



UNIVERSITY *of*  
RWANDA

**KNOWLEDGE AND PRACTICES OF NURSES REGARDING  
INPATIENT MANAGEMENT OF CHRONIC KIDNEY DISEASE AT  
SELECTED REFERRAL HOSPITALS IN RWANDA.**

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Masters of Nephrology Nursing

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by

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A research project Submitted in Partial fulfillment of the Requirements for the degree of

**MASTER IN NEPHROLOGY NURSING**

In the College of Medicine and Health Sciences

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## **DECLARATION**

I, **Emmanuel Gapira Bimenyimana**, hereby declare that this research entitled “**Knowledge and practices of nurses regarding inpatient management of Chronic Kidney Disease at selected referral hospitals in Rwanda**” submitted in partial fulfilment of the requirements for Masters of Nursing sciences Degree in Nephrology Nursing at the **University of Rwanda, college of medicine and health sciences** is my original work and has not been presented for a degree in any other University or for any other award. I also declare that a complete list of references is provided indicating all sources of information quoted or cited.

## **DEDICATION**

To God

To my Lovely wife GATEYENEZA Chantal

To my son IMENA GAPIRA Cullen

To my parents

To my brothers and sisters

For your support and encouragement

## **ACKNOWLEDGEMENT**

I acknowledge my supervisor Dr Geldine Chironda and my Co-Supervisor Mrs. Marie Jeanne TUYISENGE for your great support in this study.

May God bless you.

## ABSTRACT

**Introduction:** Chronic Kidney Disease (CKD) is a serious condition to manage and requires multidisciplinary team involvement. Nurse's knowledge and good practices play a major role in decreasing morbidity and mortality in CKD patients.

**Aim:** To assess knowledge and practices of nurses regarding inpatient management of Chronic Kidney Disease at selected referral hospitals in Rwanda.

**Method:** A quantitative approach with Non-experimental descriptive correlational design was used. The study was conducted at the Centre Hospitalier Universitaire de Kigali (CHUK) and Rwanda Military Hospital (RMH) in emergency, renal and internal medicine units and a non-probability purposive total population sampling was used. Data was collected among 120 nurses. Descriptive and inferential statistics were used to determine the meaning of data collected. Chi-square test was used to establish an association between demographic characteristics, knowledge and practice of nurse's regarding inpatient management of CKD patients. Pearson correlation coefficient  $r$  was also calculated to identify relationship between nurse's knowledge and practice regarding inpatient CKD management. Knowledge and practice levels were categorized as  $>80\%$  "high",  $50-79\%$  "moderate" and  $1-49\%$  "low".

**Results:** The overall findings of the present study were: The majority (84%) had moderate level of knowledge and almost half (51%) of nurses had moderate level of practice (score 50–79%) regarding of inpatient management of CKD. The factors associated with knowledge of inpatient management of CKD were hospital of practice (16.3; 95% CI 15.5–17;  $p=.024$ ), work service (17.6; 95% CI 16.6–18.6;  $p=.000$ ), level of training (17.4; 95% CI 12.1–22.6;  $p=.010$ ) and type of specialty (mean = 19.4; 95% CI 18.4–20.3;  $p=.000$ ) were significantly associated with knowledge of inpatient management of CKD. The factors associated with practice of inpatient management of CKD was work service (mean = 3.8; 95% CI 3.4–4.3;  $p=.015$ ) was significantly associated with practice of inpatient management of CKD. A very weak positive relationship, which non-significance between knowledge and practice of inpatient management of chronic kidney disease ( $r = .115$ ,  $N = 120$ ,  $p = .21$ ) have been observed.

**Conclusion:** Nurses knowledge and practice of inpatient management of CKD is prerequisites in management of patients with CKD in Rwanda. Nurses should have frequent continuous professional development to enhance their level of knowledge and practice for better health outcomes of CKD patients. Further research is needed to identify the barriers to management of CKD in Rwanda

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## **LISTS OF SYMBOLS AND ACRONYMS /ABBREVIATIONS**

CKD: Chronic Kidney Disease

ESRD: End stage Renal Disease

AKI: Acute kidney injury

AKF: American Kidney Fund

ACE: Angiotensin Converting Enzyme

ARB: Angiotensin Receptor Blocker

BMI: Body Mass Index

NDs: Nursing diagnosis

GFR: Glomerular Filtration Rate

HIV: Human Immunodeficiency Virus

HBV: Hepatitis B Virus

HCV: Hepatitis C Virus

HD: Hemodialysis

UK: United Kingdom

USA: United States of America

RMH: Rwanda Military Hospital

CHUK: Centre Hospitalier Universitaire de Kigali

NIH: National Institutes of Health

UR: University of Rwanda

CMHS: College of Medicine and Health Sciences

IRB: Institutional Review Board

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# **CHAPTER ONE: INTRODUCTION**

## **1.1. INTRODUCTION**

Chronic kidney disease (CKD) is defined as an estimated glomerular filtration rate of less than 60ml/min/1.73m<sup>2</sup> and persistent albuminuria. There are five stages of CKD and the definition of CKD starts from stage 3 to 5. In stage 3; about 50% of kidney function has been lost, there is a significantly increased risk of morbidity and premature deaths (Hoerger, et al.,2015). Step 5 is the worst form of CKD and is known as kidney failure. At this stage, death is an inevitable consequence unless the renal replacement therapy is introduced (Etheredge and Fabian, 2017).

Adequate knowledge and practice of nurses about management of CKD is essential to be effective in reduction of morbidity and mortality among CKD patients and educating the society and identifying high-risk groups to develop CKD. In addition, the majority of the patients tend to seek advice on health-related issues from health workers such as nurses, who are family members and friends before coming to the hospital (Adejumo, et al., 2018).

This chapter cover introduction, background, problem statement, aim of the study, research objectives, research questions, significance of the study, definition of key terms and conclusion to chapter one.

## **1.2. BACKGROUND OF THE STUDY**

Chronic kidney disease (CKD) is now recognized as a major health problem worldwide. In India in 2015, CKD has been ranked eighth leading cause of death. The global burden of disease study emphasizes CKD as the 17<sup>th</sup> among the causes of death worldwide Deaths from kidney failure were 2.9% of all deaths in 2010 to 2013 individuals from 15 to 69 years old (Jai and Modi, 2017). So far, CKD is currently affecting 18.4% of the European population. According to the latest European Renal Association, European dialysis and transplant association registry data of 1.1 million CKD patients in Greece making 10% of the total population and 13 359 of them have reached the stage 5 of CKD (Stavropoulou et al., 2017).

Chronic kidney disease affects more than 10% of adults in the United States of America. People with CKD are at high risk of dying from cardiovascular disease than developing kidney failure. In USA 45 million of dollars covering 18% of the total health budget is spent

to CKD (Polzin ,2016). In Africa 10% of the population is affected by CKD and the gravity of CKD in African countries especially sub-Saharan Africa is unknown. However, some suggest that the prevalence rates in this setting could be even much higher at least 3 to 4 times more common than in developed countries (Chironda and Bhengu ,2016).

In South Africa from 1999 to 2006 rising of death up to 67% was due to CKD, although accurate statistics of CKD prevalence is not revealed and hypertension and diabetes mellitus are risks factors to CKD and if the patient has hypertension automatically this patient has to be screened for CKD by doing urine dipsticks and measurement of serum creatinine and glycated hemoglobin for diabetes mellitus. (Moosa et al.,2016).

In Easter Africa a study conducted about Prevalence of CKD, Diabetes, and Hypertension in Rural Tanzania found that 12.4% of the population had stages 3 to 5 CKD (Plath, et al., 2018). The causes of CKD in Uganda are hypertension, diabetes and HIV (Kalyesubula et al.,2017). Other causes according to the study of American Kidney Fund findings show that the causes of CKD are diabetes (44%), hypertension (28.4%), glomerulonephritis (7.9%), and inherited congenital diseases (2.2%), urological diseases (0, 5%), other known causes (10.7%), lack of cause (3.2%), and of unknown origin (3.1%) (AKF,2015).

In Rwanda little is known about CKD prevalence. Rwanda has initially focused on improving palliative care while screening for kidney disease in high risk populations.

Fluid restriction in CKD patients remain a major clinical health problem which happens sometime as intradialytic cramping, hypotensive episodes and the symptomatic management of their complications (Chironda and Bhengu ,2016).

CKD patients on regular Hemodialysis face difficulty to control fluid and diet intake. The dizziness and fatigue complicated to fluid administration and this led to lower extremities edema, left ventricular hypertrophy, congestive heart failure, hypertension, ascites, shortness of breath and acute pulmonary edema and the fluid overload contributes to increase morbidity and mortality among CKD patients(Filipe and Cristóvão ,2015).

Early recognition of CKD and management by primary where patient is identified having risk factors of CKD(HTN and DM) and referred to secondary level where CKD is suspected after measurement of renal function test and transferred to tertiary care where the final diagnosis of CKD is made and patient treated according to the CKD stage and good management is essential for reducing mortality and morbidity related to CKD and the burden of disease on the health care system and the affected patients by this condition (Sinclair et al., 2017).

CKD management focuses on blockade of the renin angiotensin aldosterone system with either an inhibitor of angiotensin converting enzyme (ACE) inhibitor or blocker of angiotensin receptor blocker (ARB) is the cornerstone of treatment to prevent or reduce the rate of progression of renal disease in the terminal phase. The control of blood pressure (<140 / 90mmHg) reduces the progression of renal disease and cardiovascular morbidity and mortality(Lukela et al., 2014).

CKD patients with proteinuria may benefit from closer monitoring with a target of <130 / 80mmHg. Statin therapy is recommended in all cases of CKD among 50 years and above to reduce the risk of atherosclerosis. Close control for CKD complications including anemia, fluid and electrolyte imbalances, bone and mineral disease, malnutrition and avoidance of nephrotoxicity drugs to prevent worsening of renal function (Kidney Health New Zealand ,2013).

Poor management of CKD in early stages (1-3) lead to kidney failure and if it happens, treatment options namely dialysis (hemodialysis or peritoneal dialysis) and kidney transplant are initiated and the family or careers should receive more information concerning the nature of ESRD, the different management including hemodialysis, peritoneal dialysis and kidney transplant for reduction of mortality and morbidity among ESRD (Stevens and Lusignan ,2015).

According to my clinical experience in Rwanda patients who develop CKD are patients with hypertension, diabetes mellitus, Pregnant patients who develop acute kidney injury due to post-partum hemorrhage, pre-eclampsia and hypovolemic shock; malaria, and diarrhea and reach tertiary level with acute kidney injury which complicate to CKD. The management of CKD patients who requires renal replacement therapy are treated using hemodialysis (HD) (Igiraneza et al.,2018).

HD services are available at tertiary level in three hospitals in Kigali City with approximately 22 working dialysis machines. Also, one private dialysis center is available in Kigali. Additionally; there is one HD unit in southern province in a Referral Hospital entitled “CHUB), and 2 private clinics in western province (Mukakarangwa, et al,2018).

Proper management of diabetes mellitus, hypertension in CKD patients can reduce the complications of CKD, prolong the lives of CKD patients so that they will probable get a kidney transplantation and improve their quality of life.



### **1.3. PROBLEM STATEMENT**

According to my clinical experience poor practice of nurse's inpatient management of CKD has been observed. Literature review did by researcher, there is limited literature in Rwanda about practices of nurse's inpatient management of CKD.

However, in other countries, studies have been done about practices of nurse's inpatient management of CKD; like study conducted in Nepal about the knowledge of nurses and practice regarding care for patients on hemodialysis; results of the study revealed that 44% of nurses having low level of practice regarding patient's care during hemodialysis (Al-mawsheki and Taha,2016).

Another study conducted on provider knowledge, attitudes, and practice surrounding conservative management for patients with advanced CKD revealed that 47.5% of primary health care providers have good practice to discuss palliative care in CKD patients as conservative management (Parvez et al.,2016).

Poor practices in management of chronic kidney disease by nurses lead to increase mortality and morbidity, quick progression to end stage renal disease(ESRD), decreased quality of life, recurrent infections of patients with catheters who are on hemodialysis, malnutrition among CKD patients, fluid overload and increasing of blood pressure during dialysis or post dialysis (Sadeghpour et al.,2019).

Nurse's poor practice regarding chronic kidney management have been implicated to be linked with inadequate level of knowledge of nurses regarding chronic kidney disease management thus leading to poor patient's health outcome.

Meanwhile no study in Rwanda about nurse's knowledge of inpatient management of CKD has been done, but in other countries like Tanzania, a cross sectional study conducted revealed 59.4% of participants had low knowledge of chronic kidney disease and 72.4% of nurses were not knowledgeable in nutrition of chronic kidney disease patients (Munuo et al.,2016).

Another study conducted about nurses 'knowledge of the nutritional management of renal failure in Erbil city in Iraq revealed that majority of nurses (70.6%) had fair knowledge, while 17.6% had good knowledge and 11.8% had low knowledge score (Younis, et al.,2018).

In Rwanda health care system, nurses are the ones responsible for managing chronic kidney disease patients and are with patients many hours than other health care providers and yet their knowledge and practices regarding chronic kidney disease management is not explored through a research study. the reason to conduct the present study, as it will focus on assessing knowledge and practices regarding inpatient management chronic kidney among nurses at selected referral hospitals.

#### **1.4. THE AIM OF THE STUDY**

The aim of this study was to assess knowledge and practices of nurses regarding inpatient management of chronic kidney disease (CKD) at selected referral hospitals in Rwanda

#### **1.5. RESEARCH OBJECTIVES**

1. To describe the level of knowledge regarding inpatient management of chronic kidney disease among nurses at selected referral hospitals in Rwanda.
2. To determine the level of practice regarding inpatient management of chronic kidney disease among nurses at selected referral hospitals.
3. To establish demographic factors associated with nurse's knowledge and practices regarding inpatient management of chronic kidney disease at selected referral hospitals in Rwanda.
4. To examine the relationship between knowledge and practice regarding inpatient management of CKD among nurses at selected referral hospitals.

#### **1.6. RESEARCH QUESTIONS**

1. What is the level of nurse's knowledge regarding inpatient management of chronic kidney disease at selected referral hospitals in Rwanda?
2. What is the level of nurse's practices with respect to inpatient management of chronic kidney disease at selected referral hospitals in Rwanda?
3. What are the associated factors with nurse's knowledge and practices regarding inpatient management of chronic kidney disease at selected referral hospitals in Rwanda?
4. What is the relationship between knowledge and practice regarding inpatient management of CKD among nurses at selected referral hospitals?

## **1.7. SIGNIFICANCE OF THE STUDY**

It should determine who benefits from the study and how that specific audience will benefit from its findings.

### **Significance to nursing practice**

The findings in this study indicated that the level of knowledge of nurses was moderate and the level of practice was moderate. It appeared that moderate level of practice due to the fact that, nurses got knowledge from school but when reached to clinical setting, they don't get more CPD related to CKD management and this affect their level of practice. If this situation is not addressed poor practice may affect CKD patient's management. More and more patients will continue to deteriorate and increase mortality in CKD patients.

### **Significance to nursing research**

The results of this study identified gaps in nurse's knowledge and practices in CKD inpatient management and this will help other researchers to explore more from this gap identified. Findings of the present study will serve as baseline for other researchers in the same field.

### **Significance to nursing administration**

The results of this study will inform nursing leaders about nurses CKD inpatient management and therefore this will be used in planning continuous professional development about CKD management. Additionally, Results of this study will inform national healthcare policy makers and RMH /CHUK administration in particular, to recognize gaps among nurses' knowledge and practices in management of inpatient CKD patients hence developing useful guidelines fit for local setting and set adequate and suitable strategies aiming at improving nurse's Knowledge and Practice of inpatient management of chronic kidney disease.

### **Significance to nursing education**

This study therefore has implications to nursing education in terms of equipping nurses with adequate knowledge skills on subtle areas pertaining to management of CKD. General nurses need to be given adequate evidence-based knowledge to enable them to appropriately manage patients with CKD.

## 1.8. DEFINITIONS OF CONCEPTS

**The level of knowledge:** Is the extent to which a person has information required to perform a task, and the ability to apply again in the work (Wang and Noe, 2014). In this context, the author say that level of knowledge is all about what the level we know, but also is expected of theoretical and practical individual learning that getting over time (Tran B, 2014). In the present study, the level of knowledge refers to extent to nurse's knowledge about CKD definition, causes, risk factors, complication and management with dialysis, medications, fluid restriction and nutrition in management of CKD.

**Level of practice:** is the extent to which the person has the capacity of performing something (American Nurses Association ,2010). In this study, level of practice refers to what level nurses do in terms of dialysis, medications, fluid restriction and nutrition for CKD patients management.

**In patient Management:** is the art of knowing what you want to do and then see what is done in the best and cheapest for patient in hospital (Waghmode et al.,2016). In this study inpatient management refer to the use of medications, fluid restriction, dialysis and nutrition in chronic kidney disease management of patients who are admitted at emergency, internal medicine and those in renal unit.

**Chronic kidney disease (CKD):** is an abnormalities of kidney structure or renal function (defined by markers of kidney disease or decrease in GFR below 60ml/min/1.73m<sup>2</sup>) present for more than 3 months with health consequences (Lukela et al.,2014). CKD in our study is the disease of the study.

**Nurse:** is a healthcare professional who is focused on serving of individuals, families and communities, ensuring that achieve, maintain and recover optimal health and functioning. Is also a person who is able to assess, plan, implement and evaluate care independently of physicians (Henderson, 2006). In this study nurses are registered nurses who work in internal medicine, emergency and renal unit who identify patients with CKD, administer fluid and medications, and do hemodialysis and manage post kidney transplant who come at RMH and CHUK hospitals.

## 1.9. STRUCTURE / ORGANIZATION OF THE STUDY

This research is subdivided into the following main chapters: chapter One that covers the introduction, Chapter Two the literature review, Chapter Three the methodology, Chapter

four of Results, Chapter Five of discussion, chapter six of conclusion and recommendations and the list of appendices.

### **1.10. CONCLUSION TO CHAPTER ONE**

CKD is a life-threatening condition if it is not well managed. Increase in non-communicable diseases like diabetes and hypertension also increase the prevalence of CKD in population. Knowledge and practice of nurses in management of CKD contribute to decreased or morbidity and mortality in these patients. In Rwanda like for any other low-income countries, research in nephrology is not developed and there is limited data about nurse's knowledge and practices regarding inpatient CKD management among nurses.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. INTRODUCTION**

A literature review is systematized written presentation of what you find when you review the literature (Grove and Burns ,2012). This chapter covers literature search strategies about CKD management, critical review and research gap identification of inpatient management of CKD among nurses, theoretical literature about CKD, empirical literature of qualitative and quantitative articles published between 2014 and 2019, and the conceptual framework of unitary human beings by MARTHA E. ROGERS.

### **2.2. LITERATURE SEARCH STRATEGIES**

Review of literature has been done using internet where Google scholar, PubMed, HINARI, promoting access to African research and international research websites have been used. The search words used are: prevalence of CKD in Rwanda, Easter Africa, in sub Saharan Africa, in USA, in Europe and Asia; CKD in general; knowledge of nurses on CKD management; practices of nurses in CKD management; factors associated with nurse's knowledge and practices regarding CKD management and relationship between nurse's knowledge about CKD management.

### **2.3. THEORETICAL LITERATURE REVIEW**

It is a review that help to establish the various theories that exist in relation to the topic being considered. While such a review will highlight the major widely accepted theories on the issue, efforts should also be made to identify newly emerging theories concerning the topic as these acts as pointers to future directions for research and discourse on the issue. The review of each theory should consider the underlying assumptions, the main propositions of the theory and the main criticisms. Thus, the review should be critical and it should highlight how the theories evolve over time (Dochy,2015). This review covers prevalence of CKD, causes, diagnosis and management of CKD.

#### **2.3.1. Prevalence of CKD**

Chronic kidney disease is an abnormality of kidney function or its structure. It is a silence killer at stage one to stage three and patient seek for health at stage 4 and at ESRD. People who have hypertension and diabetes are at high risks of developing the disease. When not managed well at its early stage ,CKD progress to late which is fatal (Levey, Becker and Inker,2015).CKD is a major public health problem whereby approximately 10% of

population globally are affected with this condition. An estimated 10% of USA population is affected by CKD (AKF, 2015) and approximately 10% of European population has CKD (Jager et al., 2016).

In sub-Saharan Africa; a total of 14% is affected by CKD and the latter was 18<sup>th</sup> leading causes of death worldwide in 2010 (Okaka, Ojeh-Oziegbe and Unuigbo 2017). No statistics of prevalence of CKD in Rwanda. Management of CKD are blood pressure control by use of anti-hypertensive, glycemic control for diabetic patients, avoiding dehydration or fluid overload. Dietary management consists of, low sodium consumption, and protein and avoidance of nephrotoxic drugs like Brufen among others. Once CKD has reached to ESRD dialysis, kidney transplantation and conservative treatment are considered (Stevens, O'Donoghue and Lusignan, 2015).

### **2.2.1. Causes of CKD**

Causes of CKD in USA are diabetes (44%), hypertension (28.4%), glomerulonephritis (7.9%), cystic/hereditary congenital disease (2.2%), urological disease (0.5%), other known causes (10.7%), missing cause (3.2%) and unknown causes (3.1%) (AKF 2015:1). Main Causes of CKD in South Africa are hypertension, diabetes type 2, HIV positive patient due to nephrotoxicity of anti-retroviral drugs, renal tuberculosis and sarcoidosis (Jaguszewski et al., 2015).

The study done in CHINA found that older age, history of cardiovascular disease, Diabetes mellitus (DM) and Hypertension (HTN) are causes of CKD (Zhang L et al., 2012). A study conducted in Princess Marina Hospital in Botswana found that causes of CKD were HIV, HTN and DM. Other causes of CKD are overweight, high salt intake, high oil consumption, smoking, alcohol, kidney stones and urinary tract infection (Sathya, 2012).

The causes of CKD in Rwanda according to my clinical experience are diabetes mellitus, hypertension, malaria that causes Acute Kidney Injury (AKI) and progress to CKD, post-partum hemorrhage and diarrhea that complicate to hypovolemic shock and if it is not well treated; progress to AKI which later lead to CKD.

### **2.2.2. Diagnosis of CKD**

The following diagnostic evaluation tests for CKD are always indicated: Full blood count, repeat within one-week serum urea, electrolyte, creatinine, GFR, and albumin; urine protein, HbA1c for people with diabetes. Additionally; calcium and phosphate, parathyroid hormone (6-12 monthly if GFR <45 mL/min/1.73m<sup>2</sup>, urine albumin, creatinine ratio (preferably a first

morning void, although a random urine is acceptable), Glucose and fasting lipids and urine microscopy and culture and renal ultrasound are also performed. Risk factors for HBV, HCV and HIV status are also diagnosed. Finally; renal biopsy is done if there is persistent albuminuria > 60-120 mg / mmol (approximately equivalent to 24hr urinary protein > 2 g / day) (Johnson, 2013).

### 2.2.3. CKD STAGING

CKD staging is based on estimated glomerular filtration rate as follow:

**Table 2.1. Stage of CKD**

Stages	GFR (ml/min/1.73m <sup>2</sup> )	Terms
Stage 1	> 90	Normal or elevated
Stage 2	60 and 89	Mildly decreased
Stage 3a	45-59	Mildly to moderately decreased
Stage 3b	30-44	Moderately to severely decreased
Stage 4	15 to 29	severely decreased
Stage 5	<15	Kidney failure albuminuria

(Lukela et al., 2014).

Complications of chronic kidney disease (CKD) are dyslipidemia, hyperkalemia, metabolic acidosis, anemia and bone and mineral disorders. Chronic acidosis has recently been shown to be a risk factor in the progression of CKD kidney dysfunction. Therefore, treatment is mandatory, serum phosphate is raised in stage 4 CKD, especially in stage 5 CKD, which is associated with coronary heart disease and other vascular and carotid calcifications that can lead to ischemic heart disease, myocardial infarction and stroke. High levels of parathyroid hormone (secondary hyperparathyroidism) is also a major risk factor for cardiovascular disease and is associated with an increase in hypertension and resistance to treatment of CKD associated anemia (Van Der Walt et al., 2015).

### 2.2.4. Management of CKD in Hospital

CKD hospital management is done using either medications, nutrition, fluid restriction, dialysis and kidney transplantation. When giving medication to CKD patients; nephrotoxic



medications have to be reviewed and consider dose reduction if GFR is below 60mL/min1,73m<sup>2</sup>. The following medications adversely affect renal function in CKD patients therefore, they have to be administered with caution. They include but not limited to aminoglycosides, calcineurin inhibitors, gadolinium, lithium, NSAIDS and Cyclooxygenase-2 inhibitors, Angiotensin converting enzyme inhibitors, fluoroquinolones, statins, immunosuppressant and antiviral drugs. And some drugs like Metformin is indicated in CKD patients with GFR>30 mL/min1,73m<sup>2</sup> and contra indicated in patients with GFR<30 mL/min1,73m<sup>2</sup>(Stevens, O'Donoghue and Lusignan, 2015).

Blockade of renin angiotensin aldosterone system with either angiotensin converting enzyme (ACE) or angiotensin receptor blocker (ARB) is the first line treatment of hypertension in CKD patients and prevent or decrease the rate of progression to end stage renal disease and when patient is on the above medication the blood pressure, potassium and serum creatinine has to be monitored because these medications increase potassium and serum creatinine and before start ACEI and ARB the levels of potassium and creatinine has to be checked(Lukela et al.,2014).

In the treatment of CKD, the nutritional aspect has to be considered to prevent from malnutrition that is manifested by electrolyte abnormalities, muscle mass reduction and immunological function depression. This malnutrition is also manifested by anorexia, hypoalbuminemia, nutritional disorders mainly mineral and vitamin deficiencies. A balanced diet needs to be maintained and a visit to a renal nutritionist is recommended. The nutritional requirements of CKD patients differ according to stages.

**Table 2.2. Nutrition requirement of CKD patients**

CKD stages	Calories Kcal/kg/d	Na mEq/d	K mEq/d	P mg/d	Protein g/kg/d
3	30-35	≤65	-	600-1000	0.75
4	30-35	≤65	40-60	600-1000	0.6-0.8
5	Per dietitian	≤65	40-60	600-1000	0.6-0.8

(Stevens, O'Donoghue and Lusignan, 2015).

CKD patients in early stages are advised to drink fluid not greater than 2 to 2.5 liters per day including fluid content of food to prevent fluid overload and patient have to exceed this level in case there is diarrhea or excessive sweating (Johnson et al.,2013).

Patients with CKD stage 4 to 5 who are not on dialysis or who are in conservative care need fluid that is equal to urine output + 500ml/day according to balance and patients who are on hemodialysis need a fluid that equal to urine output + previous day loss +500ml/day and will depend also to balance( Chan, 2016).

CKD patients may be recommended fluid intake in case of Nephrolithiasis where patients are recommended 2 to 3 liters per day; salt-wasting nephropathies where patients require 4 liters/day and above and high salt diet and central and nephrogenic diabetes insipidus where fluid intake is 5 liters/day and above(Lukela et al.,2014) .

Dialysis is a process of cleaning wastes from the blood by using a machine. In normal way this work is done by kidneys and when they fail, this machine will do the work of kidney. CKD patients in stage 5 are those who will need dialysis 3 sessions per week in order to maintain normal health. There are 2 types of dialysis namely hemodialysis and peritoneal dialysis.

Hemodialysis: is a treatment method where patient's blood flow outside the body through the tubes into a special filter called dialyzer and blood goes around and round through the filter as it is done by normal kidney. The filter removes excess wastes and water from the blood what the damaged kidney was not able to do. Most CKD patients who need dialysis have 3 sessions per week and one session take a period of 4 to 5 hours. The dialysis can be done at home when patient has been taught how to do it him/her self, it can be done at clinic or in a hospital (American Thoracic Society ,2014).

Peritoneal dialysis is a treatment option where the cleaning of blood is done inside the body not by the machine. The special dialysis fluid is put inside abdomen from a plastic bag through a soft rubber tube or catheter inserted by small surgical procedure. The peritoneum which is a natural filter allows the waste products and excess water to be removed from the blood to dialysis fluid and after 1 to 2 hours the used liquid is drained out into another plastic bag and replace it with fresh fluid as before and this is called exchange and the used fluid is emptied down the toilet. The peritoneal dialysis is done four time a day and each session last 20 to 40 minutes daily and is done every day(Bekker and Winterbottom,2015).

Kidney transplantation is a procedure that involves surgical opening of lower abdomen and new functioning kidney is put in the right or left of lower abdomen above front of hip bone

and the diseased ones are not removed. The blood vessels of the new kidney are connected to the existing blood vessels and the ureter is connected to the bladder. The operation last between 3 to 5 hours(Martin and Errasti ,2006). The patient with CKD who will undergo kidney transplantation are prepared and active on waiting list at least 6months prior to starting dialysis and patients undergo many tests to confirm fitness to kidney transplant(Murphy et al.,2008).

## **2.3. EMPIRICAL LITERATURE**

Empirical literature means what previous studies found on the relationship between the variables under consideration. Every relationship should be arranged thematically (positive, negative and insignificant findings (Dochy,2015). This session covers knowledge, practices, associated factors and relationship between knowledge and practice of inpatient management of CKD.

### **2.3.1. Knowledge of Nurses regarding CKD inpatient management**

The study conducted on the knowledge of nurses and practice regarding care for patients on hemodialysis; results of the study revealed that 90% had satisfactory level of total knowledge about hemodialysis (Al-mawsheki Ibrahim and Taha ,2016). Another study also assessed knowledge and attitude regarding kidney transplantation among the patient's suffering from chronic kidney disease at selected referral hospital and revealed that the level of knowledge regarding kidney transplantation were 16.67% of the study (Bhalchakra and Sebastian ,2017).

In a qualitative study conducted about health care provider perception of CKD knowledge and behavior among African American patients; it was found noncompliance of treatment among CKD patients due to lack of knowledge and information about CKD, feelings of denial of the disease and fear of kidney transplantation(Kazley et al.,2014). Another cross sectional study conducted on nutrition knowledge, attitudes and practices among healthcare workers in management of chronic kidney diseases in selected hospitals in Dar es Salaam, Tanzania found that 59.4% of participants had low knowledge and 72.4% of nurses in the study reported that they were not knowledgeable in nutrition of CKD patients and they thought that nutrition assessment for CKD patients were for nutritionists and physicians(Munuo et al.,2016).

A study entitled “provider knowledge, attitudes, and practice surrounding conservative management for patients with advanced CKD” found 83.5% of primary care providers, 78.2% of nephrology respondents reported that they were likely to discuss conservative

management with their older patients with advanced CKD (Parvez et al., 2016). A study about Barriers to effective communication between veterans with chronic kidney disease and their health care providers revealed that 47% of participants reported that they lack knowledge about complications of CKD like anemia and bone disease because they don't get this information from nurses and they are supposed to educate them about this complication and its self-management (Lederer et al.,2015). When reviewing the literature, the researcher didn't find studies done on identifying the level of nurse's knowledge regarding CKD inpatient hospital management and in present study this knowledge was determined

### **2.3.2. Practice of Nurses regarding CKD inpatient management**

A study conducted about Nurse's knowledge and practice regarding care for the patients during hemodialysis found that 56% of studied nurses had good level of practice regarding patient's care during hemodialysis (Al-mawsheki and Taha ,2016). Another study conducted about effectiveness of self-instructional module on knowledge and practices among caregivers on home care management of patients on hemodialysis found 78.3% of care givers had good practice and 21.7% had poor practice regarding homecare management of hemodialysis patients (Al Salmi and Kadium, 2015).And nurses are among health care providers who does homecare of patients on hemodialysis and their levels of practices toward CKD management including hemodialysis are necessary.

A study conducted in Tanzania about nutrition knowledge, attitudes and practices among health care workers in management of CKD in selected hospitals in Dar es Salaam found about practice regarding nutrition education of CKD,48,9% of participants did not provide information about nutrition in CKD patients,28.6% and 22.6% did it once to twice a week while they have time to do provide this education and nurses are among this health care providers that was been investigated( Munuo et al., 2016).A study done on Educating Patients about CKD: The Path to Self-Management and Patient-Centered Care revealed that many providers including nurses express lack of confidence or feel that they have inadequate training in managing or explaining kidney disease (50,51%). Lengthy, prescriptive, and evolving kidney disease guidelines as well as lack of clear guidance on timing and content of education may confuse and intimidate non-kidney specialists, leaving them uncertain about management and causing them to delay education until referral to a nephrologist and impact practice in CKD inpatient management (Narva, Norton and Boulware, 2016).

Another study on how ready is general practice to improve quality in chronic kidney disease revealed that nearly all practitioners had reservations as to whether CKD is a disease, problem in diagnosis of CKD according to estimated glomerular filtration rate, not aware if CKD in older people is a disease or is a part of natural ageing; difficulty in explaining the condition to patients without scaring them; and others reported unable to recognize the target blood pressure and acknowledged educational gaps given to patients (Crinson et al., 2015). When reviewing the literature, the researcher didn't find studies done on identifying the level of nurse's practice regarding CKD inpatient hospital management and in present study this practice will be highlighted.

### **2.3.3. Associated factors and relationship between nurse's knowledge and practices regarding inpatient management of CKD**

The study conducted about nurse's knowledge and practice regarding care for the patients during hemodialysis found that there are significant differences between nurse's knowledge scores and their age and this may be due to the studied nurses had spent much time caring for caring these patients. Also, the same study revealed that there is high significant difference between studied nurses practice scores and working place (Al-mawsheki and Taha, 2016). No other study found about demographic factors associated with nurse's knowledge and practices regarding CKD inpatient hospital management. In the present study this association will be identified.

The study conducted about nurse's knowledge and practice regarding care for the patients during hemodialysis found that there is no statistically significant difference between nurse's knowledge and their practice (Al-mawsheki and Taha 2016). No other study found about relationship between nurse's knowledge regarding CKD management. In present study relationship between knowledge and practice regarding CKD management will be highlighted.

## **2.4. Critical review and research gap identification**

Chronic kidney disease (CKD) is now recognized as a major health problem worldwide. In Africa 10% of the population is affected by CKD and the gravity of CKD in African countries especially sub-Saharan Africa is unknown. Nurses are health care providers that are with patient many hours and their knowledge affect their practices in health care promotion and decrease mobility and mortality of CKD patients. When doing literature review no study

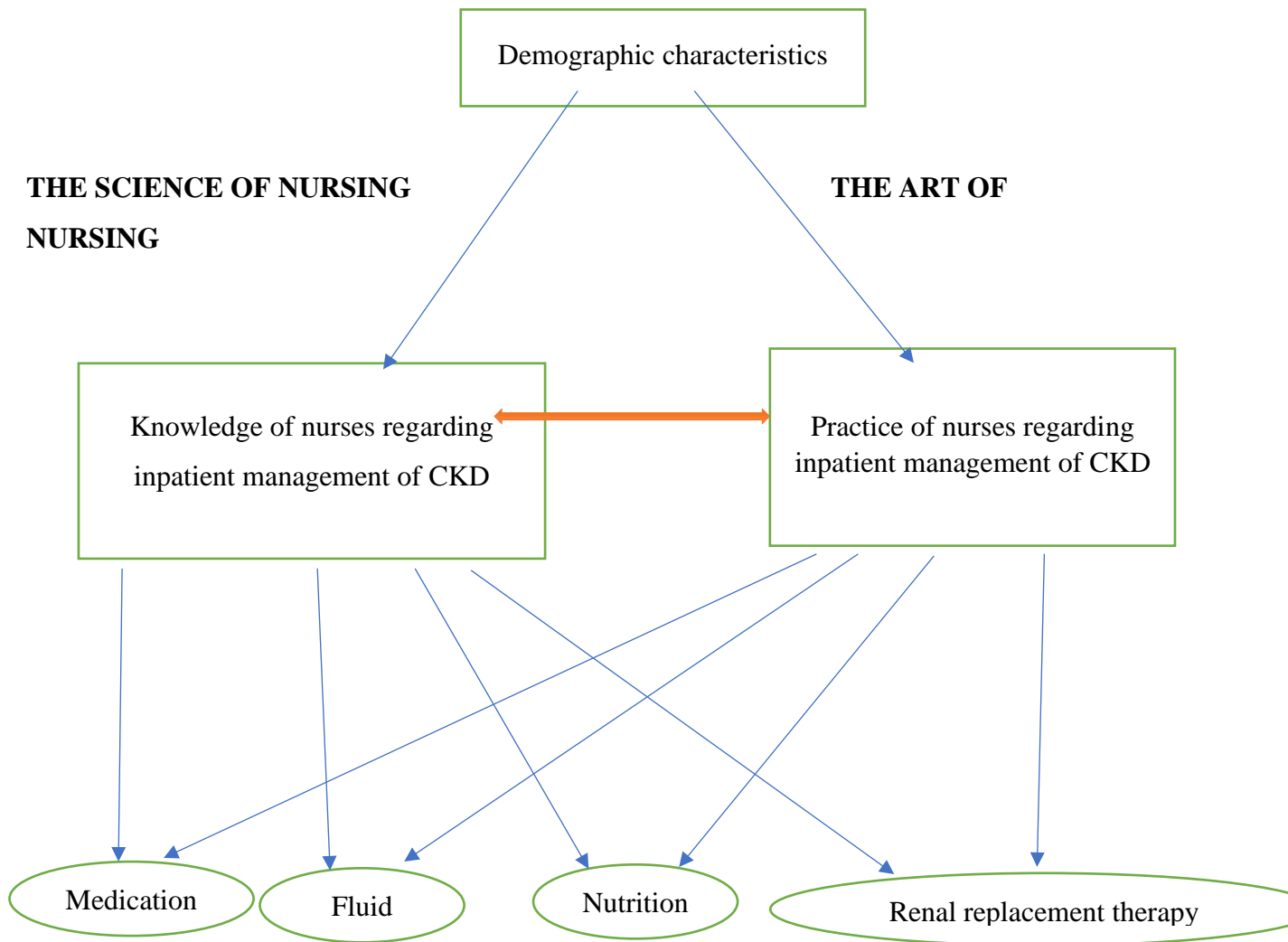
was found in Rwanda, in Easter Africa, in sub Saharan Africa, in Europe, in Asia and America that was focusing on nurse's knowledge and practice regarding CKD management and relationship between nurse's knowledge and practice in CKD inpatient hospital management.

## **2.5. CONCEPTUAL FRAMEWORK**

This study used Science of **unitary human beings** by **MARTHA E. ROGERS**. She developed her model based on the concepts of systems theory. Rogers viewed human being and his environment as integral that cannot be separated. She believed that human and his environment are one unit and therefore, must be studied together. She also felt that human beings and their environment progress, change and move ahead together and after the change occur, both humans and their environment cannot return to their previous stage. Rogers also stated that nursing in the Science of Unitary Human Beings contains two dimensions:

**The Science of nursing:** which is the knowledge specific to the field of nursing that comes from scientific research(Aranha ,2018). in this study science of nursing is knowledge of nurses regarding inpatient CKD management using medications, fluid, nutrition, and renal replacement therapy.

**The art of nursing:** which involves using the science of nursing creatively to help better the life of the patient, and is also the creative use of science to better people, and the creative use of its knowledge is art of practice (Aranha, 2018). In this study this one is the practice of nurses regarding inpatient CKD management on medications, fluid, nutrition, and renal replacement therapy. The diagram has demographic characteristics that may affect the knowledge of nurses regarding inpatient CKD management and practice of nurses regarding inpatient CKD management.



**Figure 2.1: Adopted Model** Science of Unitary Human Beings by Martha E. Rogers, 1990

## 2.6: CONCLUSION TO CHAPTER TWO

Chronic kidney disease is an abnormality of kidney function or its structure, the main causes of CKD are diabetes, hypertension and older age and CKD are treated using medications, fluid restriction, nutrition, dialysis and kidney transplantation and CKD complications are dyslipidemia, hyperkalemia, metabolic acidosis, anemia and bone and mineral disorders. Researches done had proven that that knowledge of nurses for CKD affect their practices in CKD inpatient hospital management. In different studies no statistically significant difference between nurse's knowledge and their practice. The gaps identified in previous study done about knowledge and practice in management of CKD among nurses are low level of knowledge and practice, as well as few studies has been conducted on the nurse's knowledge and practice in management of CKD. The Model Science of Unitary Human Beings by Martha E. Rogers has been used.

## **Chapter THREE: RESEARCH METHODOLOGY**

### **3.1. INTRODUCTION**

Research methodology is a technique used to organize and structure a study in systematic manner from beginning to the end (Beck and Polit,2004). The methodology is composed of research design, research approach, research setting, population, sampling, validity and reliability of research instruments, data collection, data analysis, ethical considerations, data management, data dissemination, problems and limitations.

### **3.2. RESEARCH APPROACH**

The research approach is a process by which a researcher identify research problem, review the literature, specify the research purpose, collect, analyze and interpret data, report and evaluate the research( Burns and Grove,2001). The ongoing research used quantitative approach which is the formal, objective, systematic process in which numerical data are used to obtain information about the world (Burns and Grove,2001).

### **3.3. RESEARCH DESIGN**

A research design is a plan for maximizing control over factors that could interfere with a study's desired outcome (Burns and Grove ,2012). This study used a descriptive correlation design and helped researcher to understand the knowledge of nurses and practice regarding inpatient hospital management of chronic kidney disease at selected referral hospitals.

### **3.4. RESEARCH SETTING**

Research setting is the location where a study is conducted (Burns and Grove ,2012).

The study was done in 2 referral hospitals located in Kigali city namely Rwanda Military Hospital (RMH) Centre Hospitalier Universitaire de Kigali (CHUK).in emergency, internal medicine and renal unit. RMH is a military hospital which is referral and receiving CKD patients from eastern province district hospitals and CHUK is a public referral hospital receiving CKD patients from Kigali, north, and many of south and western district hospitals. CKD patients who come from district hospitals are using community health insurance and others who use other health insurance their come to this referral hospital without passing at district hospitals.



### **3.5. STUDY POPULATION**

Population is all the elements (individuals, objects or substances) that meet certain criteria for inclusion in given universe (Burns and Grove ,2012). Study population: It was made of nurses working at Rwanda Military Hospital (RMH) and Centre Hospitalier Universitaire de Kigali (CHUK).

Target population: It was 146 nurses working in emergency, renal, and internal medicine units because when CKD patients came to this referral hospital, after diagnosis, patients with CKD at stage 1 to 4 are transferred to internal medicine whereas patients who are at ESRD who need to start hemodialysis, they are transferred to renal unit for Hemodialysis and thereafter return to internal medicine when are not stable to go home.

Accessible population: It was made of 120 nurses working at Rwanda Military Hospital (RMH) and Centre Hospitalier Universitaire de Kigali (CHUK) working in emergency, renal, and internal medicine units who agreed to participate in the study and returned back the questionnaire to the researcher.

### **3.6. SAMPLING CRITERIA**

Sampling criteria refers to the criteria for the selection of population that has required characteristics for the phenomenon under the study (Burns and Grove, 2009). And it encompasses inclusion and exclusion criteria.

#### **3.6.1. Inclusion criteria**

Inclusion criteria are those characteristics that a subject or participants must be possessing to be part of largest population (Card,2015). In this study inclusion criteria were to be a registered nurse working in emergency, internal medicine and Renal units who were available during period of data collection.

#### **3.6.2. Exclusion criteria**

Exclusion criteria are those characteristics that disqualify participants or subjects to participate in the study( Creswell and Creswell,2017).In this study exclusion criteria were to be a registered nurse who doesn't work in emergency, internal medicine and renal units at RMH&UTHK and those who were in maternal leave, annual and sick leave.

### 3.6.3. Sample size

It is defined as a subset of the population that is selected for a particular study (Burns and Grove,2012). Sample size obtained using the concept of census population where all nurses working at RMH and CHUK in internal medicine, emergency and renal who was present during period of data collection participated in the study and was composed of 120 of registered nurses working in emergency, internal medicine and renal units at RMH&CHUK after data collection.

The table below is showing that 78 of nurses was from emergency,58 nurses was from internal medicine and 10 nurses was from renal unit.

**Table 3.1. Distribution of population**

Services	RMH	CHUK	Total
Emergency	35 Nurse	43 Nurse	78Nurse
internal medicine	19 Nurse	39 Nurse	58Nurse
Renal	6 Nurse	4 Nurse	10 Nurse
<b>Total</b>	<b>50</b>	<b>86</b>	<b>146</b>

### 3.6.2. Sampling strategy

It is a process of selecting a portion of the population, which is an entire aggregate of cases (Beck and Polit,2010). In this study the sampling method used was a non-probability sampling which is a sampling technique in which the researcher selects samples based on the subjective judgment of the researcher rather than random selection (Polit and Beck,2004). It was used in this study, A purposive sampling which is the judgment of an expert in selecting cases or it selects cases with a specific purpose in mind (Polit and Beck, 2004). And it was used in selection of participants. The type of purposive sampling used was total population sampling which is the sampling where the whole population of interest (i.e., a group whose members all share a given characteristic) is studied (Polit and Beck,2004). And this was used to recruit participants for data collection. It was focusing on nurses working in internal medicine, emergency and renal units because are those who receive patients with CKD.

### 3.7. DATA COLLECTION TOOL

Data collection is a process of obtaining numerical data to address the research objectives, questions, or hypothesis (Burns and Grove ,2012). The data collection was done using an adopted tool developed by Associate professor Siméon Pierre Choukem, MD (Yaoundé), Researcher used academic data bases to find the article with the tool adopted and researcher wrote a request letter to professor Siméon and permission to use and modify the questionnaire was granted (Appendix 1).

The tool adopted was used in the study entitled “Knowledge of physicians on chronic kidney disease and their attitudes towards referral, in two cities of Cameroon: a cross-sectional study “knowledge questions were from Professor Siméon instrument, other knowledge and practice questions were from in-depth literature.

The tool was composed of 3 sections, Section A was made of demographic data questions and was from question 1 to 5 and was composed of Hospital of practice, Work service, Age, Gender, years of experience, level of training and type of specialty. Section B was made of Knowledge questions from question 6 to 15 and was about definition of CKD, risk factors of CKD, marker of kidney function, classification of CKD, complications of CKD, forms of renal replacement therapy(RRT), medication administration in CKD patients, management of nutrition in CKD patients, fluid management in CKD patients and hemodialysis in CKD patients and section C was made of practice questions, from questions 16 to 22 and was about practice questions about management with medications, fluid, nutrition, hemodialysis and peritoneal dialysis.

Knowledge questions was given and participants responded true or false depending on how participant knew about this knowledge and practice question was formulated in the way, a scenario has been given and participants and its management and participants response was agreeing or disagree with this management.

The minimum possible total score of knowledge was zero (0) and the maximum possible score, signifying level of knowledge of inpatient management of CKD among nurses was twenty-four (24). Dividing the attained score on this section by the maximum possible attainable score (24) and multiplying by a hundred to come up with a percentage calculated level of knowledge of 80% to 100% was classified as high, 79% to 50% was classified as moderate and level of below 50% was considered as low.

The minimum possible total score of practice was zero (0) and the maximum possible score, signifying level of practice of inpatient management of CKD among nurses was seven (7). Dividing the attained score on this section by the maximum possible attainable score (7) and multiplying by a hundred to come up with a percentage calculated level of practice of 80% to 100% was classified as high, 79% to 50% was classified as moderate and level of below 50% was considered as low level of practice. The investigator developed the scale because no scale was found in literature.

### **3.8. VALIDITY AND RELIABILITY OF THE RESEARCH INSTRUMENTS**

#### **3.8.1. Validity of the research instruments**

**Validity** is the extent to which it actually reflects or is able to measure the construct being examined (Burns and Grove,2012). The researcher evaluated the validity of this instrument in terms of face and content.

**Face validity:** is the measurement that verify basically that the instrument looked like it was valid or gave the appearance of measuring the construct it was supposed to measure (Burns & Grove,2012). In this study face validity was observed in 3 sections of questions in questionnaire. However, since face validity is the weakest measure, the researcher considered the validity of the instrument in terms of content.

**Content validity:** the degree to which measurement method includes all the major elements relevant to the construct being measured (Burns and Grove ,2012). In this study the content validity is expressed by Using of adopted instrument designed by Prof Simeon which was on Knowledge of management of CKD among general practitioner and in-depth literature for formulating practice questions of management of CKD among nurses. After that, the instrument was given to experts in clinical and academic for review, comments and correction. Further, the content validity ratio was calculated for each item on a scale by rating 0(not necessary),1(useful), or 3(necessary). Measurement of content validity index for the instrument by giving the instrument to 6 experts for rating each item in instrument using a 4 point and content validity ratio was 0.7( $CVR = [(E - (N / 2)) / (N / 2)]$  E=5, N=6,  $CVR = [(5 - (6/2)) / (6/2)] = (5-3)/3 = 0.7$ ) Moreover, the validity of questionnaire was done by matching objectives with the statements on the questionnaire.

**Table 3.2. Content validity table**

Objectives	Questions	Components of the conceptual framework
1.To describe the level of knowledge regarding inpatient management of chronic kidney disease among nurses at selected referral hospital in Rwanda.	6 to 15	The Science of nursing
2.To determine the level of practice with respect to regarding inpatient management of chronic kidney disease among nurses at selected referral hospital	16 to 22	The art of nursing
3.To establish demographic factors associated with nurse’s knowledge and practices regarding the inpatient management of chronic kidney disease at selected referral hospital in Rwanda.	1 to 22	The science of nursing and the art of nursing
4.To examine the relationship between knowledge and practice regarding inpatient management of CKD among nurses at selected referral hospital.	6 to 22	The science of nursing and the art of nursing

### **3.8.2. Reliability of the research instrument**

**Reliability** refers to the consistency of the measures obtained of an attribute, item, or situation in a study or clinical practice (Burns and Grove,2012). In this study reliability was observed by doing test-retest reliability which is the consistency of repeated measures of the

same attribute with the use of same scale or instrument over time (Grove and Burns,2012). Any inconsistencies seen in the research tool, any ambiguity and any corrections or any change in wording of the questions done. Nurses was administered questionnaire to evaluate its level of consistency; each nurse of these 15 responded to questionnaire two times in interval of 2 weeks.15/15 of nurses answered to the questionnaire in the same manner and the consistent of the tool has been observed. In addition, the instrument was translated from English to French and Kinyarwanda, then backtranslation to, English for evaluating the consistency of instrument, the instrument remained the same after translation and backtranslation.

The same instrument was used for all participants. Here all participants used the same questionnaire and explained in the same manner before starting answering the questionnaire.

Cronbach's alpha was calculated which is a statistical procedure used for calculating internal consistency for interval and ratio level data (Burns and Grove,2012). Cronbach's alpha ranges from 0 to 1, If all of the scale items are entirely independent from one another, here Cronbach's alpha will be zero, and if less than 0.5 are usually unacceptable, and if above 0.5 was acceptable and means all of the items in the instrument are reliable. The Cronbach's alpha for the present study instrument was above 0.5. This means that the instrument was a good measure of knowledge and practice of nurses.

### **3.9. DATA ANALYSIS**

Data analysis is a process of reducing, organizing, and give meaning to the data (Burns & Grove,2012). Before analyzing the data, the data was cleaned, grouped and classified according to demographic characteristic, knowledge and practices. These quantitative data were analyzed descriptively using tables, and percentages, and inferential statistics (chi-square) with the help of SPSS (Statistical Package for Social Sciences) window version 21. Descriptive statistics used to describe the demographic variables, the level of nurse's knowledge and practice regarding inpatient CKD management. Inferential statistics (chi-square test) used to establish association between demographic characteristics and nurse's knowledge and practice regarding inpatient CKD management. Pearson correlation coefficient ® was calculated to identify the direction and the strength of the relationship between nurse's knowledge and practice regarding inpatient CKD management and

The Pearson correlation determine the strength and direction of a relationship between two quantitative/numerical variables. It ranges from negative (-1) to positive (+1) coefficient values.

A negative correlation indicates that high values on one variable are associated with low values on the next. A positive correlation indicates that high values on the one variable are associated with high values of the next (Hall,2015).

Correlations have different strengths: 0.10 to 0.29 = Weak correlation/relationship, 0.30 to 0.49 = Moderate relationship/Medium correlation and 0.50 and above = Strong relationship/high correlation. The sign of the relationship does not indicate the strength; (-).50 is the same strength as (+).50 but different direction (Hall,2015).

### **3.10. ETHICAL CONSIDERATIONS**

Ethical considerations in research are the norms or standards for conduct that distinguish between right and wrong. They help to determine the difference between acceptable and unacceptable behaviors. Ethical considerations are so important in research because it prevent against the fabrication or falsifying of data and therefore, promote the pursuit of knowledge and truth which is the primary goal of research (Grove,Gray and Faan, 2019). It is important in our study because our participants are human and principles of ethics have to be respected. The ethical considerations are described as follows:

**3.10.1. Ethical boards for approving the study:** The present study has been approved by University of Rwanda College of Medicine and Health Sciences institutional review board (Ref: CMHS/IRB/033/2019) and Ethical Committee of RMH (Ref: RMH/IRB/010/2019) and CHUK (Ref: EC/CHUK/038/2019).

**Right to Confidentiality:** Is the right by which researcher manage private information shared by a subject that must not be shared with others without authorization of the subject (Burns and Grove,2012). In this study participant's confidentiality was respected by which the participants received the questionnaire and handled to the researcher himself, data entry in SPSS was done by researcher only in his own room at home, hard copy information is kept in closed cupboard and soft copy information is in researcher secured computer and any one will receive participant's information without their authorization.

**Right to privacy:** Is individual's right to determine the time, extent, and general circumstances under which personal information is shared with or withheld from others

(Burns and Grove,2012). In this study participant's privacy was applied because participants responded to questionnaire when they were at home or working place in quiet and private place.

**Right to self-determination:** States that human is able of controlling their own destinies, they should be treated as autonomous agents who have the freedom to conduct their lives as they choose without external controls (Burns and Grove,2012). In the study this right was respected by explaining participants about ongoing study and allowing them to voluntarily choose to participate or not, or withdrawal from the study without penalty.

**Right to fair treatment:** State that each person should be treated fairly and should receive what he or she is owed (Burns and Grove,2012). In this study selections of participants were done using purposive sampling, participants were given the questionnaire in the same manner and explanation about the research before data collection was uniform to all participants.

**Informed consent:** Means that participants have adequate information about the research, understand that information, and have the capacity to consent or refuse participation voluntarily (Burns and Grove,2012). In this study participants were informed verbally and visually on sheet about the title of research project, invitation to participate in the research, purpose and significance of research, time commitments, and termination of participation, indication voluntary contribution, risks involved, costs and compensation, after understand of the study, they signed for authorization of participation.

### **3.11. DATA MANAGEMENT**

The researcher contacted participants at work place where he provided questionnaire hand in hand and researcher took contact of participants, after completion of answering to questionnaire, participants contacted researcher and came to pick the questionnaire. After completion of data collection, researcher entered the questionnaire into SPSS at home, soft copy kept in researcher computer protected by a pass word and on his email, hard copy data is kept in a locked cupboard at home for a period of five years whereby unauthorized access will be prohibited.

### **3.12. DATA DISSEMINATION**

After completion of the study, the feedbacks will be given to RMH and CHUK where the study has been taking place a final copy of this research findings will be submitted to the



University of Rwanda Library for helping future students for research purpose and finally the findings will be published in nursing journal.

### **3.13. THE LIMITATIONS AND CHALLENGES**

**Sample size:** the sample size was a methodological limitation as sample was small, a non-probability sampling used, it was difficult to find significant relationships from the data, the aspect of leaving Centre Hospitalier Universitaire de Butare (CHUB) which deals with CKD becomes a limitation in the sample size of this study.

**Generalizability:** Is defined as the extension of research findings and conclusions from a study conducted on a sample population to the larger population or other similar situations (Brannen,2017). In this study generalizability was applied on nurses working at RMH and CHUK and not applied in nurses working at CHUB (Centre Hospitalier Universitaire de Butare) and this hospital cover small part of western and south district which was not involved in the study.

**Information bias:** Is a bias that occurs during data collection when measurements on exposure and/or outcomes are incorrectly recorded in a systematic manner(Smith and Noble ,2014). The nurses might not have been able to comprehend the content of the questionnaire because researcher was not there when they fill in the questionnaire

### **3.14. CONCLUSION TO CHAPTER THREE**

The study was conducted at Centre Hospitalier Universitaire de Kigali) and Rwanda Military Hospital in emergency, renal and internal medicine and non-probability purposive total population sampling was used. Data was collected among 120 nurses using self-administered questionnaire on knowledge and practices regarding inpatient management of chronic kidney disease patients among nurses. Descriptive and inferential statistics was used to determine the meaning of data collected. Chi-square test and Pearson correlation was used to establish an association between demographic characteristics, knowledge and practice of nurse's inpatient management of CKD. Right to confidentiality, fair treatment, self-determination and informed consent have been respected. Approval for CMHS IRB, RMH and CHUK ethical committee has granted for the present study.

## **CHAPTER 4: RESULTS**

### **4.0.1. INTRODUCTION**

This chapter presents the findings of the study. The findings include a description of sample demographics, knowledge and practice of nurses about inpatient management of chronic kidney disease. Moreover, the inferential analysis and interpretation of chi-square, correlation and regression results of knowledge, practice and demographic factors were presented.

### **4.0.2. Summary**

The purpose of the study was to identify knowledge and practice inpatient management of chronic kidney disease at selected referral hospital. The study aimed to answer the following questions;

1. What is the level of nurse's knowledge regarding inpatient management of chronic kidney disease at selected referral hospital in Rwanda?
2. What is the level of nurse's practices with respect to inpatient management of chronic kidney disease at selected referral hospital in Rwanda?
3. What are the associated factors with nurse's knowledge and practices regarding inpatient management of chronic kidney disease at selected referral hospital in Rwanda?
4. What is the relationship between knowledge and practice regarding inpatient management of CKD among nurses at selected referral hospital?

The study was conducted in 2 referrals public hospital located in Kigali/Rwanda. The sample of male and female subjects was selected using purposive sampling strategy. Data was collected by administering questionnaire to participants which responded to them in their free time and the researcher collected them after completion. The SPSS/pc computer software version 21 was used to compute all statistical analyses. Descriptive statistics were used to describe the demographic data, level of knowledge and practice of inpatient management of chronic kidney disease. Inferential statistics of chi squared test was used to establish demographic factors associated with knowledge and practice. Regression analysis was used to identify the contribution of demographic variables on knowledge and practice of nurses regarding inpatient management of CKD patients. Furthermore, correlation coefficient  $r$  was used to identify the strength and direction of the relationship between knowledge and practice.

**4.0.3. Response rate:** The response rate for the participants was calculated using this formula.

Response Rate= (Responses Returned) / (Surveys Sent Out) \* 100= 120/146\*100=82.1%, the response rate to the survey was 82.1%

#### **4.1. SAMPLE DEMOGRAPHICS**

Table 4.1 displays results on Hospital of practice, Work service, gender, age, year of experience, level of training and type of specialty of the participants.

The sample was 120 nurses where 51 of participants was nurses working at RMH making 42.5% and 69 of participants was nurses work at CHUK making 57.5%. In terms of work service,53 of participants was working at emergency making 44.2%,57 of participants was working in internal medicine making 47.5% and 10 participants was working at renal unit making 8.3%. In terms of gender 43(35.8%) were male and 77(64.2%) were female. In terms of participants age,25(20.8%) was between 20-30 years old,81(67.5%) was between 31 -40 years old and 14(11.7%) was above 41 years old. On side of experience,67(55.8%) had 1-5 years of experience and 53(44.2%) had above 5 years of working experience. In terms of level of training, 2(1.7%) of participants had level of masters,45(38.3%) had bachelor degree and 72(60%) had advanced diploma. In terms of specialty 3(2.5%) was nephrologists nurse and 117(97.5%) were registered general nurse).

**Table 4.1: Demographic characteristics (1) (N=120)**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<i>Hospital of Practice</i>		
RMH	51	42.5
CHUK	69	57.5
<i>Work Service</i>		
Emergency	53	44.2
Internal medicine	57	47.5
Renal	10	8.3
<i>Gender</i>		
Male	43	35.8
Female	77	64.2
<i>Age</i>		
20-30	25	20.8
31-40	81	67.5
41 and above	14	11.7
<i>Years of Experience</i>		
1-5 Years	67	55.8
5 years and above	53	44.2
<i>Level of training</i>		
Masters	2	1.7
Bachelor	46	38.3
Advanced diploma	72	60
<i>Type of specialty</i>		
Nephrology	3	2.5
Critical care and trauma	0	0
Registered general nurse	117	97.5

## **4.2. PRESENTATIONS OF FINDINGS AS ALIGNED WITH OBJECTIVES**

### **4.2. 1. Knowledge of nurses regarding inpatient management of CKD.**

Table 4.2 below displays statistics about knowledge of participants about inpatient management of chronic kidney disease. 73(60.8%) failed to definition of CKD question, 110(91.7%) of participants respond to the question of diabetes as a risk factor of CKD, 105(87.5%) of participants respond to the question of drugs as a risk factor of CKD, 112(93.3%) of participants respond to the question of hypertension as a risk factor of CKD, 100(83.3%) answered to the question of glomerulonephritis as a risk factor of CKD, 83(69.2%) failed to the question of HIV as a risk factor of CKD.

70(58.3%) answered to the question of hepatitis as a risk factor of CKD, 106(88.3%) of participants answered to the question of glomerular filtration rate and creatinine clearance as appropriate marker of kidney function, 85(70.8%) of participants failed to the question of classification of CKD into 4 stages by KDOQI, 90(75%) of participants answered to the question of anemia is a complication of CKD, 110(91.7%) of participants answered to the question of hyperkalemia is a complication of CKD, 111(92.5%) of participants answered to the question of uremia is a complication of CKD, 100(83.3%) of participants answered to the question of hypertension is a complication of CKD, 67(55.8%) failed to the question of osteodystrophy is a complication of CKD, 99(82.5%) of participants answered to the question of edema is a complication of CKD, 88(73.3%) of participants answered to the question of nausea and vomiting are complication of CKD.

98(81.7%) of participants answered to the question of coma is a complication of CKD, 71(59.2%) failed to the question of peritoneal dialysis as form of renal replacement therapy, 117(97.5) answered to the question of kidney transplant as form of renal replacement therapy, 79(65.8%) answered to the question of hemodialysis as form of renal replacement therapy, 85(70.8%) answered to the question of nephrotoxic drug dose reduction in  $eGFR < 60 \text{ml/min/1.73m}^2$ , 91(75.8%) of participants answered to the question of nutrition consideration by CKD patients due to the risk of electrolytes imbalance, 42(35%) of participants answered while 78(65%) failed to the question of fluid intake of output +1.5liter in CKD stage 4&5 who are not on hemodialysis, 19(15.8%) answered while 101(84.2%) failed to the question of management of stage 3 CKD by Hemodialysis.

Table 4.2: Knowledge of nurses on inpatient management of CKD (N=120)

Variable	Correct Answer		Wrong Answer	
	Freq	%	Freq	%
CKD is condition of chronically elevated serum creatinine and urea which is usually reversible with appropriate management	47	39.2	73	60.8
Diabetes is a risk factor of CKD	110	91.7	10	8.3
Drugs is a risk factor of CKD	105	87.5	15	12.5
Hypertension is a risk factor of CKD	112	93.3	8	6.7
Glomerulonephritis is a risk factor of CKD	100	83.3	20	16.7
HIV is a risk factor of CKD	37	30.8	83	69.2
Hepatitis is a risk factor of CKD	70	58.3	50	41.7
Glomerular filtration rate and creatinine clearance are appropriate marker of kidney function	106	88.3	14	11.7
Classification of CKD into 4 stages by KDOQI	35	29.2	85	70.8
Anemia is a complication of CKD	90	75	30	25
Hyperkalemia is a complication of CKD	110	91.7	10	8.3
Uremia is a complication of CKD	111	92.5	9	7.5
Hypertension is a complication of CKD	100	83.3	20	16.7
Osteodystrophy is a complication of CKD	53	44.2	67	55.8
Edema is a complication of CKD	99	82.5	21	17.5
Nausea and vomiting are complication of CKD	88	73.3	32	26.7
Coma is a complication of CKD	98	81.7	22	18.3
Peritoneal dialysis is form of renal replacement therapy	49	40.8	71	59.2
Kidney transplant is a form of renal replacement therapy	117	97.5	3	2.5
Hemodialysis as form of renal replacement therapy while	79	65.8	41	34.2
Nephrotoxic drug dose reduction in $eGFR < 60 \text{ml/min/1.73m}^2$	85	70.8	35	29.2

Nutrition consideration by CKD patients due to the risk of electrolytes imbalance	91	75.8	29	24.2
Fluid intake in CKD stage 4&5 who are not on hemodialysis equal of output +1.5liter	42	35	78	65
Management of stage 3 CKD by Hemodialysis	19	15.8	101	84.2

#### 4.2.2. Practice of nurses in management of chronic kidney disease

Table 4.3. below displays descriptive statistics of practice of inpatient management of CKD.

63(52.5%) of participants agree with replacement of glipizide with metformin 500mg twice a day for A 48 years old man who was hospitalized and recent laboratory studies showed eGFR of 55ml/min/1.73m<sup>2</sup>.,66(55%) agree with administration of oral cipro floxacillin of A 65 year old woman with stage 4 CKD secondary to hypertension with signs of urinary tract infection.

72(60%) disagree with management of 23 to 35 kcal/day of 70 years old patient with stage 3 CKD with poor appetite ,78(65%) of participants agree with management of food intake of chicken, fish, beef, eggs, soybeans and quinoa as protein requirement of patient on hemodialysis with albumin of 2.6g/dl ,66(55%) of participants agree with management of administration of 3% of normal saline intravenously of 56 years old man who came at hospital with long history of alcohol use with decreased breath sounds, with hepatomegaly,creatinine:0.8mg/dl,Na:108mEq/Land urea:4mg/dL.

66(55%) of participants agree with this management of intraperitoneal administration of antibiotics of 67-year-old man with mild neurocognitive disorder (dementia), in whom peritoneal dialysis with abdominal pain for the past 48 hours, with gram positive in peritoneal fluid, 61(50.8%) of participants disagree with management of add sodium modeling of A 60-year-old woman with ESRD on HD who has cramping during hemodialysis as well as weakness after each treatment. Post-treatment was HR:95/min and BP:90/60 mmHg.

Table 4.3: practice of nurse's inpatient management of CKD (N=120)

Variable	Correct answer		Wrong answer	
	Freq	%	Freq	%
Replacement of glipizide with metformin 500mg twice a day for A 48 years old man who was hospitalized with 10 years of DM and 5 years of HTN and recent laboratory studies showed eGFR of 55ml/min/1.73m <sup>2</sup>	63	52.5	57	47.5
Administration of oral Cipro floxacillin of A 65-year-old woman with stage 4 CKD secondary to hypertension with signs of urinary tract infection	66	55	54	45
23 to 35 kcal/day of energy requirement of 70 years old patient with stage 3 CKD with poor appetite	48	40	72	60
Food intake of chicken, fish, beef, eggs, soybeans and quinoa is protein requirement of patient on hemodialysis with albumin of 2.6g/dl	78	65	42	35
Administration of 3% of normal saline intravenously of is used for 56 years old man who came at hospital with long history of alcohol use with decreased breath sounds, with hepatomegaly, creatinine:0.8mg/dl, Na:108mEq/L and urea:4mg/dL	66	55	54	45
Intraperitoneal administration of antibiotics of given to 67-year-old man with mild neurocognitive disorder (dementia), in whom peritoneal dialysis with abdominal pain for the past 48 hours, with gram positive in peritoneal fluid	66	55	54	45
Add sodium modeling of A 60-year-old woman with ESRD on HD who has cramping during hemodialysis as well as weakness after each treatment. Post-treatment was HR:95/min and BP:90/60 mmHg	59	49.2	61	50.8



### **4.2.3. Level of knowledge and practice regarding inpatient management of CKD**

Referring the table 4.4 below the minimum and maximum total scores on knowledge subsection was 10 and 23 respectively, the media was 16, the mode was 17, the range was 13, the variance was 8.02, the mean of knowledge was 16.3(67.9%) and the standard deviation was 2.84, 12% of participants has high level of knowledge, 84% has moderate level of knowledge and 4% has low level of knowledge of inpatient management of CKD.

Also referring to the table below the minimum and maximum total scores on practice subsection was 0 and 6 respectively, the media was 4, the mode was 4, the range was 6, the variance was 1.6, the mean of practice was 3.7(52.8%) and the standard deviation was 1.27; 7.5% have high level of practice, 51% of participants have moderate level of practice.

Table 4.4: Participants level of knowledge and practice regarding inpatient management of CKD (n=120)

Perceived knowledge scores out of 24	Knowledge score in percentage (%)	Level of knowledge/Frequency	Measure of central tendencies.
10	42	Low:5(4%)  Moderate:101(84%)  High:14(12%)	Mean:16.3 Media:16 Mode:17 St. Deviation:2.8 Variance:8.02 Range:13 Minimum:10 Maximum:23
11	46		
12	50		
13	54		
14	58		
15	63		
16	67		
17	71		
18	75		
19	79		
20	83		
21	87		
22	91		
23	95		
Perceived practice score out of 7	Practice score in percentage	Level of practice/Frequency	Measure of central tendencies.
0	0	Low: 50(42.5%)  Moderate:61(51%)  High:9(7.5%)	Mean:3.7 Media:4 Mode:4 St. Deviation:1.27 Variance:1.6 Range:6 Minimum:0 Maximum:6
1	14		
2	28		
3	43		
4	57		
5	71		
6	86		

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#### **4.2.4. Factors associated with knowledge and practice of nurse's inpatient management of chronic kidney disease**

In table below 4.5, the factors associated with knowledge of nurse's inpatient management of have been obtained after doing chi-square test ,and these factors are hospital of practice(mean = 16.3; 95% CI (15.5–17); p=.024), work service(mean = 17.6; 95% CI (16.6–18.6); p=.000), level of training(mean = 17.4; 95% CI (12.1–22.6); p=.010) and type of specialty (mean = 19.4; 95% CI (18.4–20.3); p=.000) p values are below .05.

The factors associated with practice of inpatient management of CKD was work service (mean = 3.8; 95% CI (3.4–4.3); p=.015) p value is below .05.

**Table 4.5. Measure of central tendencies and Chi-square of Factors associated with knowledge and practice of nurse's inpatient management of chronic kidney disease**

	Factors associated with knowledge		Factors Associated with practice	
Variables	Mean (95% CI)	p value	Mean (95% CI)	p value
	<b>Hospital of practice</b>			
RMH	16.2(15.3-17.1)	.024	3.4(3-3.8)	.272
CHUK	16.3(15.7-16.9)		3.98(3.7-4.2)	
	<b>Work Service</b>			
Emergency	15.9(15.3-16.6)	.000	3.3(2.9-3.7)	.015
IM	15.7(15.1-16.3)		4(3.7-4.3)	
Renal	21.2(19.5-22.9)		4.3(3.7-4.9)	
	<b>Gender</b>			
Male	16.6(15.6-17.6)	.329	3.6(3.2-4)	.499
Female	16.1(15.5-16.7)		3.8(3.5-4.1)	
	<b>Age</b>			
20-30 y-o	15.9(14.7-17.1)	.312	3.4(2.8-4)	.390
31-40 y-o	16.3(15.7-16.9)		3.8(3.5-4.1)	
41 and above y-o	16.9(15.2-18.7)		3.6(3-4.3)	
	<b>Years of experience</b>			
1-5 Years	16(15.3-16.7)	.061	3.9(3.5-4.2)	.404
5 years and above	16.6(15.9-17.4)		3.5(3.2-3.9)	
	<b>Level of training</b>			
Masters	19.6(5.3-34)	.010	4.7(3.2-6.1)	.891
Bachelor	16.67(15.8-17.5)		3.7(3.3-4.1)	
Diploma	15.9(15.3-16.6)		3.7(3.4-4)	
	<b>Type of specialty</b>			
Nephrology	22.6(21.2-24.1)	.000	4.7(3.2-6.1)	.561
Registered general Nurse	16.1(15.6-16.6)		3.7(3.5-4)	

#### **4.2.5. Multiple regression analysis of knowledge, practice and demographic data of inpatient management of CKD**

Table 4.6 below highlights the multiple regression analysis. There was an overall significant moderate positive correlation ( $r .401, p < .05$ ) between hospital of practice, work service, age, gender, years of experience and level of training and knowledge of nurse's inpatient management of CKD. The aforementioned covariates are contributing nearly 16.1% variance on the knowledge of nurses. Similarly, a significant positive moderate relationship ( $r 0.390, p < .05$ ) between the covariates (hospital of practice, work service, age, gender, years of experience and level of training) and practice of nurses was revealed with a variance of 15.2% on the outcome. Simple linear regression analysis was conducted and showed a non-significant weak positive correlation ( $r .115, p > .05$ ) between knowledge and practice of nurse's inpatient management of CKD in which the knowledge contributed to the observed practice at 1.3%

**Table 4.6: Multiple regression analysis for demographic variables, knowledge and practice of nurses (N= 120)**

<b>Multiple regression analysis for factors associated with knowledge of nurses</b>				
R=.401	R <sup>2</sup> =.161	Sig. F change=.003	P value for the correlation = .05	
<b>Variables</b>	<b>Coefficient(B)</b>	<b>95%CI(B)</b>	<b>Standard error</b>	<b>Significance level</b>
Hospital of practice	.009	.050- .099	.504	.922
Work service	.313	1.399-3.502	.400	.001
Gender	- .134	- .789- -1.516	.520	.132
Age	.036	.181- .454	.454	.690
Years of experience	.135	.768-1.525	.503	.130
Level of training	- .152	-.792- -1.744	.454	.084
<b>Multiple regression analysis for factors associated with practice of nurses</b>				
R=.390	R <sup>2</sup> =.152	Sig. F change=.004	P value for the correlation = .05	
<b>Variables</b>	<b>Coefficient(B)</b>	<b>95%CI(B)</b>	<b>Standard error</b>	<b>Significance level</b>
Hospital of practice	.227	.582-2.599	.227	.012
Work service	.278	.558-3.093	.180	.002
Gender	- .018	-.048- .204	.235	.839
Age	.017	.038- .205	.205	.852
Years of experience	- .112	-.285- -1.254	.227	.212
Level of training	- .026	-.062- -.300	.205	.764
<b>Simple linear regression analysis for knowledge and practice of nurses</b>				

R=.115	R <sup>2</sup> =.013	Sig. F change=.210	P value for the correlation = .05	
<b>Variable</b>	<b>Coefficient(B)</b>	<b>95%CI(B)</b>	<b>Standard error</b>	<b>Significance level</b>
Knowledge of nurses	.115	.052-1.26	.041	.210

**Conclusion:** The overall findings of the present study was: 84% (score 50–79%) of the majority of nurses had moderate level of knowledge of inpatient management of CKD ;(51%) of nurses had moderate level of practice (score 50–79%). The factors associated with knowledge of inpatient management of CKD were hospital of practice (mean = 16.3; 95% CI 15.5–17; p=.024), work service (mean = 17.6; 95% CI 16.6–18.6; p=.000), level of training(mean = 17.4; 95% CI 12.1–22.6; p=.010) and type of specialty(mean = 19.4; 95% CI 18.4–20.3; p=.000) The factors associated with practice of inpatient management of CKD was work service (mean = 3.8; 95% CI (3.4–4.3); p=.015). There was an overall significant moderate positive correlation (r 0.401, p < 0.05) between hospital of practice, work service, age, gender, years of experience and level of training and knowledge of nurse’s inpatient management of CKD. The aforementioned covariates are contributing nearly 16.1% variance on the knowledge of nurses. Similarly, a significant positive moderate relationship (r 0.390, p < 0.05) between the covariates and practice of nurses was revealed with a variance of 15.2% on the outcome. Simple linear regression analysis conducted showed a non-significant weak positive correlation (r 0.115, p > 0.05) between knowledge and practice of nurse’s inpatient management of CKD in which the knowledge contributed to the practice at 1.3%.

## **CHAPTER FIVE: DISCUSSION**

### **5.1. INTRODUCTION**

This chapter presents the discussion of findings focusing on knowledge and practice of nurse's inpatient management of CKD with other studies done in relation with. The discussion is done according to the objectives of the study in terms of demographics characteristics, factors associated and relationship of knowledge and practice of nurse's inpatient management of CKD.

### **5.2. DEMOGRAPHIC CHARACTERISTICS**

The sample size in this study was 120 nurses support the results of the study about Nurses' Knowledge and Practice Regarding Care for the Patients during Hemodialysis by Al-Mawsheki, et al. (2016) where sample was 50 nurses. The sample demographics revealed (35.8%) were male and (64.2%) were female. These findings are similar to the results of AL-Mawsheki et al.(2016) revealed that 94% were female and 6 % and reinforced by Adeline ,E (2014) that revealed 71% of participants were female and 29% were male participants. The present supported by Munuo et al. (2016) A cross sectional study conducted on nutrition knowledge, attitudes and practices among healthcare workers in management of chronic kidney diseases in selected hospitals in Dar es Salaam, found that there were 39 (29.3 %) males and 94 (70.7 %) female participants in the study.

The study findings in terms of working hospital 42.5% participants was nurses working at RMH 57.5% of participants was nurses work at CHUK. this is in concordance of Al-Mawsheki, et al. (2016) stated that 55% of nurses were working at Suez Canal University Hospital and 44% of studied nurses were working at Ismailia General Hospital.

In terms of participants age, (20.8%) was between 20-30 years old, 67.5% was between 31 - 40 years old and 11.7% was above 41 contrary Adeline (2014) majority of respondents (40.6%) aged between 40 and 50years. Few of them were below 28 years (11.3%) and above 51years (14.3%) respectively. More than half 54% of studied nurses their ages ranged between twenty to less than thirty years by Al-Mawsheki, et al. (2016).The current study reinforced by Munuo et.al(2016) study that revealed Most (74.1 %) of the study participant's age ranged between 29 and 50 years.



The study findings about level of training, 1.7% of participants had level of masters,38.3% had bachelor degree and (60%) had advanced diploma. This study is also in agreement with Al-Mawsheki, et al. (2016) study that revealed 58% of studied nurses had diploma of nursing. On side of experience,67(55.8%) had 1-5 years of experience and 53(44.2%) had above 5 years of working this is supported by Adeline, (2014) that revealed Majority of respondents (42.9%) had worked experience between 2-5 years and by Al-Mawsheki, et al. (2016) study revealed half of studied nurses had experience from 1 year to less than 10 years, and 40% of studied nurses were attended training courses about patients care in hemodialysis Unit.

### **5.3. LEVEL OF KNOWLEDGE OF INPATIENT MANAGEMENT OF CKD**

Regarding nurse's total knowledge about inpatient management of CKD, the results of the current study revealed that majority of nurses had satisfactory knowledge in inpatient management of CKD with 12% of participants had high level of knowledge,84% has moderate level of knowledge and 4% has low level of knowledge this is in agreement with Al-Mawsheki, et al. (2016) study showed that the majority of studied nurses 90% had satisfactory level of total knowledge about hemodialysis, this is in disagreement with Kazley et al. (2014) qualitative study conducted about health care provider perception of CKD knowledge and behavior among African American patients that found noncompliance of treatment among CKD patients due to lack of knowledge and information about CKD, feelings of denial of the disease and fear of kidney transplantation and similarly to Munuo et al.(2016), A cross sectional study conducted on nutrition knowledge, attitudes and practices among healthcare workers in management of chronic kidney diseases in selected hospitals in Dar es Salaam, Tanzania found that 59.4% of participants had low knowledge and 72.4% of nurses in the study reported that they were not knowledgeable in nutrition of CKD patients and they thought that nutrition assessment for CKD patients were for nutritionists and physicians.

The present study is in contrast with Lederer et al (2015) study about Barriers to effective communication between veterans with chronic kidney disease and their health care providers revealed that 47% of participants reported that they lack knowledge about complications of CKD like anemia and bone disease because they don't get this information from nurses and they are supposed to educate them about this complication and its self-management.

#### **5.4. LEVEL OF PRACTICE OF INPATIENT MANAGEMENT OF CKD**

The present study showed 7.5% have high level of practice, 51% of participants have moderate level of practice and 42.5% of participants have low level of practice of inpatient management of CKD. This is in agreement with Al-Mawsheki et al. (2016) who conducted a study about Nurse's knowledge and practice regarding care for the patients during hemodialysis found that 56% of studied nurses had good level of practice regarding patient's care during hemodialysis. The present study disagrees with Al Salmi and Kadium (2013) who conduct a study about effectiveness of self-instructional module on knowledge and practices among caregivers on home care management of patients on hemodialysis found 78.3% of care givers had good practice and 21.7% had low practice regarding homecare management of hemodialysis patients.

The present study agrees with Adeline (2014) who did a study about nutrition knowledge, attitudes and practices among health care workers in management of CKD in selected hospitals in Dar es Salaam revealed that 48.9% had low practice I provision of health education about nutrition to CKD patients. The present study is similar to Narva, Norton and Boulware (2016) study about The Path to Self-Management and Patient-Centered Care revealed that 50.5% has low practice in CKD inpatient management.

#### **5.4. ASSOCIATED FACTORS BETWEEN KNOWLEDGE AND PRACTICE OF INPATIENT MANAGEMENT OF CKD**

The present study revealed the factors associated with knowledge of nurse's inpatient management of CKD were hospital of practice (mean = 16.3; 95% CI (15.5–17);  $p=.024$ ), work service (mean = 17.6; 95% CI (16.6–18.6);  $p=.000$ ), level of training (mean = 17.4; 95% CI (12.1–22.6);  $p=.010$ ) and type of specialty (mean = 19.4; 95% CI (18.4–20.3);  $p=.000$ ).

The present study is reinforced by Munuo et al. (2016) revealed a significant association between some of demographic characteristics (age  $p=0.01$  and work experience  $p<0.05$ ) and nutrition knowledge. The present disagree with Al-Mawsheki et al (2016) who revealed significant difference between nurse's knowledge scores and their age. In the present study, the factors associated with practice of inpatient management of CKD was work service (mean = 3.8; 95% CI (3.4–4.3);  $p=.015$ ). This is in disagreement with Al-Mawsheki et al. (2016) who stated a high significant difference between studied nurses practice scores and working place.

Munuo et al. (2016) did not mention in her study, association between demographic characteristics and practice.

### **5.5. RELATIONSHIP BETWEEN KNOWLEDGE AND PRACTICE OF INPATIENT MANAGEMENT OF CKD**

The present study showed a non-significant weak positive correlation ( $r = 0.115$ ,  $p = 0.210$ ) between knowledge and practice of nurse's inpatient management of CKD. The present study is supported by Al-Mawsheki, et al. (2016) who showed that there was a weak positive relationship ( $r = 0.157$ ) and no significant correlation between knowledge score and practice score ( $p = 0.300$ ) among the studied nurses about care for the patients during hemodialysis. authors Bhalchakra & Sebastian (2017) and Munuo et al.(2016) did not mention in their study relationship between knowledge and practice.

## **CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS**

### **6.1. INTRODUCTION**

This chapter cover the summary of problem statement, the main objective, the summary of methodology used, the summary of findings, recommendations and perspectives of further research.

### **6.2. CONCLUSIONS**

Poor nursing practice of inpatient management of chronic kidney disease among nurses has been observed by researcher in hospital by his experience. yet the nurses are the first health care who are with patients seven to seven twenty hours. Their poor practice increase mortality and morbidity of patients.

The aim of this study was to assess knowledge and practices of nurses regarding inpatient management of chronic kidney disease (CKD) as well as to examine relationship between knowledge and practice nurses regarding inpatient management of CKD at selected referral hospital in Rwanda.

The study utilized a descriptive correlation design. A purposive total population sample of 120 nurses working at RMH and CHUK in internal medicine, emergency renal units was selected. An instrument comprising a demographic question, knowledge and practice questions was administered to participants. Data was analyzed using descriptive and inferential statistics.

The findings of the study showed that the majority of 57.5 % of nurses work at CHUK, the majority of nurses of 47.5% was working in internal medicine,64.2% of participants were female, the majority of participants (67.5 %) was in range of 31 to 40 years old, 55.8% of participants had experience of 1-5 years,60% of participants had advanced diploma,97.5% of participants was registered nurses. The majority of nurses (84%) had moderate level of knowledge (50-79), the majority of nurses (51%) had moderate level of practice.

The factors associated with knowledge of inpatient management of CKD were hospital of

practice (mean = 16.3; 95% CI 15.5–17; p=.024), work service (mean = 17.6; 95% CI 16.6–18.6; p=.000), level of training(mean = 17.4; 95% CI 12.1–22.6; p=.010) and type of specialty(mean = 19.4; 95% CI 18.4–20.3; p=.000).

The factors associated with practice of inpatient management of CKD was work service (mean = 3.8; 95% CI (3.4–4.3); p=.015).

Pearson correlation analysis showed a weak positive correlation ( $r = .115$ ,  $p=.21$ ) between knowledge and practice of inpatient management of CKD. The results imply that to a small extent, as the level of knowledge increases, level of practice increases. The weak relationship between the study variables was further supported by a linear regression analysis which showed the level of knowledge can only explain 1.3% of the variance to the practice.

### **6.3. RECOMMENDATIONS**

Based on the research findings, the following recommendations are made:

**1.Recommendation to nursing practice:** In-service nurses teaching sessions as well as group discussions focusing on inpatient management of CKD to improve practice is needed for good practice. In-service training for registered nurses working in the internal medicine and emergency should be introduced to equip them with current information of inpatient management of CKD is needed.

**2. Recommendation to nursing Education:** The knowledge and practice of inpatient management of CKD revealed in this study may not be readily noticed by nurses. General nurses need to be given adequate evidence-based knowledge at university level to enable them to appropriately manage patients with CKD.

**3. Recommendations for nursing administration:** Results of this study highlighted gaps among nurse practices in management of inpatient CKD patients. Nursing administrations have to develop useful guidelines fit for local setting and set adequate and suitable strategies

aiming at improving nurse's Knowledge and Practice of inpatient management of chronic kidney disease.

**4. Recommendations for nursing research:** The results of this study identified gaps in nurse's knowledge and practices in CKD inpatient management. The present study should be taken as a pilot study for a bigger study including nurses of CHUB to improve the generalizability of the study results to the general population of nurses in Rwanda. Further research to elicit the major contributory factors to poor practice among of inpatient management of CKD among nurses should be carried out.

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## ANNEX 1: REQUEST AND PERMISSION LETTER FOR USE OF QUESTIONNAIRE

Request for the permission to use the instrument

Inb X  
ox



**EMMANUEL B.GAPIRA** <begapira@gmail.com>

Apr 18 2018

To: Simeon-Pierre Choukem and Colleagues

RE: Request for the permission to use the instrument

Dear Sir,

I'm Bimenyimana Gapira Emmanuel living in Rwanda, currently I'm a student in University of Rwanda College of medicine Sciences in Masters in Nursing Nephrology tract and one of the requirements to complete this program is to conduct a study entitled: " Knowledge and Practice regarding inpatient management of chronic kidney disease among Nurses at selected hospitals in Kigali". While I was looking for instrument that should help me maintain scientific rigor of this investigation underway, I was very interested in your research entitled "knowledge of physicians on chronic kidney disease and their attitudes towards referral, in two cities of Rwanda: a cross-sectional study conducted by Simeon-Pierre Choukem and Colleagues.

As you have seen I'm interested on Chronic kidney disease knowledge the reason I'm requesting the permission to use and adapt the instrument that you have used in your study in order to conduct my study.

Thank you for your time and consideration

We are looking forward to hear from you soon

Regards



**Simeon Choukem** <schoukem@gmail.com>

Apr 19 2018

to me

Dear Emmanuel

Thanks for the interest to our work. Please feel free to use it in your study and modify as per your needs.

Do consider this mail as a formal permission

Best regards

*Siméon Pierre CHOUKEM, MD (Yaounde), PU-PH (Paris)*

*Associate Professor of Internal Medicine, Diabetes and Endocrinology,*

*Consultant Internist-Endocrinologist, Douala General Hospital, Douala, Cameroon*

*Dean of the Faculty of Medicine and Pharmaceutical Sciences, University of Dschang, Cameroon*

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*Website: [www.2hdnetwork.org](http://www.2hdnetwork.org)*

## ANNEX 2: Budget

<b>Item</b>	<b>Number</b>	<b>Unit Cost</b>	<b>Total Rwfr</b>
Principal Investigator	1	0	0
Research Assistant	4	100,000	400,000
Laptop	1	400,000	400,000
Printer	1	150,000	150,000
Papers	10	5000	50,000
Printing Ink	1	25,000	25,000
Other writing materials (Note Books, pens, markers, flipcharts etc)			15000
Local Travel per day	30	2500	75000
Report writing and Dissemination		200,000	200,000
<b>Grand Total</b>			<b>1,351,000Rwf</b>

### ANNEX 3: QUESTIONNAIRE

#### QUESTIONNAIRE ON KNOWLEDGE AND PRACTICE REGARDING INPATIENT MANAGEMENT OF CHRONIC KIDNEY DISEASE AMONG NURSES

##### SECTION A: IDENTIFICATION

1	Hospital of Practice	1=RMH, 2=UTHK	
	Work Service	1=Emergency,2=ICU,3=Renal	
2	Gender	1=Male, 2=Female	
3	Age	1=20-30yo,2=31-40yo,3=41 and above	
4	Years of experience	1=0-1year,2=1-5 years,3=5 and above	
5.0	Level of Training	1=Masters, 2=Bachelor,3=Advanced diploma	
5.1	Specialty	1=Nephrology,2=CCT,3=None	

##### SECTION B: KNOWLEDGE

6	What is the definition of Chronic Kidney Disease (CKD)	A condition of chronically elevated serum creatinine and urea which is usually reversible with appropriate management  True, False	
7	The following are risk factors of Chronic kidney disease (CKD)	Diabetes; True, False	
		Drugs; True, False	
		Hypertension; True, False	
		Glomerulonephritis; True, False	
		HIV; True, False	
		Hepatitis; True, False	



8	The most appropriate marker for Kidney function is	Creatinine clearance/Glomerular filtration rate True, False	
9	The Kidney Disease Outcome Quality Initiative (KDOQI) Guidelines classify CKD into	4 stages True, False	
10	The following are complications of chronic kidney disease.	Anemia; True, False	
		Hyperkalemia; True, False	
		Uremia; True, False	
		Hypertension; True, False	
		Osteodystrophy; True, False	
		Edema; True, False	
		Nausea/vomiting; True, False	
11	The following are forms of Renal Replacement therapy (RRT)	Peritoneal Dialysis True, False	
		Kidney Transplant; True, False	
		Hemodialysis; True, False	
12	When giving medication to CKD patients nephrotoxic medications have to be reviewed and consider dose reduction if GFR is below 60mL/min1,73m <sup>2</sup>	True, False	
13	Nutrition have to considered in CKD patients because most of them develop malnutrition manifested by electrolytes abnormalities	True, False	
14	Stage 4 & 5 CKD patients who are not on dialysis or who are in conservative care need fluid that is	True, False	

	equal to urine output+ 1500ml/day according to balance		
15	Stage 3 CKD patients are managed using hemodialysis	True, False	

**SECTION C: PRACTICES (Multiple choice questions)**

16.A 48-year-old man is hospitalized and recent laboratory studies showed glomerular filtration rate, calculated using the Modification of Diet in Renal Disease (MDRD) Study equation, of 55 mL/min/1.73 m<sup>2</sup>. Medical history includes diagnosis of type 2 diabetes mellitus 10 years ago and diagnosis of hypertension five years ago. Current medications include carvedilol 12.5 mg twice daily, lisinopril 20 mg daily, and glipizide 5 mg daily. Recent laboratory studies of serum show hemoglobin A1c of 8.0% and potassium level of 4.5 mEq/L. Body mass index is 24.2 kg/m<sup>2</sup>. Pulse rate is 64/min, and blood pressure is 124/64 mmHg. Physical examination shows no abnormalities. To prevent further decrease in this patient's glomerular filtration rate, which of the following changes to his drug regimen is most appropriate?

Replace glipizide with metformin 500 mg twice daily

Agree or Disagree

17. A 65-year-old woman with stage 4 chronic kidney disease secondary to hypertension told you that she has had dysuria and increased urinary frequency during the past two days. She has not had fever or hematuria. Temperature is 37.3°C (99.1°F), pulse rate is 90/min, and blood pressure is 142/85 mmHg. On physical examination, no flank tenderness is noted. Urinalysis shows cloudy urine that is positive for leukocyte esterase, nitrites, and protein. Results of urine culture are pending. Which of the following medications is the most appropriate therapy for this patient's condition?

Oral administration of ciprofloxacin

Agree or Disagree

18. You are assessing a 70-year-old patient with stage 3 CKD. Her current weight is 74kg and her BMI is 28. Her weight four months ago was 65kg and her BMI was 24, yet she

says she has a poor appetite. She is not in acute renal failure nor does she have nephrotic syndrome. What energy needs will you recommend for this patient?

23 to 35 kcals/kg of previous weight

Agree or Disagree

19. You are seeing a patient on hemodialysis for a monthly lab review. During the review, you notice that his albumin level is 2.6 g/dL. He says he eats one meal per day and would like advice on what meats and meat alternatives to prepare. Which proteins are among those you would advise your patient to eat?

Chicken, fish, beef, eggs, soybeans, quinoa

Agree or Disagree

20. A 56-year-old man with a long history of alcohol use is admitted to the hospital after he had a seizure that was witnessed by his wife. The patient is obtunded, swollen, and jaundiced.

Temperature is 36.8°C (98.3°F), pulse rate is 104/min and regular, respirations are 18/min, and

blood pressure is 104/62 mmHg. On physical examination, auscultation of the chest shows

diminished breath sounds. Examination of the abdomen shows firmness of the right upper quadrant, palpable hepatomegaly, and protuberance of the umbilicus. Results of laboratory

studies of serum include the following:

Creatinine :0.8 mg/dL

Sodium :108 mEq/L

Potassium :3.5 mEq/L

Blood urea nitrogen :4 mg/dL

Which of the following is the most appropriate initial management?

(C) Intravenous administration of 3% saline

Agree or Disagree

21. A 67-year-old man with mild neurocognitive disorder (dementia), in whom peritoneal dialysis was recently initiated because of end-stage renal disease, is brought emergency by his wife because he has had abdominal pain for the past 48 hours. The patient's wife says he has been reusing one cap to close off his peritoneal dialysis catheter. On analysis, a sample of fluid from the catheter is cloudy and grows gram-positive cocci. Which of the following is the most appropriate next step?

Intraperitoneal administration of antibiotics

Agree or Disagree

22. A 60-year-old woman with end-stage renal disease secondary to diabetic nephropathy comes to the clinic for routine hemodialysis. The patient says she has cramping during hemodialysis as well as weakness after each treatment. Post-treatment, pulse rate is 95/min and blood pressure are 90/60 mmHg. On physical examination, auscultation of the chest shows normal breath sounds. Examination of the extremities shows no edema.

Which of the following is the most appropriate next step?

Add sodium modeling Agree or Disagree

Thank you for your contribution.

## QUESTIONNAIRE

### QUESTIONNAIRE SUR LA CONNAISSANCE ET LA PRATIQUE DES INFIRMIERS SUR LE TRAITEMENT DES MALADES HOPITALISES POUR UNE INSUFFISANCE RENALE CHRONIQUE

#### SECTION A: IDENTIFICATION

1	Hôpital de travail	1=HMR, 2=CHUK	
	Service de travail	1=Urgence,2=MI,3=Renale	
2	Genre	1=Masculin, 2=Feminin	
3	Age	1=20-30ans,2=31-40ans,3=41 et plus	
4	Annee d'expérience	1=0-1 ans,2=1-5 ans,3=5 et plus	
5.0	Niveau d'étude	1= Maitrise 2=Licensie,3=Graduant	
5.1	Specialite	1=Nephrologie,2=SI&U,3=Aucune	

#### SECTION B: CONNAISSANCES

6	Quelle est la définition d'insuffisance rénale chronique?	État caractérisé par une élévation chronique de la créatinine et de l'urée, habituellement réversible avec un traitement approprié vrai, faux	
7	Les facteurs de risque de l'insuffisance rénale chronique (IRC) sont:	le diabète; vrai, faux	
		Hypertension; vrai, faux	
		Glomérulonéphrite; vrai, faux	
		VIH; vrai, faux	
		Medicaments; vrai, faux	
		Hépatite; vrai, faux	

8	L'indicateur le plus approprié pour la fonction rénale	Est la clairance de la créatinine / le taux de filtration glomérulaire. vrai, faux	
9	Les directives de l'Initiative sur la qualité des résultats des maladies du rein (KDOQI) classifient l'insuffisance rénale chronique en	4 étapes vrai, faux	
10	les complications de l'insuffisance rénale chronique sont:	Anémie; vrai, faux	
		L'hyperkaliémie; vrai, faux	
		L'urémie; vrai, faux	
		Hypertension; vrai, faux	
		Ostéodystrophie; vrai, faux	
		Œdème; vrai, faux	
		Nausées et Vomissements; vrai, faux	
11	Les traitement d'insuffisance rénale chronique sont les suivantes:	le dialyse péritonéale; vrai, faux	
		Greffage renale; vrai, faux	
		Hémodialyse; vrai, faux	
12	lors de l'administration de médicaments à des patients atteints d'insuffisance rénale chronique, les médicaments néphrotoxiques doivent être réexaminés et réduction de la dose si le taux de filtration glomulaire inférieur à 60 ml / min1,73 m <sup>2</sup> .	vrai, faux	
13	La nutrition doit être prise en compte chez les patients atteints	vrai, faux	

	d'insuffisance rénale chronique ,car la plupart d'entre eux développent une malnutrition se manifestant par des anomalies électrolytiques		
14	Les patients atteints d'insuffisance rénale chronique de stade 4 et 5 qui ne sont pas sous dialyse ou qui sont sous traitement conservateur ont besoin d'un liquide égal à la production d'urine + 1500 ml / jour selon le solde	vrai, faux	
15	Les patients atteints d'insuffisance rénale chronique au stade 3 sont traités par hémodialyse	vrai, faux	

SECTION C: PRATIQUES (questions à choix multiples)

16. Un homme âgé de 48 ans est hospitalisé et des études de laboratoire récentes ont montré un taux de filtration glomérulaire, calculé à l'aide de l'équation de l'étude Modification du régime alimentaire dans l'insuffisance rénale (MDRD), de 55 mL / min / 1,73 m<sup>2</sup>. Les antécédents médicaux incluent le diagnostic de diabète de type 2 il y a 10 ans et le diagnostic d'hypertension il y a cinq ans. Les médicaments actuels comprennent le carvedilol à 12,5 mg deux fois par jour, le lisinopril à 20 mg par jour et le glipizide à 5 mg par jour. Des études de laboratoire récentes sur le sérum ont révélé une hémoglobine A1c de 8,0% et un taux de potassium de 4,5 mEq / L. L'indice de masse corporelle est de 24,2 kg / m<sup>2</sup>. La fréquence du pouls est de 64 batt / min et la pression artérielle est de 124/64 mmHg. L'examen physique ne montre aucune anomalie. Pour éviter toute diminution supplémentaire du débit de filtration glomérulaire de ce patient, lequel des changements suivants de son schéma thérapeutique est le plus appropriée

Remplacer le glipizide par la metformine 500 mg deux fois par jour

J'accepte, Je n'accepte pas

17. Une femme de 65 ans atteinte d'une insuffisance rénale chronique de stade 4 due à une hypertension vous a dit qu'elle avait eu une dysurie et une fréquence accrue de ses mictions

au cours des deux derniers jours. Elle n'a pas eu de fièvre ni d'hématurie. La température est de 37,3 ° C (99,1 ° F), le pouls est de 90 batt / min et la pression artérielle est de 142/85 mmHg. Lors de l'examen physique, aucune sensibilité des flancs n'est constatée. L'analyse d'urine montre une urine trouble qui est positive pour les estérases, les nitrites et les protéines des leucocytes. Les résultats de la culture d'urine sont en attente. Lequel des médicaments suivants est le traitement le plus approprié pour l'état de ce patient?

Administration de la ciprofloxacine orale

J'accepte, Je n'accepte pas

18. Vous évaluez un patient de 70 ans atteint d'insuffisance rénale chronique au stade 3. Son poids actuel est de 74kg et son indice de masse corporelle est de 28. Son poids il y a quatre mois était de 65kg et son indice de masse corporelle de 24. Pourtant, elle a un faible appétit. Elle ne souffre pas d'insuffisance rénale aiguë ni de syndrome néphrotique. Quels besoins en énergie recommanderez-vous pour ce patient?

23 à 35 kcal / kg de poids précédent

J'accepte, Je n'accepte pas

19. Vous consultez un patient sous hémodialyse pour un examen mensuel en laboratoire. Lors de l'examen, vous remarquez que son taux d'albumine est de 2,6 g / dL. Il dit qu'il mange un repas par jour et aimerait avoir des conseils sur les viandes et les substituts de viande à préparer. Quelles sont les protéines que vous conseilleriez à votre patient de manger?

Poulet, poisson, boeuf, œufs, soja, quinoa

J'accepte, Je n'accepte pas

20. Un homme de 56 ans qui consomme de l'alcool depuis longtemps est admis à l'hôpital après une crise dont son épouse a été témoin. La patiente est obstruée, enflée et jaunisse. La température est de 36,8 ° C (98,3 ° F), le pouls est de 104batt / min et régulière, les respirations sont de 18cycle / min et la pression artérielle est de 104/62 mmHg. À l'examen physique, l'auscultation de la poitrine montre souffle diminué, L'examen de l'abdomen montre la fermeté de la tige droite, hépatomégalie palpable et protubérance de l'ombilic. Résultats de laboratoire: Les études sur le sérum comprennent les suivantes:

Créatinine: 0,8 mg / dL

Sodium: 108 mEq / L

Potassium: 3,5 mEq / L



Urée sanguine: 4 mg / dL

Lequel des suivants est la gestion initiale la plus appropriée?

Administration intraveineuse de solution saline à 3%

J'accepte, Je n'accepte pas

21. Un homme de 67 ans atteint d'un trouble neurocognitif léger (démence) chez qui une dialyse péritonéale a récemment été initiée en raison d'une insuffisance rénale au stade terminal est amené en urgence par son épouse, qui souffre de douleurs abdominales depuis 48 heures. L'épouse du patient dit qu'il a réutilisé un capuchon pour fermer son cathéter de dialyse péritonéale. Lors de l'analyse, un échantillon de fluide provenant du cathéter est trouble et produit des coques à Gram positif. Quelle est la prochaine étape la plus appropriée?

Administration d'antibiotiques intraperitoneale

J'accepte, Je n'accepte pas

22. Une femme de 60 ans présentant une insuffisance rénale chronique stade 5 due à une néphropathie diabétique se présente à la clinique pour une hémodialyse de routine. La patiente déclare avoir des crampes pendant l'hémodialyse et une faiblesse après chaque traitement. Après traitement, le pouls est à 95 batt / min et la pression artérielle à 90/60 mmHg. Lors de l'examen physique, l'auscultation thoracique montre des bruits de respiration normaux. L'examen des extrémités ne montre aucun œdème. Quelle est la prochaine étape la plus appropriée?

Ajouter la modélisation du sodium

J'accepte, Je n'accepte pas

**Nous vous remercions de votre contribution.**

#### ANNEX 4: INFORMED CONSENT

**Study title: ‘KNOWLEDGE AND PRACTICES OF NURSES REGARDING INPATIENT MANAGEMENT OF CHRONIC KIDNEY DISEASE AT SELECTED REFERRAL HOSPITAL IN RWANDA’**

Dear Nurse,

I am **EMMANUEL BIMENYIMANA GAPIRA**, student in Masters in Nursing Program Nephrology track at University of Rwanda, College of Medicine and Health Sciences, in school of nursing sciences and midwifery, Department of General Nursing, Remera Campus. I’m conducting a research project entitled **KNOWLEDGE AND PRACTICES OF NURSES REGARDING INPATIENT MANAGEMENT OF CHRONIC KIDNEY DISEASE AT SELECTED REFERRAL HOSPITAL IN RWANDA**. I will very much appreciate your participation in this research.

We do not request you to put your name so that the information you provide will be anonymous and confidential. The findings from this study will be used to contribute to the continuous quality nursing care that you provide to CKD patients. Enclosed you will find a questionnaire that will take approximately 30 minutes for you to complete. The questionnaire is composed of 3 sections. You are invited to mark the response that best reflect how you feel or you know. There is no coercion or incentive to participate in this study, and you are free to withdraw from the study without any consequence or penalty. Your consent to participate in this study will be displayed by completing the questionnaire. If you have any questions or concerns about this research project, please feel free to contact me on mobile phone: 0785614694 e-mail: begapira@gmail.com or supervisors: **Mrs Marie Jeanne TUYISENGE**, mail mjsenge@gmail.com, Phone number: 0788896409 and Co-Supervisor **Dr Geldine Chironda** mail gerrychironda@yahoo.co.uk, phone: 0789924956, Chairperson of the CMHS IRB (0788 490 522) and of the Deputy Chairperson (0783 340 040).

Thank you for your time

Regards,

**EMMANUEL BIMENYIMANA GAPIRA**

## CONSENTEMENT ÉCLAIRÉ

Titre de l'étude : LA CONNAISSANCE ET LA PRATIQUE DES INFIRMIERS SUR LE TRAITEMENT DES MALADES HOPITALISES POUR UNE INSUFFISANCE RENALE CHRONIQUE À L'HÔPITAL DE RÉFÉRENCE CHOISI AU RWANDA

Chère Infirmière

Je suis BIMENYIMANA GAPIRA EMMANUEL, étudiant au programme de maîtrise en sciences infirmières de la filière néphrologie de l'Université du Rwanda, de la faculté de médecine et des sciences de la santé, à l'école des sciences infirmières et de sage-femme, au département des soins généraux, au campus de Remera. Je suis en train de mener un projet de recherche intitulé **CONNAISSANCE ET LA PRATIQUE DES INFIRMIERS SUR LE TRAITEMENT DES MALADES HOPITALISES POUR UNE INSUFFISANCE RENALE CHRONIQUE À L'HÔPITAL DE RÉFÉRENCE CHOISI AU RWANDA**. Je vous saurais gré de votre participation à cette recherche.

Nous ne vous demandons pas de mettre votre nom afin que les informations que vous fournissez soient anonymes et confidentielles. Les résultats de cette étude seront utilisés pour contribuer à la qualité constante des soins infirmiers que vous prodiguez aux patients atteints de néphropathie. Vous trouverez ci-joint un questionnaire qui vous prendra environ 30 minutes à remplir. Le questionnaire est composé de 3 sections. Vous êtes invité à marquer la réponse qui reflète le mieux ce que vous ressentez ou ce que vous savez. Il n'existe aucune contrainte ni incitation à participer à cette étude et vous êtes libre de vous retirer de cette étude sans conséquence ni pénalité. Votre consentement à participer à cette étude sera affiché en remplissant le questionnaire. Si vous avez des questions ou des préoccupations au sujet de ce projet de recherche, n'hésitez pas à me contacter par téléphone mobile : 0785614694, courrier électronique : begapira@gmail.com ou par l'entremise de Mme **Marie Jeanne TUYISENGE**, courrier électronique: mjsenge@gmail.com, numéro de téléphone: 0788896409 et la codirectrice **Dr Geldine Chironda** mail gerrychironda@yahoo.co.uk, téléphone: 0789924956, Président du CMHS IRB (0788 490 522) et du Vice-président (0783 340 040).

Merci pour votre temps

**BIMENYIMANA GAPIRA Emmanuel**

## ANNEX 5. Time frame

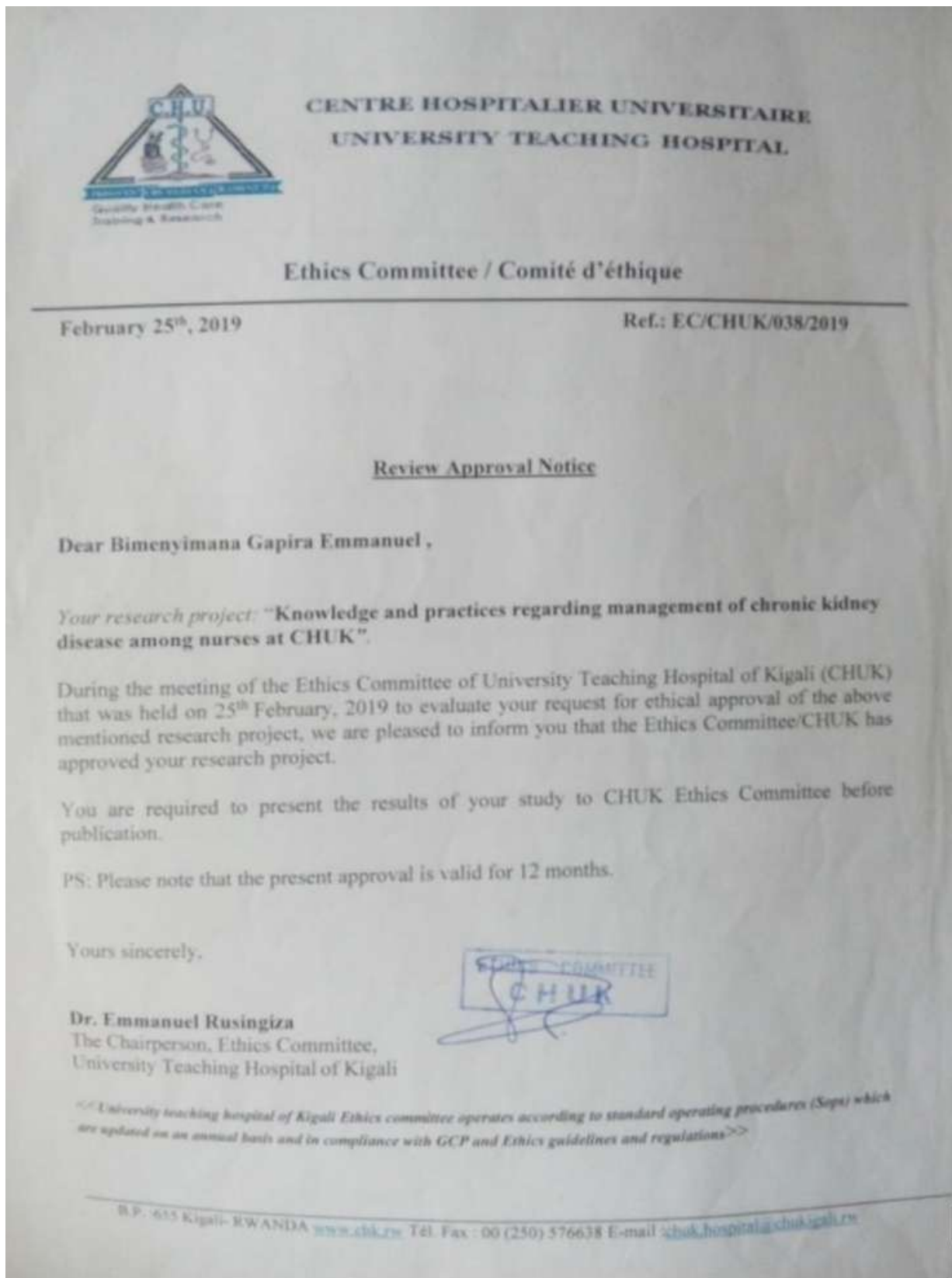
<b>Work to be done</b>	<b>Date to be completed</b>	<b>Personnel assigned to task</b>	<b>Person days required</b>
1. Research Proposal preparation and submission	Week 1-23 4 <sup>th</sup> June-12 <sup>th</sup> Nov 2018	1 person	161 days
2. Ethical clearance and permission to do the study	Week 23-27 22 <sup>th</sup> February 2019-10 <sup>th</sup> April 2018		42 days
3. participants recruitment	Week 28-30 13 <sup>th</sup> dec-27 <sup>th</sup> Dec 2018	1 person	14 days
4. Pre-testing and questionnaires	Week 31 -33 28 <sup>th</sup> Dec -11 <sup>th</sup> Jan 2019	1 person	14 days
5. Data Collection RMH&UTHK	Week 32-35 12 <sup>th</sup> April-23 <sup>rd</sup> May 2019	1 person	43 days
6. Data coding, and entry into computer and data analysis	Week 38-40 25 <sup>th</sup> -31 <sup>st</sup> May	1 person	14 days
7. Report Writing (First draft) and report presentation	Week 41 21 <sup>st</sup> June-30 <sup>th</sup> June 2019	1 person	10 days

8. Report presentation	Week 41	1person	1 day
9. Report Writing (Final draft) and finalizing the report	Week 42	1person	7days
10.Dissertation presentation preparation	Week43	1person	5 days
11.Dissertation submission and oral presentation	Week 44	1person	3 days

## APPENDIX 1: CMHS/IRB ethical clearance



## APPENDIX 2: CHUK Ethical Approval letter for the study



### APPENDIX 3: RMH ethical approval letter for the study

