medication

7. When was the last time a medical professional (your doctor, nurse, dietician or other medical staff) spoke to you about your medicines? □ This week(1) □ Last week(2) □ One month ago(3) □ More than a month ago(4) □ When I first began dialysis treatment(5) □ Never(6)
8. How often does a medical professional (your doctor, nurse, dietician or other medical staff) talk to you about the importance of taking medicines as ordered? □ Every dialysis treatment(1) □ Every week(2) □ Every month(3) □ Every 2 to 3 months(4) □ Every 4 to 6 months(5) □ When I have abnormal blood or other (for example, blood pressure) test results(6) □ Rarely(7)
9. How important do you think it is to take your medicines as scheduled? □ Highly important(1) □ Very important(2) □ Moderately important(3) □ A little important(4) □ Not important(5)
10. Why do you think it is important to take your medicines as scheduled? (Please choose one best answer that applies to you.) □ Because I fully understand that my kidney condition requires to take medicines as scheduled(1) □ Because taking medicines is important to keep my body healthy(2) □ Because a medical professional (my doctor, nurse, dietician, or other medical staff) told me to do so(3) □ Because I had an experience that I was sick after I missed medicines(4) □ Because I had an experience that I was hospitalized after I missed medicines(5) □ I don't think taking medicines is very important to me(6)

11. Have you had any difficulty with taking your medicines? □ No(1) □ Yes(2)
12. During the past week, how often have you missed your prescribed medicines?
□ None of the time: I did not miss my medicines(1) □ Very seldom(2) □ About half of the time(3) □ Most of the time(4) □ All of the time(5)

III. Fluid

13. When was the last time a medical professional (your doctor, nurse or dietician or other medical staff) spoke to you about your fluid restrictions? □ This week(1) □ Last week(2) □ One month ago(3) □ More than a month ago(4) □ When I began dialysis treatment(5) □ Never(6)
14. How often does a medical professional (your doctor, nurse, dietician or other medical staff) talk to you about the importance of fluid restriction? □Every dialysis treatment(1) □ Every week(2) □ Every month(3) □ Every 2 to 3 months(4) □ Every 4 to 6 months(5) □ When I have abnormal blood or other (for example, blood pressure) test results(6) □ Rarely(7)
15. During the past week, how often have you followed the fluid restriction recommendations?
□ All of the time(1) □ Most of the time(2) □ About half of the time(3) □ Very seldom(4) □ None of the time(5)
16. How important do you think it is to limit your fluid intake? □ Highly important(1) □ Very important(2) □ Moderately important(3) □ A little important(4) □ Not important(5)
17. Why do you think it is important for you to limit your fluid intake? (Please choose one best answer that applies to you.)
□ Because I fully understand that my kidney condition requires limiting fluid intake(1) □ Because limiting fluid intake is important to keep my body healthy(2) □ Because a medical professional (my doctor, nurse, dietician, or other medical staff) told me to do so(3) □ Because I got sick after I

drank lots of fluid(4) □ Because I was hospitalized after I drank lots of fluid(5) □ I don't think limiting fluid is very important to me(6)

IV. Diet

18.How important do you think it is to watch the types of food you eat each day?

□ Highly important(1) □ Very important(2) □ Moderately important(3) □ A little important(4) □ Not important(5)

19. Why do you think it is important for you to watch your diet daily? (Please choose one best answer that applies to you.)

□ Because I fully understand that my kidney condition requires to watch my diet(1) □ Because watching my diet is important to keep my body healthy(2) □ Because a medical professional (my doctor, nurse, or dietician) told me to do so(3) □ Because I got sick after eating certain food that I was not supposed to eat(4) □ Because I was hospitalized after eating certain food that I was not supposed to eat(5) □ I don't think watching my diet is important to me(6)

20. Have you had any difficulty following your dietary recommendations? □ No(1) □ Yes(2)

21. During the past week, how many times have you followed the diet recommendations?

□ All of the time(1) □ Most of the time(2) □ About half of the time(3) □ Very seldom(4) □ None of the time(5) (weighted score for adherence 1= 25 2=15, 3=10, 4=5, 5=0, 6 and above =0)

SECTIOND: perceived factors affecting adherence to hemodialysis

Which of the following factors can affect adherence to hemodialysis;	Strongly agree	Agree	Strongly disagree	Disagree
1.Financial constraints				
2.lack of transportation				
3.Forgetfulness				
4.improved condition				
5.Lack of improvement				
6.Long waiting time				
7.Advancing age				
8.lack of counseling from health care professional				
9.Busy schedule				
10. attitude of medical personnel				

(SA=4, A=3,SD=2,D=1)