AWARENESS AND SELF CARE PRACTICES REGARDING PREVENTION OF CHRONIC KIDNEY DISEASE AMONG HYPERTENSIVE PATIENTS AT THE UNIVERSITY TEACHING HOSPITAL OF BUTARE

By

Pierre Marie Theos MBABAZI

REG No. 218014400

A Dissertation submitted in Partial fulfillment of the Requirements for the Masters of Science Degree in Nephrology Nursing

College of Medicine and Health Sciences

School of Nursing and Midwifery

UNIVERSITY OF RWANDA

Supervisor: **Dr Geldine Chironda, PhD, MSc, BSN**

Co-Supervisor: **Mrs. Marie Jeanne TUYISENGE, RN, MSCN**

Kigali, June 2019

Declaration

I, **Pierre Marie Theos MBABAZI,** hereby declare that this research entitled "**Awareness and self-care practices regarding prevention of Chronic Kidney Disease among hypertensive patients at the University Teaching Hospital of Butare"** for partial fulfillment of the requirement for Mastersof sciences Degree in Nephrology nursing **of 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.

Pierre Marie Theos MBABAZI

Abstract

Background: There is a strong relationship between hypertension (HTN) and CKD (Chronic Kidney Disease) and this relationship has an interrelated characteristic; this means that HTN can be a cause or a complication CKD, and it is found in more than 80% of patients living with CKD. Moreover, HTN is recognized to be a risk factor for cardiovascular conditions with the potentiality to lead to a vicious cycle of cardiovascular diseases to CKD and vice versa. So, being aware about HTN and adhering to self-care practices are very important to control blood pressure (BP),and therefore to slow down the progression of HTN to CKD.

Aim: The main aim of this study was to assess the awareness and self-care practice regarding the prevention of chronic kidney disease among patients living with high blood pressure at the University Teaching Hospital of Butare located in the district of Huye, in the southof Rwanda.

Methods: The approach for this study was quantitative, and the designwas descriptive cross-sectional.Collected data came from a sample of 140 participants chosen using purposive sampling technique collected using a Closed-ended questionnaire. Datahave been analyzed using SPSS Software Version number 23 with descriptive and inferential statistics.

Results: Among the 140 participants, the findings about the level of awareness revealed that 48.6%% were with low level, 10% with moderate level, and 41.4% with high level. Regarding the level of self-care practice, 6.4% were with low level, 56.5% with moderate level, and 37.1% with high level. The only factor found to be associated with the awareness was the educational level (mean = 9.9; 95% CI (7.9–11.9); p=.026). The factors associated with self-care practices were age (mean = 18.6; 95% CI (17.1-20.1); p=.000); marital status (mean = 18.4; 95% CI (17.1–19.7); p=.003); educational level (mean = 18.3; 95% CI (17.4–19.3); p=.020), occupation (mean = 18.2; 95% CI (15.4–20.8); p=.021); residence (mean = 18.3; 95% CI (17.6–19); p=.026). A non-significantweak positive relationship between awareness and self-care practices of hypertensive patients has been observed (r = .254, n = 140, p = 0.02)**.**

Conclusion: The results indicatedthat the majority of participants are with moderatelevels of awareness and self-care practices regarding CKD prevention, therefore further actions are needed to raise their awareness and self-care practices to prevent CKD caused by HTN.

Key words: Awareness, self-care practices, hypertension, prevention, Chronic Kidney Disease.

Dedication

This work is dedicated to the Lord God almighty for His blessings through all my studies. It's also dedicated to all my teachers from primary school up to now, the members of my family and friends for the support they provided to me.

Acknowledgements

First, I would like to thank my supervisors **Dr Geldine Chironda** and **Mrs. Tuyisenge Marie Jeanne**for the support and advices they provided to me throughout the process of this work, their effort permitted me to overcome all obstacles to the realization of this study.

I am also thankful to Amani Khalil and Maysoon Abdalrahim for giving the permission to use and to adapt their research tool, tothe Government of Rwanda for the initiation of this Master's program of nursing, the administration of the University Teaching Hospital of Butare for giving me permission to conduct this research in its internal medicine department, to the staff of that department for helping me during data collection process and to other people who participated in the realization of this project.

May God bless you!

Table of contents

Declaration i
Abstract ii
Dedication iii
Acknowledgements iv
Table of contents v
List of acronyms and abbreviations viii
List of tables ix
LIST OF ANNEXES x
CHAPTER I INTRODUCTION 1
1.1 Introduction 1
1.2 Background 1
1.3 Problem Statement 3
1.4 Aim of the study 4
1.5. Specific objectives 4
1.6 Research questions 4
1.7 Significance of the study 4
1.8 Operational definitions of terms pertinent to the study 5
Conclusion to the chapter one 6
CHAPTER II REVIEW OF LITERATURE 7
2.1 Introduction 7
2.2 Theoretical literature 7
2.3 Empirical literature 10
2.4 Critical review and research gaps identified 14
2.5 Conceptual framework 15
Conclusion to chapter two 17
CHAPTER III RESEARCH METHODOLOGY 18
3.1 Introduction 18
3.2 Research approach 18

3.3 Research design 18
3.4 Research setting 18
3.5 Study Population 19
3.5.1 Inclusion criteria 19
3.5.2. Exclusion criteria 19
3.6 Sample and sampling procedures 19
3.6.1 Sample size 19
3.6.2 Sampling strategy 20
3.7 Data collection 20
3.7.1 Data collection instrument 20
3.7.2 Data collection instrument validity 20
3.7.3 Data collection instrument reliability 21
3.7.4 Data collection procedure 21
3.8 Data analysis 22
3.9 Ethical considerations 22
3.10 Data management 23
3.11 Data dissemination 23
3.12 Limitations and challenges 23
Conclusion 23
CHAPTER IV RESULTS 24
4.1 Introduction 24
4.2 Summary 24
4.3 Results presentation 25
CHAPTER V: DISCUSSION 37
5.1 Introduction 37
5.2 Demographic characteristics 37
5.3 Level of awareness of hypertensive patients regarding the prevention of CKD 37
5.4 Level of self-care practices of hypertensive patients regarding the prevention of CKD 38
5.5 Factors associated with awareness and self-care practices of hypertensive patients regarding the prevention of CKD 40

5.6 Relationship between awareness and self-care practices of hypertensive patients regarding the prevention of CKD 41
CHAPTER VI: CONCLUSIONS AND RECOMMENDATIONS 42
6.1. Introduction 42
6.2. Conclusions 42
6.3 Recommendations 42
REFERENCES 44

List of acronyms and abbreviations

AHA: American Heart Association

AKF: American Kidney Fund

BP: Blood Pressure

CKD: Chronic Kidney Disease

CMHS: College of medicine and health science

DBP: Diastolic Blood Pressure

eGFR: estimated glomerular filtration rate

ESRD: End stage Renal Disease cases

Freq: Frequency

HTN: Hypertension

IRB: Institutional Review Board

Km: Kilometer

ML/min: milliliters per minute

MmHg: millimeters of mercury

MOH: Ministry of Health

NCD: Non-Communicable Diseases

OPD: Out Patient Department

RRT: Renal Replacement Therapy

SBP: Systolic Blood Pressure

USA: United States of America

UR: University of Rwanda

UTBH: University Teaching Hospital of Butare

WHO: World Health Organization

List of tables

Table 4. 1: Socio-demographic characteristics of the participants 25
Table 4. 2 Awareness of hypertensive patients regarding the prevention of CKD 27
Table 4. 3 Self-care practices of hypertensive patients regarding the prevention of CKD 29
Table 4. 4 Level of awareness of hypertensive patients regarding the prevention of CKD (n=140) 31
Table 4. 5 Level of self-care practices of hypertensive patients regarding the prevention of CKD 31
Table 4. 6 Factors associated with awareness and self-care practices of hypertensive patients regarding the prevention of CKD..... 33
Table 4. 7 Multiple regression analysis for demographic variables, awareness and self-care practices of hypertensive patients 35

LIST OF ANNEXES

Annex 1: Informed consent to participate in a research study

Annex 2: Questionnaire

Annex 3: Project activity plan

Annex 4: Project budget

Annex 5: Research ethics training certificate

Annex 6:CMHS/IRB ethical clearance

Annex 7: Data collection approval letter

CHAPTER I INTRODUCTION

1.1 Introduction

Chronic Kidney Disease and hypertension are two diseases which are strongly interrelated with an interacting cause and effect relationship. Hypertension is typically recognized to be one of the principal risk factors for Chronic Kidney disease (CKD), and equally a decrease in renal function leads to high blood pressure which in turn accelerates the progression to renal failure (Judd and Calhoun, 2015). To prevent that hypertension leads to CKD, the control blood pressure is a requirement and this is achieved through antihypertensive medication and some lifestyle changes like low salt diet, but some people fail to follow those measures and their hypertension remains uncontrolled and progresses to CKD (Judd & Calhoun, 2015).

1.2 Background

A strong association exists between hypertension (HTN) and CKD and this relationship has an interrelated characteristic; this means that HTN can be a cause or a complication CKD, and it is found in more than 80% of patients living with CKD. Moreover, HTN is recognized to be a risk factor for cardiovascular conditions with the potentiality to lead to a vicious cycle of cardiovascular diseases to CKD and vice versa. So, it is a must to maintain under control the blood pressure (BP) to slow down the progression of HTN to CKD (Kono *et al.*, 2016).

In 2015, the global prevalence of HTN was estimated to be around 1.13 billion among adult population due to the phenomena of aging and growing population (American college of Cardiology, 2016) while for CKD, estimations from developing and developed countries show that the prevalence is between 8% to16% of the global population (Zhang et al., 2016).

The relationship of causality and consequence which exists between HTN and CKD is undeniable. In the USA, around 70 million of individuals are hypertensive, and HTN is the second cause of CKD, and is leading to 28.4% of all new registered cases of kidney failure (Fathi, 2018).

In Africa, HTN is the principal cause of CKD, particularly in black people where it affects around 24.7% of the overall adult population, but only less than 3% of people needing renal replacement therapy (RRT) are able to receive it, especially in East-Africa. Therefore, the mortality among people with end-stage kidney disease (ESRD)continues to increase though treatment options exist (Kumela Goro *et al.*, 2019).

By 2025, it's expected that the global number of hypertensive people will be around 1.56 billion corresponding to 29% of the overall world adult population. This increasing number of hypertensive population is significantly associated with various factors like the family background, diet, lifestyle, and the environment (Bakhsh *et al.*, 2017).

Though there is an increase in the prevalence of HTN, hypertensive patients continue to show low level of awareness, increasing the risk of getting complications. In a study conducted in Kenya in 2018 among hypertensive people, results revealed that only 15.6% were aware of their high blood pressure; and among those aware only 26.9% were receiving antihypertensive drugs with BP under control in 51.7% (Shukri F. Mohamed *et al.*, 2018).

To prevent the complications related to HTN like CKD, hypertensive patients firstly need to be aware of their condition but also to adhere to self-care practices. The most important self-care practices are: respecting medical prescriptions, lowering salt and fat intake, regular physical activity, reducing alcohol intake and stopping to smoke, weight reduction for obese and overweight people, regular monitoring of BP, respecting medical appointments, and adhering to stress reduction activities (Ademe, Aga and Gela, 2019).

However, in their daily life, many hypertensive patients fail to regularly implement those recommendations and are at high risk of developing complications from uncontrolled BP, and a typical example can be found in a study conducted in Ethiopia where findings revealed that HTN was uncontrolled among 50% of hypertensive patients. Among the factors recognized to affect the self-care practice, there were demographic factors like age, level of education, occupation, access to health literacy, duration of HTN diagnosis, HTN knowledge, and social support (Ademe, Aga and Gela, 2019).

In Rwanda, data about CKD and its causes are still insufficient, but in one study conducted in 2014, statistics revealed that the prevalence of CKD among hypertensive and diabetic patients was varying from 4% up to 24% (Stanifer *et al.*, 2014).

To prevent the progress of CKD in Rwanda, a systematic screening of proteinuria is conducted for adult patients with a blood pressure over 160/100 mmHg and cases of those found with a proteinuria greater than 500 - 1500 mg/24 hours are referred to the district hospitals for confirmation and for creatinine level measurement. When high blood pressure is found in children younger than 15 years, it's in most of cases indicating that there is a hidden cause which

is frequently found to be renal failure. For these patients a referral to district hospital is done to evaluate and to assess their renal function (Litbarg, 2018).

Awareness and self-care practice play a key role in slowing down the development of CKD among hypertensive patients, and this highlights the importance of involving patients in the process of care through self-monitoring and participation in setting goals related to the management of their health problems. Through self-care process, patients receive information about CKD and its associated risk factors, and then they can early engage in healthy behaviors, do regular checks of renal function, and life style changes to control and to maintain BP at acceptable levels (Khalil & Abdalrahim, 2014).

1.3 Problem Statement

People living with HTN are at increased risk of developing Chronic Kidney Disease; and the lack of awareness and self-care practices has been highlighted as the key modifiable determinants of this progression from HTN to CKD (Sa'adeh, Darwazeh, Khalil, & Zyoud, 2018). Despites the recognized importance of increased awareness and self-care practices in the prevention of CKD among hypertensive patients; studies continue to reveal low level of awareness and self-care practices among those patients.

In one study conducted in Australia, only 2.8% of the study population was capable to point out hypertension as one of the risk factors of CKD (Oluyombo et al., 2016), and in their study in Low and Middle Income Countries, Sherwood & McCullough (2016) found that less than 10% of participants living with risk factors like hypertension and diabetes were aware about the relationship existing between their current condition with the risk of developing CKD.

In another study conducted in Iran, low level of self-care practices among those patients can be observed. Findings showed that only 36.1% of patients were adhering to HTN medication, 24.5% were following a regular physical activity, 39.2% have adhered to the program of weight reduction, and only 12.3% were adhering to low salt intake (Fazel et Al, 2016).

Though various studies have been conducted worldwide to assess the awareness and the self-care practices of hypertensive patients, little is still known about how hypertensive patients' are aware and engaging in self-care practices regarding the prevention of CKD in Rwanda. Therefore, the objective of this study is to get an insight about the awareness of hypertensive patients regarding the causality association existing between HTN and CKD, and how they behave to prevent that HTN progresses to CKD, using data from one University Teaching Hospital of Rwanda.

1.4 Aim of the study

To assess the levels of awareness and self-care practice regarding the prevention of CKD among patients living with HTN at the University Teaching Hospital of Butare (UTHB).

1.5. Specific objectives

- To determine the level of awareness of hypertensive patients about the prevention of CKD at the UTHB.

-To evaluate the level of self-care practice of hypertensive patients regarding the prevention of CKD at the UTHB.

- To establish demographic and social factors associated with awareness and self-care practices regarding prevention of CKD among hypertensive patients at the UTHB.

- To examine the relationship between awareness and self-care practices regarding prevention of CKD among hypertensive patients at the UTHB.

1.6 Research questions

- What is the level of awareness of hypertensive patients regarding CKD prevention?
- What is the level of self-care practices among hypertensive patients regarding the prevention of CKD?
- What are different demographic factors associated with awareness and self-care practices regarding prevention of CKD among hypertensive patients?
- How is awareness being related to self-care practices regarding prevention of CKD among hypertensive patients?

1.7 Significance of the study

A lot of patients are developing CKD due to negligence or poor management of HTN. The findings of this study can help to know the current level of awareness and self-care practices to prevent CKD among hypertensive patients.

For nursing practice: this study permitted to discover existing gaps in the awareness and self-care practices of those patients, and where nephrology nurses and other nurses need to make efforts to raise their attention and level of self-care practices to prevent CKD, especially through providing needed information.

For nursing research: the findings from this study revealed some gaps in the prevention of CKD among hypertensive patients and is proposing recommendations for further researches to find possible solutions to those gaps.

For nursing administration: findings from this study can be used to raise nurse managers' attention regarding the management of HTN and prevention of CKD among hypertensive people, therefore they should act and advocate for policies and other measures needed to deal with those two public health threats.

For nursing education: findings of this study showed to educators where they need to focus to provide future nurses with essential information, which will help them to promote the prevention of CKD among hypertensive patients.

1.8 Operational definitions of terms pertinent to the study

Awareness: perception that something is present; being able to understand a present situation or subject basing on received information or lived experience. For this study, awareness is conceptualized as being conscious about a present phenomenon; this means that for to be aware, an individual has to possess a certain level of knowledge and meaning of the phenomenon in question, both knowledge and meaning acting as catalytic agents of the awareness process (Nifco and Barbara, 2005).

Self-care practices: is the action of taking regular actions to stay in good health and take appropriate steps when someone falls sick. Operationally defined, self-care practices mean all interventions that are aiming to provide patients with needed skills to be an active and responsible participant in the management of their health problems. To be fully functioning, this process asks that patients acquire knowledge about their chronic problems and be stimulated to independently monitor disease signs and symptoms, to adhere to medication regimens, and to get skills in problem-solving, decision-making and behavior changing (Jonkman et al., 2016).

Prevention: means all activities and measures undertaken to reduce the burden of a disease or any other risk factor. Prevention is categorized in the following three levels:

Primary prevention: measures aiming to prevent disease or injury occurrence.

Secondary prevention: Prevention of a disease, illness or injury complications through early detection and treatment.

Tertiary prevention: activities aiming the rehabilitation after a severe illness or injury that has lifelong health impacts (Institute for Work & Health, 2015).

For this study, prevention has to be understood as all specific, primary and secondary interventions which are targeting to reduce the burden of a health problem and its related risk factors among individuals or communities. Primarily those interventions help to avoid the occurrence of disease manifestations and secondarily to early detect a disease when this can improve the health outcome of a patient (Webber, Guo and Mann, 2013).

Conclusion to the chapter one

It's recognized that HTN is one of the principal causes of CKD, but according to the current data, many hypertensive patients are not aware of the relationship existing between those two diseases and then are not engaging in self-care practices to prevent the progression of hypertension to CKD. The principal objective of this study was to have a picture of the current situation by assessing how hypertensive patients were aware about HTN and CKD and what they were doing to minimize the negative impact of HTN on their kidneys.

CHAPTER II REVIEW OF LITERATURE

2.1 Introduction

A literature review is defined as critical search and appraisal of the existing literature about a topic of interest, and its main purpose is to contextualize the research problem (Polit and Beck, 2003).

CKD is in most of the time due to various factors including hypertension. When patients receive appropriate education and treatment of hypertension, this can prevent the complication towards CKD. This study will try to evaluate the level of awareness and practice on CKD prevention among patients living with hypertension, and then this part is going to include an overview of global situation of CKD and hypertension, their pathophysiology, a description of the level of awareness and practice of CKD in general and in case of hypertensive patients in particular.

2.2 Theoretical literature

2.2.1 Hypertension

HTN is defined as systolic blood pressure (SBP) equal or greater than 140 mmHg or by a diastolic blood pressure (DBP) over 90 mmHg. There are two types of HTN, the first one is the primary or essential HTN which is of unknown etiology and is observed in older adults and it is most of the time linked with nutritional disorders like uncontrolled salt intake, being obese and family predispositions. The second type of HTN is called secondary because it's due to known factors like the stenosis of renal artery, CKD, sleep apnea and disorders of adrenal gland. In both situations there is an imbalance in the sympathetic nervous system, dysfunction in the renin-angiotensin-Aldosterone system and other different regulatory mechanisms of the blood pressure (Williams, 2015).

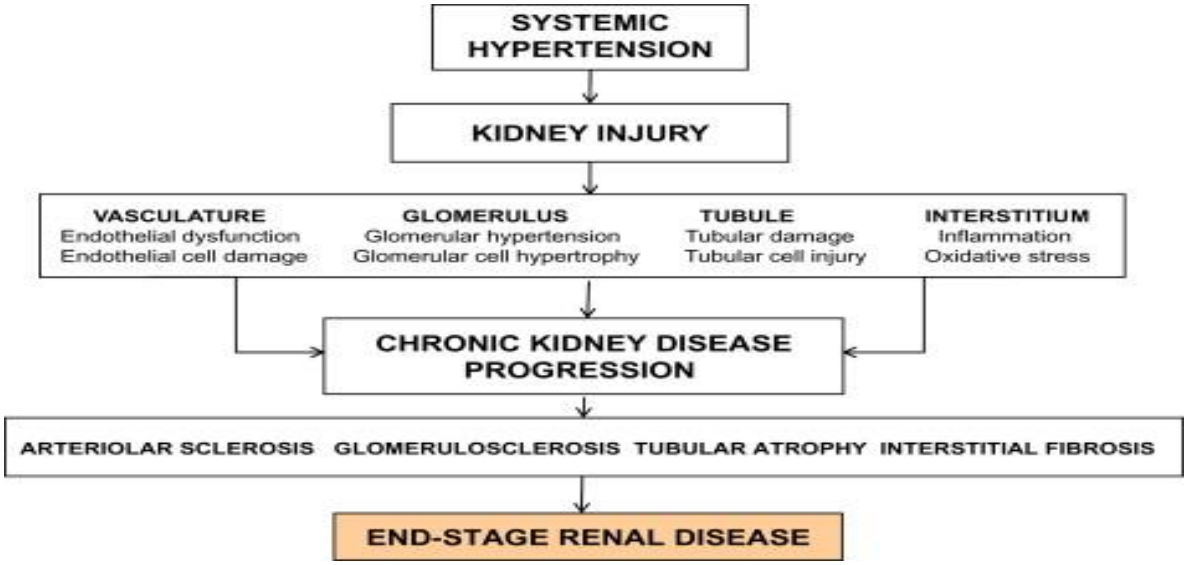
2.2.2 Chronic Kidney Disease

CKD is defined as damage in kidney structure manifested by a decrease in renal function with an estimated glomerular filtration rate (eGFR) less than 60 ml/min/1.73m2 for a period of more than 3 months. Another frequent test used in CKD is the dosage of urinary albumin/creatinine ratio (Vassalotti et al., 2016).

2.2.3 Relationship between hypertension and CKD

Over time, uncontrolled high blood pressure damages renal arteries, they become narrow and harden and this reduce blood supply to kidneys and when nephrons are not receiving sufficient oxygen and nutrients they become also damaged and this can lead to kidney failure. The global burden of CKD is continually increasing, and today it's among the major public health issues that the world is facing, with a worldwide prevalence estimated to be between 8 to 16% (Yann Ng, Shiun Lee, & Seong Goh, 2016). In most of the cases, the genesis of CKD is linked with preexisting hypertension and diabetes; which are recognized to be the principal causes leading patients with chronic kidney failure to undertake RRT programs (Cristina *et al.*, 2017).

Pathophysiology of Kidney injury secondary to HTN



(Velasquez, 2014)

2.2.4 Risk factors of HTN

The precise etiology of HTN is not known but following factors are predisposing to be hypertensive: smoking, obesity and overweight, high salt intake, increased alcohol intake, stress, age, antecedents of hypertension in the family, genetics, sleep apnea, etc. (Wenger *et al.*, 2018).

2.2.5 Diagnosis of hypertension

There is HTN in case SBP becomes equal or greater than 140 mm Hg or with a DBP greater than 90 mm Hg. Blood pressure is said to be normal when SBP is lower than 120 mm Hg and DBP lower than 80 mm Hg, while SBP between 120 to 139 mm Hg and DBP less than between 80 mm Hg indicate an elevated BP. In case of an increase of SBP between 130-139 mm Hg and a DBP between 80-89 mm Hg, this becomes Stage 1 hypertension and Stage 2 hypertension when SBP is greater than or equal to 140 mm Hg and DBP greater than or equal to 90 mm Hg. There is a hypertensive crisis when SBP is higher than 180 mm Hg and/or a DBP higher than 120 mmHg (American Heart Association, 2017).

2.2.6 Management of hypertension

To manage hypertension, the American Heart Association (AHA) recommends lifestyle changes as the key for successful management of hypertension, antihypertensive drugs come to support when lifestyle changes are not sufficient to control the increased blood pressure.

Lifestyle changes recommended:

Weight control: it is recognized that when body weight increases this results also in blood pressure raise, and a weight loss equivalent to 10 kg permits to reduce 5-20 mm Hg of blood pressure. To achieve the goal of weight loss, people with hypertension have to observe strictly what they are eating and have to be physically active (Anderson et Al, 2016).

Physical activity: 3.2 mm Hg of systolic and 2.7 mm Hg of diastolic are reduced in case of regular aerobic exercise. For this, exercises like utilizing the stairway, running, walking, ridding, gardening, etc. are just enough when those exercises are regularly done for at least half an hour per day (Anderson *et al.*, 2016).

Salt restriction: reduction of sodium intake at lower than 6 g permits to reduce between 2 to 4 mm Hg of systolic blood pressure. To achieve this, the patient has to keep away from fast foods and processed foods as they contain too much salt especially sodium. To flavor his/her food the patient has to use salt-free seasonings. The aim is to reduce the salt intake to 1500 mg per day and this help to control the levels of blood pressure (Anderson et Al, 2016).

Moderating alcohol intake: men are advised to not go over 30 ml of ethanol intake per day, and for women it's 15 ml. This permits a systolic reduction equivalent to 2 to 4 mm Hg.

Smoking cessation: this means adhering to non-smoking self-care behavior. Smoking is recognized to produce an instant but transitory raise of blood pressure and of heart rate. But in case of long-term smoking, chemicals from tobacco can raise the blood pressure by injuring blood vessels walls, inducing inflammation and reducing arteries lumen. The damaged arteries become hardened and this can increase the blood pressure (Anderson et Al, 2016).

Dietary modifications: maintenance of adequate calcium, potassium and magnesium intakes, and a reduction of food rich in saturated fat.

Antihypertensive drugs: When lifestyle changes are not able to control HTN, antihypertensive drugs can be prescribed to help to attain the goal blood pressure. Various classes of antihypertensive drugs are used: Calcium channel blockers, Thiazide diuretics, Inhibitors of Angiotensin-converting enzyme, blockers of Angiotensin receptors, etc. In many cases, a combination of several antihypertensive drugs is required to control hypertension. For the success of antihypertensive drugs, the patient has to avoid stopping taking or trying to change the prescribed dose without getting the approval of the prescriber (Anderson et Al, 2016).

2.3 Empirical literature

2.3.1 Awareness of hypertensive patients regarding CKD prevention

HTN is a global problem of public health and its prevalence continues to increase day to day. Statistics of 2015 showed that the total number of hypertensive people global was around 1.13 billion, and most of them were found in adults, because of the increasing number of aged people (Naidu *et al.*, 2019). For CKD, the global prevalence was estimated to be between 8% to16% of the global population (W. Zhang et al., 2016). HTN is classified among the principal causes of CKD as many cases of CKD are found in individuals who have previously been diagnosed with elevated BP (Cristina *et al.*, 2017), therefore, being aware of CKD is essential for hypertensive patient to adhere to medical treatment and recommendations; but results from some studies suggest that the level of awareness among hypertensive patients regarding the prevention is still low. In one study conducted in low- and middle-income countries, where 75 058 individuals

have been screened for hypertension, diabetes mellitus, and CKD, results revealed that 44% among them were suffering from high blood pressure, and prevalence of CKD was 14·3% in the study population. Among them, less than 10% were aware of CKD and among those who have been found to be aware, less than half of them were not following any treatment or measure related to the prevention of CKD (Sherwood & McCullough, 2016).

In another study conducted in India, from 2015 to 2016 among 600 hypertensive patients who attended outpatient department, results showed that only 35.71% were aware that hypertension can cause kidney damage, what shows that though it's well known that managing high blood pressure can modify the occurrence of kidney diseases, the awareness regarding hypertension and its complications remains very low amongst hypertensive patients (Bakshi and Singh, 2017).

In a cross-sectional survey conducted in Rwanda, among the 100 adult participants of the study, statistics revealed that 36% of them were hypertensive; but those who were aware of being hypertensive were estimated at 3% while the other 33% were not aware of having HTN. In this study, the mean of BP among hypertensive participants was estimated to be around 147.8/93.8 mmHg and there was a significant correlation with participants' age. This low level of awareness was thought to be associated with scarce resources, different priorities of the health system and the public education which is not focusing enough on non-communicable diseases (Banyangiriki and Phillips, 2013).

2.3.2 Self-care practices regarding CKD prevention among hypertensive patients

Due to the deficient awareness about hypertension and CKD, people living with high blood pressure are not fully engaging in self-care practices though they are important in the prevention of CKD. This low level of self-care practices is confirmed by statistics from various studies conducted among hypertensive patients. For example, in one study conducted in Iran, findings showed that only 36.1% of patients were adhering to hypertension medication, 24.5% were following a regular physical, 39.2% have adhered to the program of weight reduction, and only 12.3% were adhering to low salt intake (Fazel et al., 2016).

In another study conducted in Ethiopia, findings revealed that BP was not controlled among 57.7% of participants. Regarding lifestyle changes, 59.4%, were adhering to medication regimen, 67.9%, were not respecting salt restrictions, 43.3%, were passing a week without any physical activity, 66.1% were not adhering to weight control protocols. The rate of nonsmokers was

94.8%, 86.4% among them were not drinking alcohol and 70.9% were having their BP checked at least two times a month (Tesfaye et al., 2017).

Results from another study conducted in Zimbabwe demonstrated the same low engagement in self-care practices of hypertensive patients. In this study, 70% of participants were ignoring the importance of weight control in blood pressure management, 67% reported having the habit of adding salt in food before they eat, 28% were ignoring the importance of smoking cessation, 47% were regular alcohol consumers, 63%-80% have suffered from one of clinical signs of hypertension but didn't seek medical care, preferring to attribute the cause to spirits (Mabuto and Handara, 2017).

Being aware of hypertension has not been found to be enough to engage in self-care practices. In a study conducted in Rwanda to evaluate the level of self-care activities among people living with HTN, results showed that less than 50% of patients were adhering to prescribed medication and weight management program; 87.3% and 61.3% were respectively adding an extra amount of salt in their food during preparation and eating. Regarding smoking, more than 50% of respondents were adhering to non-smoking self-care practice (Nahimana et al., 2018).

2.3.3 Factors associated with awareness and self- care practices in hypertensive patients

There are different factors which are found to be associated with the level of awareness in hypertensive patients. In one study conducted in Nigeria among hypertensive participants, the level of awareness was 40.8%, and 59.3% of those aware were found among those aged between 60-70 years, while the lowest level of awareness (1.4%) was found in young people aged between 20–29 years (Omotoye and Sanusi, 2018). In this study, gender was significantly associated with awareness as among those who were aware, 76.2% of them were females while males were aware at the level of 23.8%. Being married was also found to be increasing the level of awareness among hypertensive patients as among those who were aware, 83.6% were married while widowed respondents were aware at 11.7%. Increasing in educational level was found to be not influencing hypertension awareness as only 5.1% among those with post-secondary education were found to be aware of their hypertensive condition, and12% of those aware were coming from families with history of high blood pressure (Omotoye and Sanusi, 2018).

Regarding self-care practices among people living with HTN, in a study conducted in Iran, gender has been found to be influencing adherence to self-care practices. In these adhering respondents, hypertensive women (54.6%) were making regular physical activity than men (45.4%), but women were found to be less prone to engage in smoking cessation than men. People under 50 years old were more complying with low salt intake and medication than those aged more than 50 years. Marital status has also been found to be one of factors influencing self-care practices (Fazel et al., 2016).

Among participants who were adhering to self-care practices, 73.5% of married people were engaging in low salt regimen while only it was 2.2% among non-married. The geographical location has been cited as one of factors associated with self-care practices; 44.5% of participants from urban area were engaging in nonsmoking activities, while those from rural areas were adhering to non-smoking practice at the level of 55.5%. Regarding weight management, females were less adhering than males at respective rates of 38.6% and 61.4 of those who were adhering to the practice. The time passed since diagnosis was also found to be significant; patients who have spent more than 5 years since the diagnosis were more engaging in physical exercises than those less than 5 years. Factors like education, family history, and income were not showing a significant association with self-care practices (Fazel et al., 2016).

For Rwanda, regarding different factors associated with the level of awareness and self- care practices in hypertensive patients, only few data are found. In a study to determine "factors associated with participation in physical activity among adults with hypertension in Kigali, Rwanda", results showed that among 252 participants, the majority of inactive people were in those with mean age of 52.73 years, while the active category was found in those with mean age of 42.99 years. Regarding the marital status, among the active participants, 54.55% of them were found in those not married. The educational level was found to be one determinant of engaging in physical activity. The majority of active people were found in those with low level of education; where among them those with primary school were 40.26%, 32.47% for secondary school, and 11.69% for tertiary education (Umuvandimwe, 2015).

2.3.4 Relationship between awareness and self-care practices regarding prevention of CKD

It is recognized that awareness of HTN is a strong predictor of how individuals adhere to prevention practices and to treatment (Ozoemena *et al.*, 2019). This strong relationship existing between the awareness of hypertensive patients and how they engage in self-care practices can be observed in a study conducted by Bakhsh et al. (2017) about the "Awareness and Knowledge on Hypertension and its Self-Care Practices Among Hypertensive Patients in Saudi Arabia", where findings showed a significant relationship between awareness and practice ($P < 0.05$). Other reviewed studies don't mention how awareness is being related to self-care practices, limiting the discussion about the subject.

2.4 Critical review and research gaps identified

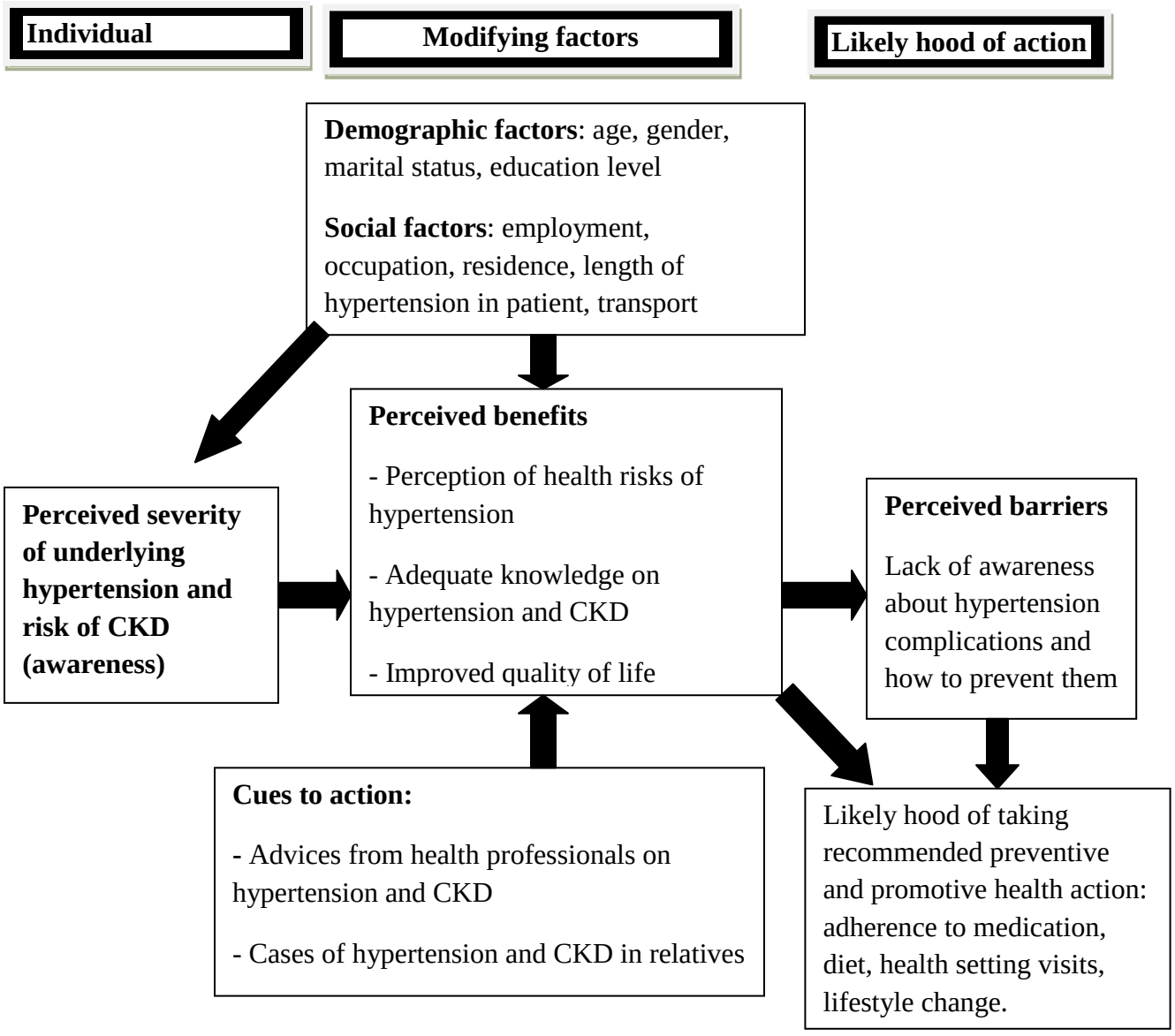
Reviewed literature shows that there are different studies that have been carried out to study the awareness and self-care practices among hypertensive patients, but most of them are separating those two variables though there is a critical connection existing between being aware of the risk, presence of disease, and resolutions taken by both patient and health professionals to alter the natural history of disease (Sherwood & McCullough, 2016).

This prevent from having a general picture about how awareness is associated with self-care to prevent CKD among hypertensive patients. The majority of reviewed studies have been conducted in America, Australia, European countries and in Asia. For Africa, only few data about the topics of awareness and self-care of hypertensive patients are found for Africa and don't permit to understand the real situation in this continent. In Rwanda, it's the same no studies conducted about awareness and self-care practices of hypertensive patients to prevent have been found. This lack of sufficient data about hypertension and CKD for the African has been cited as one of the obstacles that researchers have met while conducting their studies in Africa (Catena, Colussi, & Sechi, 2016).

Moreover, the majority of found studies have been conducted to understand the awareness of and self-care behaviors among patients already living with CKD and suffering from hypertension as a complication of CKD. This study is aiming hypertensive patients who are currently free from CKD, trying to appreciate their level of awareness regarding the prevention of CKD and precautions they undertake to prevent the occurring of CKD. There is a need for the African

continent and for our country Rwanda to have sufficient data about hypertension and CKD to permit to researchers, health professionals and other interested people to have a picture regarding hypertension and CKD association in this region, and then to know where efforts are needed to increase the awareness of hypertensive patients regarding its complications, and to make them able to take appropriate decision to maintain themselves healthy.

2.5 Conceptual framework



(A modified Health Belief Model adopted from Moore de Peralta, Holaday, & McDonell, 2015.)

To show how different variables of this study are interconnecting, the Health Belief Model has been used. The key constructs of this theory can be summarized under following 4 concepts called “perceptions” and the constructs of cues to action, motivating factors and self-efficacy. All those are used to give explanation on health behavior(Hayden, 2013).

Perceived seriousness: this construct is about how an individual recognizes the severity of a disease according to his/her beliefs. This perception can come from information provided by health professionals or from individual’s beliefs about the negative impacts that should occur following a disease. For this study, perceived seriousness can be related to the perception that CKD is a severe disease due to how it negatively interferes with all social and economic aspects human life.

Perceived susceptibility: when individuals consider that they are susceptible to get a serious disease, they try to do all possible things to avoid that it occurs. But when they think that there is low or no risk they engage themselves in unhealthy behaviors which expose them to the risk they were supposed to be preventing. For this study, when hypertensive patients are aware that hypertension can complicate in CKD, they engage in self-care practices to prevent the occurring of complications. But when they are not aware of that risk they continue to have harmful behavior like high salt intake, smoking, immoderate alcohol consumption, etc.

Perceived benefits: the construct is about the individual’s perception of usefulness of adopted behavior in minimizing the threat of developing a disease. When individuals believe that adopting new behaviors will prevent them from getting a disease, they easily adopt those healthier behaviors. In case of hypertension, people can stop smoking, reducing alcohol consumption, increasing physical activity when they think that this will prevent the progression of the disease to more serious complications.

Perceived barriers: this construct is about the individual’s perception of what obstacles that can prevent him/her to engaging in a new healthier behavior.

Modifying variables: those are personal characteristics like cultural environment, education level, age, personal experiences and motivation that influence the adoption or not of a new behavior.

Cues to action: experiences, persons, or things that can push an individual to change how they were behaving. For examples: death or hospitalization of a family member, information from social media, advice from health care professionals, etc.

Self-efficacy: if an individual perceives a behavior as useful but believes that he or she unable to adopt it, there is less chance that he/she will try it (Hayden, 2013).

Conclusion to chapter two

In this chapter, the part of theoretical literature was giving a general overview about hypertension: definition, causes, manifestations, management and showing how hypertension is relating with CKD. Then comes the part of empirical literature, where some studies which have been conducted on the topic of awareness and self-care practices regarding the prevention of CKD among hypertensive are presented and at the end some gaps found in the literature are presented.

CHAPTER III RESEARCH METHODOLOGY

3.1 Introduction

This third chapter provides an outline showing how this study has been conducted, the research design used to attain the objectives of the study and the why of that choice. It also describes the study setting, defines the study population, the method which has been used to get sample, the sample size, and what were the criteria for inclusion and exclusion for this study. Moreover, this chapter discusses and provides information about the tool which has been used to collect data; the procedure used to conduct this study, and discusses how data have been analyzed. Finally, it gives information about the data management and the measures undertaken to protect research participants.

3.2 Research approach

In this study, a quantitative approach has been used as the collected data were under numerical form. For this a quantitative approach was the most appropriate as it describes phenomena using numeral data (Polit & Beck, 2003).

3.3 Research design

For the purpose of this study, a descriptive cross-sectional design has been used. It was descriptive because a description of the level of awareness and self-care practice related to CKD prevention among of hypertensive patients has to be done, and it was a cross-sectional study because the data collection has been done at one point in time (Polit& Beck, 2003).

The basis of descriptive studies is the observation, description and documenting various aspects of phenomena in their naturally setting and situation, while a cross-sectional design is the most appropriate when a phenomenon or a relationship existing among phenomena is described at one point in time (Polit& Beck, 2003).

3.4 Research setting

Study setting is a place where the study will be conducted. The research question and the needed information to respond to it are both the key elements used to select the study setting (Polit& Beck, 2003).

This study has been conducted at the University Teaching Hospital of Butare which is located in Huye District of the Southern Province of Rwanda. UTHB is one of Rwanda national referral hospitals which and serves as catchment area for population from the Southern Province and a

part of the Western Province of the country. According to the data from the national census of 2012, the total population served by UTHB was estimated to be around 3,772,230. The principal activities conducted at UTHB are managerial and clinical activities, but its mission goes beyond and includes 6 missions which are: services to the Community, research, teaching, supervision of district hospitals, disease prevention and collaborating with national and international partners for the promotion of health care in Rwanda.

3.5 Study Population

In research, population is the aggregate of those filling a set of criteria interesting the researcher (Polit& Beck, 2003).The study population was made of 210 adult patients, calculated from the monthly average number of adult hypertensive patients attending the outpatient department (OPD) of Internal medicine department of UTHB. The accessible population was made of HTN patients who were available from 11 May 2019 to 30 May 2019, period of data collection.

3.5.1 Inclusion criteria

Inclusion criteria are conditions that identify the features of the population to be studied (Polit& Beck, 2003). For this study, all patients aged from 18 years and over, already known as hypertensive, attending the internal medicine OPD of UTHB and agreeing to join the study have been included.

3.5.2. Exclusion criteria

Exclusion criteria are features that exclude potential subjects to get involved in the study (Polit& Beck, 2003). For this study, all patients known as hypertensive but attending other departments of UTBH and those aged less than 18 years have been excluded from this study.

3.6 Sample and sampling procedures

3.6.1 Sample size

In research, a sample is a small group of subjects that are chosen from a large population to represent the whole population under study (Polit & Beck, 2003).

For this study, the sample was of 140 hypertensive patients, and this size has been calculated using the Slovin formula, where $n= N / (1+Ne^2)$, with a confidence interval of 95% and a margin of error equivalent to 0.05, the sample size = $210 / (1+210 \times 005^2) = 137.7 \approx 140$.

3.6.2 Sampling strategy

Sampling strategy is defined as the plan the researcher sets out to guarantee that the selected sample will be representative for the study population from which it has been drawn (Polit & Beck, 2003). Using purposive sampling technique, a sample has been selected from all patients fulfilling the requirements, available at the time of data collection period and accepting to be included in this research.

3.7 Data collection

3.7.1 Data collection instrument

The data collection instrument is the device that is used for data gathering (Polit & Beck, 2003). For this study, the tool used has been constructed and adapted with permission from a tool developed by following researchers: Amani Khalil and Maysoon Abdalrahim, for their study entitled "knowledge, attitudes and practices towards prevention and early detection of chronic kidney disease". The original version was in English but for the purpose of this study, it has been translated in Kinyarwanda by the researcher assisted by an academic Kinyarwanda expert. The tool was including3 categories of questions: the first category was related to socio-demographic data of participants; the second was about participants' awareness and the third was targeting to measure their level of self-care practices.

3.7.2 Data collection instrument validity

Validity is defined as the degree to which an instrument is measuring what it is aimed to measure (Polit & Beck, 2003).

3.7.2.1 Face validity: The weakest form of validity, it is a subjective evaluation of how the items of an instrument appear to be relevant to an individual taking the test (Taherdoost, 2018). For this tool, the researcher and an academician evaluated face validity through examining how its different components are constructed.

3.7.2.2 Content validity: is the extent to which a research tool has a suitable sample of items for the construct under study (Polit & Beck, 2003).

How the instrument has been developed: through a literature review, other studies that have examined similar variables have been identified. This helped to shape the study variables, and to provide the way on how they should be measured.

Content experts: the instrument has been submitted to academic and clinical experts for review

Calculation of Content Validity Ratio (CVR): basing on the feed-back from the review of research proposal by the study setting, CVR = (N_e - N/2)/ (N/2) = (4-5/2)/ (5/2) = 0.6

Content validity table

Objectives	**Components in conceptual framework**	**Components in the research instrument**
Level of awareness	Individual factors	Section II
Self-care practices	Like hood factors	Section III
Demographic	Individual, likely modifying factors	Section I,II,III
Relationship	Individual factors, self-care	Section II,III

3.7.3 Data collection instrument reliability

Reliability means the degree of consistency at what an instrument is measuring the characteristic it has been planned to measure (Polit & Beck, 2003).

For this study, to ensure the instrument reliability, following activities have been done:

Pre-testing the instrument: to reduce the errors with the tool, and to ensure the readability and understandability of its different components, a pilot study has been conducted on a small sample of 10 patients, and results showed that the questionnaire was readable and understandable, but some changes were needed to make more clear few items.

Translating and back-translation of the instrument: from English to Kinyarwanda and from Kinyarwanda to English to check if there are no meaning changes.

Measurement of the instrument internal consistency: the Cronbach's α test has been used to measure the internal consistency of this instrument. The obtained calculated α was 0.684≈ 0.7, meaning that there is a good association between different items of the tool.

3.7.4 Data collection procedure

After receiving ethical approval from IRB and a go ahead from Butare University Teaching Hospital, the researcher has met the management of the Internal medicine out-patient department for presentation and giving an overview about the study. Then, to collect data, researcher and trained research assistants got in touch with the participants to provide them all required information about the study, including those regarding their rights. Thereafter, the instrument has been distributed to participants to complete it. Those requiring assistance were helped to

complete their questionnaires, especially those who were illiterate. Every respondent was given enough time to respond to the questionnaire without being disturbed by external influence, and all answered questionnaires were collected as soon as possible.

3.8 Data analysis

Polit & Beck (2003) define data analysis as methodically organizing and synthesizing collected data in purpose to use them for research hypotheses testing. The collected data have been analyzed using SPSS software throughout following data analysis types:

Descriptive statistics: which have been used to describe the key features of the data under analysis, and those were like gender, age, educational level, socio-economic status, etc. This has been achieved through the calculation of frequencies, percentage, mean, median, mode, standard deviation, and by creating various tables highlighting the most significant findings. Also, descriptive statistics have been used to describe the level of awareness and self-care practices among hypertensive patients regarding the prevention of CKD.

Inferential statistics: chi squared has been used to establish an association between demographic characteristics, awareness and self-care practices of hypertensive patients regarding the prevention of CKD. Multiple regression analysis has been used to verify the existence of relationship between demographics, awareness and self-care practices of participants and the degree of strength of that relationship.

3.9 Ethical considerations

To ensure ethical considerations related to research involving human beings, previous to conducting the study a research proposal has been submitted to the IRB of the College of medicine and health sciences (CMHS) of the University of Rwanda (UR) to get an approval. After receiving the approval Ref: CMHS IRB 076/2019, a request has been addressed to the administration of the UTHB to acquire authorization to collect data which has been received Ref: CHUB/DG/SA050777/2019. During data collection all participants were informed that participating in the study was voluntary with the possibility to withdraw from it any time they wish. After being informed about all implications of being included in the study, a consent form was signed by each participant stating that he/she was freely taking decision to participate without any kind of pressure. To protect respondents' identities, all information such names

which can help to identify participants were not collected, and all gathered data are safely stored in protected cupboard and security codes are used to protect those stored on researcher's computer.

3.10 Data management

The management of data has been ensured through the collection of all distributed questionnaires, keeping them in a safe place and protecting all data in researcher's computer by a strong password.

3.11 Data dissemination

The findings will be released through a feedback to the study setting, and to other end users through submitting a final copy to the library of the UR/CMHS, public presentation, journal articles, scientific conferences and meetings.

3.12 Limitations and challenges

Though all possible has been done to reach the aims of this study, there were some potential limitations and challenges that should impact the interpretation of the obtained results:

Sample size: this research has been carried out in only one hospital, and then the sample size should not be larger enough to generalize findings to other settings.

Selection bias: due to short the time of data collection, purposive sampling technique has been used and this can impact on the generalizability of the findings due to no randomization.

Information bias: some participants should have been tempted to provide wrong information, due to the presence of the data collector or to hide the truth about some sensitive information like the adherence to medication.

Conclusion

The present study has been was conducted at the UTHB, in the OPD of internal medicine, and this has been done after getting approval from both the IRB of UR/CMHS and the study setting Ethics committee. The sample of 140 participants has been chosen using purposive sampling technique, and after explaining to participants their full rights, the data have been collected using a questionnaire which was pre-checked for validity and reliability. The data have been analyzed using SPSS software.

CHAPTER IV RESULTS

4.1 Introduction

In this chapter, the findings of the study are reported and this is achieved by referring to the aim of the study, which was to assess the awareness and self-care practice regarding the prevention of CKD among patients living with HTN high blood pressure at the UTHB.

4.2 Summary

In this study, the objective was to assess the awareness and self-care practice regarding the prevention of chronic kidney disease among patients living with HTN at the UTHB, and following were the research questions:

- What is the level of awareness of hypertensive patients regarding CKD prevention?
- What is the level of self-care practices among hypertensive patients regarding the prevention of CKD?
- What are different demographic factors associated with awareness and self-care practices regarding prevention of CKD among hypertensive patients?
- How is awareness being related to self-care practices regarding prevention of CKD among hypertensive patients?

The sample of 140 participants has been chosen by means of purposive sampling and the data were gathered using a questionnaire. To analyze data, SPSS software version 23 has been used through the descriptive statistics to analyze the demographic data of the sample and to calculated levels of awareness and self-care practices regarding the prevention of CKD among the sample, and through inferential statistics of chi square to establish an association between demographic characteristics, awareness and self-care practices of hypertensive patients regarding the prevention of CKD, and multiple regression analysis to verify the existence of relationship between demographics, awareness and self-care practices of participants and the degree of strength of that relationship.

4.3 Results presentation

Table 4.1 presents the socio-demographics characteristics of the participants in terms of frequencies and percentages and their total number was 140. Regarding their age, 9 (6.4%) are between 18-30 years, 26 (18.6%) are between 31-40 years, 28 (20%) are between 41-50 years, and the highest frequency was found among those aged between 51-60 years with 36 (29.3%) participants. Basing on the gender, the highest number of participants was found among females with 93 (66.4%) participants while males were 47 (33.6%). Regarding the marital status, the half of participants is married 70 (50%); singles are 16 (11.4%) while the remaining percentage is shared between widowers and divorced. Regarding the education level, 53 (37.9) are with primary education, 36 (25.7) with secondary education while 28 (20%) have attended a college or a university. Regarding the employment among participants, near a half 71 (50.7%) is self-employed; the employed are 21 (15%) the unemployed are 48 (34.3%). The majority of participants are living in urban area 72 (51.4%) while the remaining live in rural area. For 91 (65%) participants, the nearest health facility with is found between 0-2 km while only 1 (0.7%) covers a distance more than 5 km to get to the nearest health facility. For the majority 136 (97.1%), the mode of transport is public, only 4 (2.9%) have their own mode of transport. Regarding the family history of hypertension, 50 (35.7%) participants have antecedents of hypertension in their families, and in terms of duration of hypertension diagnosis, 37 (26.4%) have been diagnosed with hypertension there 0-2 years, for 41 (29.3%) there are 2-5 years, for 33 (23.6%) there 5-10 years, and 29 (20.7%) there are more than 10 years.

Table 4.1: Socio-demographic characteristics of the participants (n=140)

Variable	Frequency	Percentage (%)
Age (in years)		
18-30	9	6.4
31-40	26	18.6
41-50	28	20
51-60	36	25.7
Above 60	41	29.3
Gender		
Male	47	33.6
Female	93	66.4
Marital status		

Single	16	11.4
Married	70	50
Divorced	15	10.7
Widowed	39	27.9
Educational level		
None	23	16.4
Primary	53	37.9
Secondary	36	25.7
College/university	28	20
Employment		
Employed	21	15
Self-employed	71	50.7
Unemployed	48	34.3
Occupation		
Manual labor	47	33.6
Student	3	2.1
Clerical	13	9.3
Professional	11	7.1
Tradesperson	19	13.6
None	48	34.3
Residence		
Rural area	68	48.6
Urban area	72	51.4
Distance from the nearest health facility (in Km)		
0-2 km	91	65
2-5 km	48	34.3
Above 5 km	1	0.7
Mode of transport		
Public	136	97.1
Private	4	2.9
History of hypertension in the participant's family		
Yes	50	35.7
No	90	64.3
Duration of hypertension diagnosis (in years)		
0-2 years	37	26.4
2-5 years	41	29.3
5-10 years	33	23.6
More than 10 years	29	20.7

In table 4.2, the statistics about the awareness of hypertensive patients regarding the prevention of CKD demonstrate that 116 (82.9%) of participants recognize hypertension as a serious threat to their life, but among them, only 59 (42.1%) are aware that hypertension can complicate into CKD. 104 (74.3%) are aware that CKD is an irreversible disease, 59 (42.1%) responded that they are aware that hypertension can silently lead to CKD, and that CKD can be a complication of an untreated or uncontrolled hypertension. 62 (44.3%) recognized that obesity is a risk factor for CKD among patients living with hypertension while 59 (42.1%) are aware that elevated blood lipids and not having a regular physical activity increase the risk of getting CKD for hypertensive patients. 77 (55%), 79 (56.4%) and 75 (53.6%) are respectively aware that smoking, high intake of alcohol, and high intake of salt can lead them to having CKD. 109 (77.9%) responded they are aware that drinking at least 2 liters of water every day can help them to protect their kidneys. Around a half 71 (50.7) recognize that regular checkup of BP can help to prevent CKD and a big proportion of participants 120 (85.7%) are aware that the prevention of high blood pressure complications is their primary role, 82 (58.6%) are aware that other members of their family can help them to prevent the complications of high blood pressure like CKD. The majority 122 (87.1%) responded that preventing CKD through respecting medical advices and regimens is less expensive that trying to treat an already acquired CKD.

Table 4.2 Awareness of hypertensive patients regarding the prevention of CKD (n=140)

Variables	Correct answer (Yes)		Wrong answer (No)	
	Freq	%	Freq	%
1. Hypertension is a serious disease and a threat to my life	116	82.9	24	17.1
2. Chronic kidney is a serious complication of hypertension	59	42.1	81	57.9
3. Kidney disease is a serious and irreversible disease	104	74.3	36	25.7
4. Hypertension can silently (without symptoms) lead me to having kidney disease	59	42.1	81	57.9
5. Having uncontrolled high blood pressure make me more likely to get kidney disease	59	42.1	81	57.9
6. Having untreated hypertension will increase my chances of getting kidney disease.	59	42.1	81	57.9

7. Obesity increases risk of getting kidney disease for hypertensive patients	62	44.3	78	55.7
8. Having elevated lipid in my blood will increase my risk of getting kidney disease	59	42.1	81	57.9
9. Not having a regular physical activity increases my risk of getting kidney disease	59	42.1	81	57.9
10. Smoking increases the risk of getting kidney disease	77	55	63	45
11. High intake of alcohol increases the risk of getting chronic kidney disease	79	56.4	61	43.6
12. High intake of salt increases risk of getting chronic kidney disease	75	53.6	65	46.4
13. Regular checkup of blood pressure isneeded to prevent chronic kidney disease	71	50.7	69	49.3
14. Prevention of high blood pressure complications is also patient's responsibility	120	85.7	20	14.3
15. Family can assist me in the prevention of chronic kidney disease	82	58.6	58	41.4
16. Prevention of chronic kidney disease through respecting medical regimens and advices is less expensive than treating chronic kidney disease	122	87.1	18	12.9
17. Drinking at least 2 liters of water helps in prevention of chronic kidney disease	109	77.9	31	22.1

Table 4.3 is about self-cares practices among hypertensive patients regarding the prevention of CKD. The displayed results show that regarding the dietary measures, 129 (92.1%) participants respect the low salt prescribed regimen, 111 (79.3%) eat regularly a healthy diet including fruits, vegetables, proteins, low-fat foods and carbohydrates. While 109 (77.9%) said that they are aware that taking at least 2 liters of water per day can help to protect kidneys, only 80 (57.1%) recognized to do it in daily practice. Regarding lifestyle changes, 71 (50.7%) participants responded that they are doing regular physical activity, as physical activity, 119 (85%) answered they walk, 78 (55.7%) are doing jogging while only 35 (25%) run. About weight reduction, 85 (60.7%) try to reduce their weight when it's getting over or when they are obese. 114 (81.4) participants don't smoke or have stopped to it, 118 (84.3%) and are not drinking alcohol or have adhered to the recommended daily intake.

Regarding the adherence to medication, 63 (45%) participants recognize that they forget sometimes to take their antihypertensive medication, 36 (25.7%) answered that they have failed to take hypertensive drugs in over the last two weeks, 113 (80.7%) responded that they took BP medication the day before they meet the researcher and his assistants. 40 (28.6%) participants recognize that they sometimes forget to bring BP drugs when travelling or when they leave home, 134 (95.7%) of participants recognize that they have at least one time cut or stopped BP drugs without medical advice because they were feeling worse while taking them. 16 (11.4%) participants answered that they sometimes stop BP drugs when they feel BP is under control, 31 (22.1%) recognize that they are annoyed to take BP drugs every day and that they have difficult to stick to treatment plan. Regarding how frequently they forget to take their BP drugs, only 66 (47.1%) answered they have never forgotten to take them, 44 (31.5%) of participants forget it once in a while, 17 (12.1%) sometimes, 6 (4.3%) responded usually and 7 (5%) answered all the time. Regarding health seeking behavior, among all the participants, 126 (90%) answered that they have regular medical visits even when they are not sick, 131 (93.6%) are regularly checking their blood pressure, 128 (91.4%) try to get medical checkup and advices when they observe abnormal signs like urine, ankle swelling, reduced urine, etc. 134 (95.7 %) answered that they are doing all laboratory exams that are proposed to them and don't consult traditional healers before going to modern healthcare facilities.

Table 4.3 Self-care practices of hypertensive patients regarding the prevention of CKD (n=140)

Variables	Yes		No	
	Freq	%	Freq	%
Dietary self-care practices				
1. Respect food restrictions like low salt diet	129	92.1	11	7.9
2. Limiting daily sodium intake to no more than 1500 mgs	129	92.1	11	7.9
3. Eating a healthy diet, including fruits, vegetables, proteins, carbohydrate, low-fat food	111	79.3	29	20.7
4. Drink at least 2 liters of water per day	80	57.1	60	42.9
Lifestyle changes				
1. Regular physical activities	71	50.7	69	49.3
2. Walking	119	85	21	15
3. Jogging	78	55.7	62	44.3

4. Running	35	25	105	75
5. Reduce weight if I am overweight or obese	85	60.7	55	39.3
6. Not smoke or have stopped to do it	114	81.4	26	18.6
7. Not drinking alcohol or limiting alcohol to two drinks a day for men, one drink a day for women	118	84.3	22	15.7
8. Not using herbal medicines	104	74.3	36	25.7
Adherence to medication				
1. Do you sometimes forget to take your antihypertensive drugs?	63	45	77	55
2. Did you not take your BP medication over the last two weeks?	36	25.7	104	74.3
3. Did you take your BP medication yesterday?	113	80.7	27	19.3
4. When you travel or leave home, do you sometimes forget to bring along your BP drugs?	40	28.6	100	71.4
5. Have you ever cut back or stopped taking your BP drugs without telling your doctor, because you felt worse when you took it?	134	95.7	6	4.3
6. When you feel like your BP is under control, do you sometimes stop taking your BP medication?	16	11.4	124	88.6
7. Taking BP drugs every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	31	22.1	109	77.9

		Freq	**%**
8. How often do you have difficulty remembering to take all your BP drugs?	Never	66	47.1
	Once in a while	44	31.5
	Sometimes	17	12.1
	Usually	6	4.3
	All the times	7	5

Healthcare seeking				
1. Have regular medical visits even when I'm not sick	126	90	14	10
2. Regular check my blood pressure	131	93.6	9	6.4
3. Get medical checkup and advices when abnormal signs like nausea, vomiting, reduced urine, feet and ankle swelling, … are noticed	128	91.4	12	8.6
4. Do the laboratory exams proposed to me	134	95.7	6	4.3
5. Not consulting traditional healers before going to modern healthcare settings	134	95.7	6	4.3

The table 4.4 displays the results about the level of awareness of hypertensive regarding the prevention of CKD. The scores obtained by participants are calculated out of 17, and are classified into 3 categories which are low level (0-8 points) equivalent to 0-49%, moderate level (9-11 points) equivalent to 50-69%, and high level (12-17) equivalent to 70-100%. The lowest observed score is 0 out of 17, and the highest is 17 out of 17. The measures of dispersion are as following: mean =9.8, median =9, mode =17, standard deviation =5.6, variance =31.8, range =0. Among participants, 68 (48.6%) are in low level category, 14 (10%) are in the moderate level category, and 58 (41.4%) are in the high-level category.

Table 4.4 Level of awareness of hypertensive patients regarding the prevention of CKD (n=140)

Perceived awareness scores out of 17	Awareness score in percentage (%)	Freq.	Percent	Level of awareness/Frequency	Measures of dispersion
0	0	5	3.6	Low: 68 (48.6%)	Mean: 9.8 Median: 9 Mode:17 St. Deviation: 5.6 Variance: 31.8 Range:17 Minimum: 0 Maximum: 17
1	5.8	2	1.4		
2	11.7	6	4.3		
3	17.6	4	2.9		
4	23.5	13	9.3		
5	29.4	9	6.4		
6	35.2	18	12.9		
7	41.1	4	2.9		
8	47	7	5		
9	52.9	5	3.6	Moderate: 14 (10%)	
10	58.8	5	3.6		
11	64.7	4	2.9		
12	70.5	5	3.6		
13	76.4	3	2.1		
14	82.3	4	2.9		
15	88.2	6	4.3	High: 58 (41.4)	
16	94.1	7	5		
17	100	33	23.6		

Table 4.5 shows the results about the level of self-care practices. As it is displayed in the table, the score has been calculated out of 28, and the scores are classified into 3 categories according to the obtained score: low level category (0--13) equivalent to 0-49%, moderate level category

(14-19) equivalent to 50-69%, and high level category (20-28) equivalent to 70-100%. The minimum score observed is 8 (28.6%) while the maximum is 26 (92.8%), 9 (6.4%) participants are in low level category, 79 (56.5%) are in moderate level category, and 52 (37.1%) are in high level category. The calculated dispersion measures show that the mean=18.4, median=19, mode =19, standard deviation=3.02, variance =9.1, and range =18.

Table 4.5 Level of self-care practices of hypertensive patients regarding the prevention of CKD (n=140)

Perceived self-care practices scores out of 28	Self-care practices score in percentage (%)	Freq	Percent	Level of self-care practices/Frequency	Measures of dispersion
8	28.6	1	7	Low: 9 (6.4%)	Mean: 18.4 Median: 19 Mode: 19 St. Deviation: 3.02 Variance: 9.1 Range: 18 Minimum: 8 Maximum: 26
9	32.1	1	7		
11	39.3	2	1.4		
13	46.2	5	3.6		
14	50	7	4.3	Moderate: 79 (56.5%)	
15	53.6	6	7.9		
16	57.1	11	7.9		
17	60.7	11	13.6		
18	64.2	19	17.9		
19	67.8	25	14.3		
20	71.4	20	10		
21	75	14	7.9	High: 52 (37.1%)	
22	78.6	11	2.1		
23	82.1	3	1.4		
24	85.7	2	1.4		
25	89.2	1	7		
26	92.8	1	7		

The table 4.6 shows the results about the factors associated with awareness and self-care practices of hypertensive patients regarding the prevention of hypertension. Regarding the awareness, the only associated factor is the educational level (mean = 9.9; 95% CI (7.9–11.9); p=.026), p value is below .05. About the self-care practices, the associated factors are age (mean = 18.6; 95% CI (17.1-20.1); p=.000); marital status (mean = 18.4; 95% CI (17.1–19.7); p=.003); educational level (mean = 18.3; 95% CI (17.4–19.3); p=.020), occupation (mean = 18.2; 95% CI (15.4–20.8); p=.021); residence (mean = 18.3; 95% CI (17.6–19); p=.026), p values are below .05.

Table 4.6Factors associated with awareness and self-care practices of hypertensive patients regarding the prevention of CKD (n=140)

	Factors associated with awareness		**Factors associated with self-care practices**	
Variables	Mean (95% CI)	p value	Mean (95% CI)	p value
	Age (in years)			
18-30	12.4 (7-17)	.569	19.1 (15.2-23)	.000
31-40	12.6 (10.3-15)		20.1 (19.3-21)	
41-50	8.2 (6.1-10.2)		19.3 (18.5-20.1)	
51-60	9.3 (7.7-11)		17.2 (16-18.4)	
Above 60	8.8 (7.1-10.5)		17.4 (16.7-18.1)	
	Gender			
Male	10.9 (9.2-12.6)	.457	19.5 (18.7-20.3)	.069
Female	9.2 (8-10.3)		17.8 (17.2-18.4)	
	Marital status			
Single	12 (8.5-15.4)	.611	19.1 (16.9-21.4)	.003
Married	10.2 (8.8-11.5)		18.9 (18.1-19.6)	
Divorced	10.2 (7.2-13.2)		19 (17.4-20.5)	
Widowed	8 (6.3-9.6)		16.9 (16.2-17.6)	
	Education			
None	7.9 (5.3-10.5)	.026	16.7 (15.9-17.6)	.020
Primary	8.3 (7-9.6)		17.7 (16.9-18.5)	
Secondary	10.7 (8.9-12.4)		19 (18-20)	
University/College	12.8 (10.3-15.2)		20 (18.8-21.3)	
	Employment			

Employed	11.6 (9-14.2)	.926	19.4 (17.8-20.9)	.120
Self-employed	9.5 (8.2 -10.8)		18.7 (18.1-19.4)	
Unemployed	9.2 (7.5-10.9)		17.3 (16.4-18.2)	
	Occupation			
Manual labor	8.6 (7-10.2)	.690	18.5 (17.7-19.4)	.021
Student	11.6 (-2-25.3)		15 (5-24)	
Clerical	12.3 (8.6-16.1)		20.6 (19.6-21.5)	
Professional	10.1 (5.8-14.3)		18.6 (15.5-21.6)	
Tradesperson	11.4 (9.1-13.7)		19.4 (18.4-20.3)	
None	9.3 (7.6-11)		17.3 (16.4-18.3)	
	Residence			
Rural area	8.6 (7.4-9.9)	.119	17.8 (17-18.5)	.026
Urban area	10.8 (9.4-12.2)		18.9 (18.3-19.6)	
	Distance from the nearest health facility			
0-2 km	10.7 (9.5-11.9)	.597	18.3 (17.6-19)	.786
2-5 km	8.1 (6.6-9.5)		18.5 (17.7-19.3)	
Above 5 km	-		-	
	Mode of transport			
Public	9.7 (8.8-10.7)	.620	18.3 (17.8-18.8)	.873
Private	10.7 (-2.1-23)		20 (17.7-22.2)	
	Family history of hypertension			
Yes	9.5 (7.9-11.1)	.517	18.1 (17.3-18.8)	.478
No	9.9 (8.7-11.1)		18.5 (17.9-19.2)	
	Duration of hypertension (in years)			
0-2	8.8 (6.9-10.7)	.363	18.7 (17.4-19.9)	.383
2-5	9.5 (7.6-11.3)		18.7 (17.7-19.7)	
5-10	10.9 (8.9-12.8)		17.7 (16.8-18.6)	
More than 10	10.1 (8.1-12.1)		18.2 (17.3-19)	

Table 4.7 To examine if awareness and self-care practices of participants should significantly predict the obtained scores, a multiple regression analysis is carried out. The results show that there is a moderate positive relationship (r 0.452, $p < 0.05$) relationship between covariates and the level of awareness of hypertensive patients regarding the prevention of CKD, and they are contributing to .024 (24%) of the variance. A positive moderate relationship ($r = 0.435$, $p < 0.05$)

can also be observed between the covariates and the level of self-care practices of hypertensive patients regarding the prevention of CKD, and they contribution is equivalent to 19% of variance.

To understand whether the level of self-care practices of hypertensive patients regarding the prevention of CKD can be predicted based on the level of their awareness, simple linear regression analysis has been performed, and results show that the simple correlation ($r = 0.254$, $p < 0.05$) meaning that there is a low degree of correlation between the two variables. The total variation in the level of self-care practices can be explained by the level of awareness at 6.4% which is small. Overall, an increase in awareness doesn't correlate with increases in self-care practices.

Table 4.7 Multiple regression analysis for demographic variables, awareness and self-care practices of hypertensive patients (n= 140)

Multiple regression analysis for factors associated with awareness of hypertensive patients				
R=.452	R square =.204	Sig. F change=.001	P value for the correlation = .05	
Variables	**Coefficient(B)**	**95%CI(B)**	**Standard error**	**Significance level**
Age	-.162	-1.3-.990	.582	.782
Gender	.370	-1.631-2.552	1.103	.738
Marital status	-.439	- .789-.752	.602	.467
Education	1.789	.350- 3.227	.722	.015
Employment	-.058	-2.172-2.057	1.069	.957
Occupation	.077	-.523-.676	.303	.801
Residence	.847	-1.250-2.944	1.060	.425
Distance from the nearest health facility	-2.202	-4.083- -.322	.950	.022
Mode of transport	-3.018	-8.664-2.628	2.853	.292

Family history of hypertension	-.659	-2.689-1.380	1.031	.524
Duration of hypertension Diagnosis	1.330	.393-2.266	.473	.006
Multiple regression analysis for factors associated with self-care practices of hypertensive patients				
R=.435	R^2 =.190	Sig. F change=.003	P value for the correlation = .05	
Variables	**Coefficient(B)**	**95%CI(B)**	**Standard error**	**Significance level**
Age	-.354	-.977-.269	.315	.263
Gender	-.611	-1.791-.569	.596	.308
Marital status	-.084	-.729-.560	.326	.796
Education	.580	-.198-1.358	.393	.143
Employment	.103	-1.041-1.247	.587	.859
Occupation	-.176	-.501-.148	.164	.284
Residence	.753	-.381-1.887	.573	.191
Distance from the nearest health facility	.524	-.493-1.541	.514	.310
Mode of transport	.787	-2.267-3.841	1.543	.611
Family history of hypertension	.258	-.845-1.361	.557	.644
Duration of hypertension diagnosis	.171	-.336-.678	.256	.506
Simple linear regression analysis for awareness and self-care practice of hypertensive patients				
R=.254	R^2=.064	Sig. F change=.002	P value for the correlation = .05	
Variable	**Coefficient(B)**	**95%CI(B)**	**Standard error**	**Significance level**
Awareness of hypertensive patients	.136	.049-.223	.044	.002

CHAPTER V: DISCUSSION

5.1 Introduction

In this chapter is discussed, interpreted and described the implication of the major findings of this study. The target of the study was to get an insight about the awareness and self-care practices of people living with HTN regarding the prevention of CKD, and the discussion is done here by comparing and contrasting the findings to what is already known about the research problem under study.

5.2 Demographic characteristics

For this study, a sample of 140 hypertensive patients has been chosen to study their levels of awareness and self-care practices regarding the prevention of CKD. Findings about the demographic data support those found in a study conducted by Khalil & Abdalrahim (2014) where the sample was of 740 participants. Regarding the demographic data, the females were 64%, the married participants were 82%, and the age was ranging from 18-90 years with a mean of 54.6 ± 12.5 years. Data about education and employment respectively revealed that 53% were with less than high school education and 59.5% of participants were unemployed. Those results are almost similar to those found in a cross sectional study by Sa'adeh et al. (2018), where in a sample of 120 participants, the mean age was 59.14 ± 10.4 years, females were 65%. Similarities can also be found with a study conducted in Zambia in 2018 about a sample of 90 participants; 78.8% were females, the age was ranging from 36-83 years, 51.1% have only attended the primary education level, 61.1% were married, 77.8% were unemployed (Ikasaya, Mwanakasale and Kabelenga, 2018).

Regarding the residence, the findings from this study have similarities with those from same study by Sa'adeh et Al (2018) where most of participants (80.5%) were coming from urban area; and regarding the duration of hypertension diagnosis, in this study, 44.3% reported that they were hypertensive since more than 5 years. Similar results can be found in Ikasaya et al (2018), where 54.4% of participants were living with hypertension for a period above 5 years and in a study conducted in Egypt in 2015 where 73.4% recognized to be hypertensive since more than five years (Neminqani, El-shereef and Thubiany, 2015).

5.3 Level of awareness of hypertensive patients regarding the prevention of CKD

In this study, findings about the level of awareness of hypertensive patients regarding the prevention of CKD show that among 140 participants, 48.6% had low level, 10% moderate level,

while 41.4% had high level, meaning that more than a half (51.4%) had an acceptable level of awareness. The low level of awareness equivalent to 48.6% observed in this study, can be related to the one found in a study conducted in Sri Lanka in 2017, where findings revealed that 40.3% of 303 patients with HTN were not aware of their condition (Pirasath, Kumanan and Guruparan, 2017).

In the current study, 82.9% of participants were aware that hypertension is a threat to their life and same results can be found in Bakhsh et Al (2017), where findings revealed that more than a half of participants were aware about the harmfulness of high blood pressure. Among the participants of this study, 57.9% were unaware about the causality relationship existing between hypertension and CKD; those results can be compared to those from Pirasath, Kumanan and Guruparan (2017), where more than a half (51.8%) was unaware that hypertension can harm some organs, and only 23.7% were aware that kidneys are among those organs. Those results are a bit different with those from a study conducted in Saudi Arabia where among 211 hypertensive patients, the level of awareness was 70.3% regarding the complications of hypertension, while the overall level of awareness was 72.6% (Bakhsh *et al.*, 2017).

5.4 Level of self-care practices of hypertensive patients regarding the prevention of CKD

In this study, findings about the level of self-care practices of hypertensive patients regarding the prevention of CKD show that among 140 participants, 6.4% had low level of self-care, 56.5% had moderate level, and 37.1% had high level. Those scores can be compared with those found in one study conducted in Zambia, where the level of practice among hypertensive patients was average for 70% and good at 30% of participants (Ikasaya, Mwanakasale and Kabelenga, 2018). Those findings can also be supported by those from Khalil and Abdalrahim (2014), where the calculated mean score about the level of practice was 31 ± 5.1, and similar results can be observed in a study conducted in Ethiopia by Ademe et al. (2019), where the mean score of self-care practice of hypertensive patients was 37 ± 8.2.

Dietary prescription: in this study 92.1% responded that they were adhering to low salt diet, 79.3% to a healthy diet and 57.1% were drinking at least 2 liters of water per day. These results can be contrasted with those from Khalil and Abdalrahim (2014) where only 29.6% of respondents were always respecting low salt regimen, 60% were following it sometimes or most of the times and 10.4% were not at all complying with salt restrictions, and those having always a balanced meal were 18.6% and it was unbalanced for 6.4% of respondents. The poor adherence

to salt restrictions can also be observed in Ikasaya et al. (2018), where only 37.8% of participants were moderating salt intake.

Lifestyle changes, in this study, more than a half (50.7%) recognized to have regular physical activity, 81.4% had stopped or were not smoking, 84.3% were not drinking or had reduced the alcohol intake to the daily recommendations, and 74.3% were not using herbal medicines. Similar observations can be found in Khalil and Abdalrahim (2014), where those having daily physical exercise were 18.6% and 16.2% for sometimes, 79.7% were not smoking and 93.4% were not drinking alcohol; and in Ikasaya et al. (2018), where 44.4% of respondents recognized never performing physical exercises, 76.7% were not consuming alcohol and 91.1% were not smoking.

Regarding the adherence to BP medication, 45% of participants recognized to forget sometimes taking their BP drugs, 25.7% had not taken BP drugs for the last two weeks, 28.6% recognized to forget BP drugs when travelling and 11.4% sometimes stopped taking BP drugs because they were feeling well. Those moderate findings about respect of BP medication regimen can be supported by those from Khalil and Abdalrahim (2014), where among participants, only 62.7% were always taking BP drugs, 2.3% were not following their medication regimen, and the remaining 35% were taking drugs on a routine varying between sometimes and most of the times. The poor adherence to BP drugs is also found in Pirasath et Al. (2017), where 99% of respondents were aware of the importance of BP drugs, but in practice 84.5% recognized to have poor adherence to medication, and the reason was forgetting to take drugs (23.1%) and interrupting the daily routine of BP drugs taking (17.5%).

Health seeking: regarding the health seeking, the majority (90%) of respondents in this study answered they had regular medical visits even when no sick, 93.6% were having a regular BP checking at least one time a month, 91.4% were trying to get medical advices or checks up when they observed abnormal symptoms and signs related to CKD, 95.7% were doing all prescribed lab exams, and 95.7% were not consulting traditional healers before coming to seek care in modern healthcare settings. The findings from this study are different with those from Khalil and Abdalrahim (2014), where among 20.3% of respondents who observed abnormal changes associated with CKD, only 55% sought medical advice. Same difference can be observed in a study by Neminqani et al. (2015), where the mean score for checking BP or seeking medical advice in case of abnormalities was 2.59 ± 0.77 out of 4.

5.5 Factors associated with awareness and self-care practices of hypertensive patients regarding the prevention of CKD

From the results of this study, the only factor associated with the awareness of hypertensive patients regarding the prevention of CKD was the educational level (mean = 9.9; 95% CI (7.9–11.9); p=.026). These results are supported by the findings from Mouhtadi *et al.*(2018), where low education was found to be associated with low hypertension awareness (p-value = 0.05). But in other studies like the one from Abu-Saad *et al.*, (2014), the researchers didn't find a correlation between being illiterate and low level of awareness about HTN (p-value = 0.201), the associated factors were age (p-value = 0.01), occupation (p-value=0.45) and being overweight (p-value .001). In Liew *et al.*, (2019), the association between educational level and hypertension awareness was also found but only for primary education (p-value = 0.03) and secondary education (p-value = 0.01), but for tertiary education there was no association (p-value = 0.362). For them the other associated factors were age (p-value = 0.01), gender (p-value = 0.007), and monthly income (p-value = 0.03).

In this study, the factors found to be associated with self-care practices of hypertensive patients regarding the prevention of CKD were age (mean = 18.6; 95% CI (17.1-20.1); p=.000); marital status (mean = 18.4; 95% CI (17.1–19.7); p=.003); educational level (mean = 18.3; 95% CI (17.4–19.3); p=.020), occupation (mean = 18.2; 95% CI (15.4–20.8); p=.021); and residence (mean = 18.3; 95% CI (17.6–19); p=.026). those findings are partially supported by those from Sa'adeh *et al.*(2018), where high education level was found to be significantly associated (*p*-values< 0.01) with good practice to prevent CKD among patients with hypertension, but other factors like marital status were not associated (p-values<0.138). They are also partially supported by Sadeq and Lafta (2017) in their study where education was found to be associated with the practice of hypertensive patients (p-values<0.01), but in other studies it has not been possible to find a significant association between education and practice of hypertensive patients (Sadeq and Lafta, 2017). Findings from Neminqani et al.(2015) also support the results of this study, as they found an association between educational level and self-care practice, participants with university education were having high level of self-management practice (2.55±0.43) compared to respondents without education (2.09± 0.5). In their study, age was also associated, for young people the mean score was (2.60± 0.37) compared to (2.10± 0.58) for elderly. They didn't find a significant association between residence and self-care practice level, as respondents living in urban areas were getting insignificantly higher score compared to those living in rural areas.

Regarding the marital status, Ademe, Aga and Gela (2019), found a significant relationship between being divorced and having good self-care compared to single people (p-value < 0.01).

5.6 Relationship between awareness and self-care practices of hypertensive patients regarding the prevention of CKD

The findings of this study revealed that there was low degree of correlation between the level of awareness of hypertensive patients and their level of self-care regarding the prevention of CKD, (r =0.254). Findings from Bakhsh *et al.*(2017), disagree with the findings of this study and demonstrated that there was a significant relationship between awareness about hypertension and the practice level of patients (P < 0.05).The majority of studies reviewed for the purpose of this study were not mentioning the degree of relationship between awareness and self-care practices, this limits further discussion about the subject.

CHAPTER VI: CONCLUSIONS AND RECOMMENDATIONS

6.1. Introduction

This final chapter is summing up the aim, methodology, findings of this study, the study limitations, conclusions and recommendations drawn based on the study findings.

6.2. Conclusions

The aim of this study was to assess the level of awareness and self-care practices of hypertensive patients regarding the prevention of CKD. To achieve this, a descriptive cross sectional study has been conducted at the University Teaching Hospital of Butare, in the outpatient department of internal medicine. Through purposive sampling technique, a sample of 140 subjects has been used for the purpose of this study. According to the study results, there were various gaps observed in the awareness and self-care practices of hypertensive patients regarding the prevention of CKD; a lot of participants were not aware about hypertension and were ignoring that it can silently cause CKD, an irreversible complication. Some participants were still lacking information about how kidneys can benefit from the control of hypertension, the importance of weight control, physical activity and low salt regimen. Regarding self-care practice, a big number of participants revealed that they were forgetting to take BP drugs or sometimes cut them off without any medical advice. Some of them didn't reduce their salt intake, other were not having regular physical activity or drinking enough water, or having other behaviors which can be harmful to the kidneys. Among participants, 58.6% demonstrated low to moderate level of awareness, and 62.9% a low to moderate level of self-care practices. Therefore, there is a need to increase the awareness of our communities regarding hypertension and its long-term complications like CKD, such agenda can help to improve the self-care practice of hypertensive patients and therefore there should be a reduction in the increasing cases of CKD due to hypertension.

6.3 Recommendations

According to the findings of this study, the levels of awareness and self-care practices of hypertensive patients are generally moderate, for this, following recommendations have been found necessary to address the identified gaps:

To nursing practice: Though they spend much time in medical follow-ups, some hypertensive patients show low level of awareness and self-care practice, therefore educative sessions should

be organized to provide them with enough information about hypertension, its complications and the preventive measures. Actions are also needed at community level, and this can be done through community-based screening campaigns for early detection and management of HTN, and through mass education to raise the awareness about hypertension.

To nursing Education: when working,nurses stay a long time with patients, for this they have to be well informed about various conditions that should threaten their clients' health, and hypertension and CKD are ones of them. During their teachings, Nurse Educators should emphasize on the important role played by awareness and self-care practices in the management of hypertension and in the prevention of its complications like CKD.

To nursing Administration: as supervisors, Nurse Administrators, especially those working in internal medicine have the task to help the nursing staff to raise their awareness regarding non-communicable diseases like hypertension and CKD. This can be achieved through in service educative sessions, where nurses can get new and accurate information about the management of hypertension and the prevention of its complications which lead them to provide complete education to at risk patients. Nurse Administrators have also to promote all activities leading to early detection and management of hypertension like the screening campaigns.

To nursing Research: As it has been stated in the problem statement of this study**,** data abouthow hypertensive patients act to prevent HTN complications are still insufficient, especially In Rwanda. Since the findings from this study were just giving an overview about the problem which was under study, nurses are encouraged to undertake further studies with more large samples and in different health settings to expand the current body of knowledge.

To the study setting: The results showed that many of our study participants were still unaware about hypertension and lacking information about the self-care practices required to prevent the complications. Then the clinical staff is encouraged to provide sufficient information to hypertensive patients to raise their levels of awareness and self-care practices, as it is the only way to avert preventable complications.

REFERENCES

Abu-Saad, K. *et al.*(2014) 'Blood pressure level and hypertension awareness and control differ by marital status, sex, and ethnicity: A population-based study', *American Journal of Hypertension*, 27(12), pp. 1511–1520. doi: 10.1093/ajh/hpu081.

Ademe, S., Aga, F. and Gela, D. (2019) 'Hypertension self-care practice and associated factors among patients in public health facilities of Dessie town, Ethiopia', *BMC Health Services Research*. BMC Health Services Research, 19(1), pp. 1–9. doi: 10.1186/s12913-019-3880-0.

American Heart Association (2017) *Changes You Can Make to Manage High Blood Pressure*. Available at: https://www.heart.org/en/health-topics/high-blood-pressure/changes-you-can-make-to-manage-high-blood-pressure (Accessed: 29 May 2018).

Anderson, C. *et al.* (2016) *Guideline for the diagnosis and management of hypertension in adults*. Available at: https://www.heartfoundation.org.au/images/uploads/publications/PRO-167_Hypertension-guideline-2016_WEB.pdf (Accessed: 18 March 2018).

Bakhsh, L. A. *et al.* (2017) 'Awareness and Knowledge on Hypertension and its Self- Care Practices Among Hypertensive Patients in Saudi Arabia', *Annals of International medical and Dental Research*, 2(5). doi: 10.21276/aimdr.2017.3.5.me13.

Bakshi, A. and Singh, K. (2017) 'Dietary Intervention Tools In Chronic Kidney Disease', *Indian Journal of Applied Research*, 7(7), pp. 7–9. Available at: https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/file.php?val=July_2017_1498901730__04.pdf.

Banyangiriki, J. and Phillips, J. (2013) 'Prevalence of hypertension among working adults in Rwanda', *Iranian Journal of Public Health*, 42(8), pp. 925–926.

Catena, C., Colussi, G. and Sechi, L. A. (2016) 'The Rising Burden of Hypertensive Renal Disease in Low-Income Countries: Is it Time to Take Action?', *Journal of Clinical Hypertension*, 18(5), pp. 405–407. doi: 10.1111/jch.12780.

Cristina, E. *et al.* (2017) 'Knowledge regarding the prevention of chronic kidney disease in hypertensive and diabetic patients : a cross-sectional study', *Fisioterapia em Movimento*, 30(Suppl 1), pp. 55–62. doi: http://dx.doi.org/10.1590/1980-5918.030.s01.ao05.

Fathi, M. (2018) 'Kidney Diseases Modeling: An Operations Research and Data Science Perspective', in Institute, U. of F. I. (ed.) *Fifth International Conference on Computational Biomedicine, CBM 2018*. Gainesville, Florida, USA: University of Florida Informatics Institute. Available at: https://pdfs.semanticscholar.org/bdce/08d6ca8a9a01bf0c3e482b7c2a65732ee552.pdf.

Fazel, S. *et al.*(2016) 'Self-Care Behaviors and Related Factors in Hypertensive Patients', *Iran Red Crescent Med*, 18(6). doi: 10.5812/ircmj.35805.Research.

Hayden, J. (2013) *Introduction to Halth Behavior Theory*. Third Edit. Wayne, New Jersey: Jones & Bartlett Learning.

Ikasaya, I., Mwanakasale, V. and Kabelenga, E. (2018) 'Knowledge, Attitudes and Practices of Hypertension among Hypertensive Patients at Buchi Clinic, Kitwe, Zambia', *International Journal of Current Innovations in Advanced Research*, 1(7), pp. 78–89.

Institute for Work & Health (2015) *Primary, secondary and tertiary prevention*. Available at: https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention (Accessed: 20 May 2019).

Jonkman, N. H. *et al.*(2016) 'Self-management interventions: Proposal and validation of a new operational definition', *Journal of Clinical Epidemiology*, 80, pp. 34–42. doi: 10.1016/j.jclinepi.2016.08.001.

Judd, E. and Calhoun, D. A. (2015) 'Management of Hypertension in CKD: Beyond the Guidelines', *Advances in Chronic Kidney Disease*, 22(2), pp. 116–122. doi: 10.1053/j.ackd.2014.12.001.

Khalil, A. and Abdalrahim, M. (2014a) 'Knowledge, attitudes, and practices towards prevention and early detection of chronic kidney disease', *International Nursing Review*, 61(2), pp. 237–245. doi: 10.1111/inr.12085.

Khalil, A. and Abdalrahim, M. (2014b) 'Knowledge, attitudes, and practices towards prevention and early detection of chronic kidney disease', *International Nursing Review*, 61(2), pp. 237–245. doi: 10.1111/inr.12085.

Kono, K. *et al.* (2016) 'Relationship between type of hypertension and renal arteriolosclerosis in chronic glomerular disease', *Kidney and Blood Pressure Research*, 41(4), pp. 374–383. doi: 10.1159/000443440.

Kumela Goro, K. *et al.*(2019) 'Patient Awareness, Prevalence, and Risk Factors of Chronic Kidney Disease among Diabetes Mellitus and Hypertensive Patients at Jimma University Medical Center, Ethiopia', *BioMed Research International*, 2019, pp. 1–8. doi: 10.1155/2019/2383508.

Liew, S. J. *et al.*(2019) 'Sociodemographic factors in relation to hypertension prevalence, awareness, treatment and control in a multi-ethnic Asian population: a cross-sectional study', *BMJ Open*, 9(5), p. e025869. doi: 10.1136/bmjopen-2018-025869.

Litbarg, N. O. (2018) 'Chronic Kidney Disease', *Integrative Medicine*, pp. 411-421.e11. doi: 10.1016/B978-0-323-35868-2.00040-2.

Mabuto, M. P. and Handara, T. (2017) 'Knowledge and Self- Care Practices of High Blood Pressure Patients in Rural Zimbabwe- Implications for Adult Learning', *Global Journal of Advanced Research*, 4(6), pp. 221–229. Available at: http://gjar.org/publishpaper/vol4issue6/d717r24.pdf.

Moore de Peralta, A., Holaday, B. and McDonell, J. R. (2015) 'Factors Affecting Hispanic Women's Participation in Screening for Cervical Cancer', *Journal of Immigrant and Minority Health*, 17(3), pp. 684–695. doi: 10.1007/s10903-014-9997-7.

Mouhtadi, B. B. *et al.*(2018) 'Prevalence, awareness, treatment, control and risk factors associated with hypertension in Lebanese adults: A cross sectional study', *Global Cardiology Science and Practice*, 2018(1). doi: 10.21542/gcsp.2018.6.

Nahimana, M.-R. *et al.*(2018) 'A population-based national estimate of the prevalence and risk factors associated with hypertension in Rwanda: implications for prevention and control', *BMC Public Health*. BMC Public Health, 18(1), p. 2. doi: 10.1186/s12889-017-4536-9.

Naidu, B. M. *et al.* (2019) 'Factors associated with the severity of hypertension among Malaysian adults', *PLoS ONE*, 14(1), pp. 1–16. doi: 10.1371/journal.pone.0207472.

Neminqani, D. M., El-shereef, E. A. A. and Thubiany, M. M. A. L. (2015) 'Hypertensive Patients: Self-Care Management Practices in Al-Taif, KSA', *International Journal of Science and Research (IJSR)*, 4(12), pp. 1705–1714. doi: 10.21275/v4i12.nov152310.

Nifco, N. and Barbara, S. (2005) 'A Conceptualization of Knowledge Management Practices Through Knowledge, Awareness and Meaning', *Journal of Knowledge Management*, 3(1), pp. 45–52. Available at: http://www.ejkm.com/issue/download.html?idArticle=52.

Oluyombo, R. *et al.* (2016) 'Awareness, knowledge and perception of chronic kidney disease in a rural community of South-West Nigeria', *Nigerian Journal of Clinical Practice*, 19(2), pp. 161–169. doi: 10.4103/1119-3077.175960.

Omotoye, F. . and Sanusi, R. . (2018) 'Awareness of hypertension and factors associated with uncontrolled hypertension among nigerian adults; a community-based study', *Asian Pacific Journal of Health Sciences*, 5, pp. 53–59. doi: 10.21276/apjhs.2018.5.1.12.

Ozoemena, E. L. *et al.*(2019) 'Effects of a health education intervention on hypertension-related knowledge, prevention and self-care practices in Nigerian retirees: A quasi-experimental study', *Archives of Public Health*. Archives of Public Health, 77(1), pp. 1–16. doi: 10.1186/s13690-019-0349-x.

Pirasath, S., Kumanan, T. and Guruparan, M. (2017) 'A Study on Knowledge, Awareness, and Medication Adherence in Patients with Hypertension from a Tertiary Care Centre from Northern Sri Lanka', *International Journal of Hypertension*, 2017. doi: 10.1155/2017/9656450.

Polit, D. F. and Beck, C. T. (2003) *Nursing Research: Principles and Methods*. Seventh Ed. Lippincott Williams & Wilkins.

Sa'adeh, H. H. *et al.* (2018) 'Knowledge, attitudes and practices of hypertensive patients towards prevention and early detection of chronic kidney disease: a cross sectional study from Palestine.', *Clinical hypertension*. Clinical Hypertension, 24, p. 6. doi: https://dx.doi.org/10.1186/s40885-018-0091-7.

Sadeq, R. and Lafta, R. K. (2017) 'Knowledge, attitude and practice about hypertension in hypertensive patients attending hospitals in Baghdad, Iraq', *South East Asia Journal of Public Health*, 7(1), pp. 29–34. doi: 10.3329/seajph.v7i1.34676.

Sherwood, M. and McCullough, P. A. (2016) 'Chronic kidney disease from screening, detection, and awareness, to prevention', *The Lancet Global Health*. Sherwood et al. Open Access article distributed under the terms of CC BY, 4(5), pp. e288–e289. doi: 10.1016/S2214-109X(16)30049-3.

Shukri F. Mohamed *et al.* (2018) 'Prevalence, awareness, treatment and control of hypertension and their determinants: results from a national survey in Kenya', *BMC Public Health*, 18(Suppl 3), pp. 9–18. doi: https://doi.org/10.1186/s12889-018-6052-y.

Stanifer, J. W. *et al.*(2014) 'The epidemiology of chronic kidney disease in sub-Saharan Africa: A systematic review and meta-analysis', *The Lancet Global Health*. Stanifer et al. Open Access article distributed under the terms of CC BY-NC-ND, 2(3), pp. e174–e181. doi: 10.1016/S2214-109X(14)70002-6.

Taherdoost, H. (2018) 'Validity and Reliability of the Research Instrument; How to Test the Validation of a Questionnaire/Survey in a Research', *SSRN Electronic Journal*, (January 2016). doi: 10.2139/ssrn.3205040.

Tesfaye, B. *et al.* (2017) 'Uncontrolled hypertension and associated factors among adult hypertensive patients on follow-up at Jimma University Teaching and Specialized Hospital: cross-sectional study', *Research Reports in Clinical Cardiology*, Volume 8, pp. 21–29. doi: 10.2147/RRCC.S132126.

Umuvandimwe, B. (2015) 'Factors associated with participation in physical activity among adults with hypertension in Kigali, Rwanda', *Journal of Community and Health Sciences*, 10(1), pp. 13–22. Available at: http://etd.uwc.ac.za/xmlui/handle/11394/3057.

Vassalotti, J. A. *et al.*(2016) 'Practical Approach to Detection and Management of Chronic Kidney Disease for the Primary Care Clinician', *American Journal of Medicine*. Elsevier Inc, 129(2), pp. 153-162.e7. doi: 10.1016/j.amjmed.2015.08.025.

Velasquez, M. T. (2014) *Management of Hypertension in Chronic Kidney Disease, Chronic Renal Disease*. Elsevier Inc. doi: 10.1016/B978-0-12-411602-3.00052-4.

Webber, D., Guo, Z. and Mann, S. (2013) 'Self-care in Health: We can define it, but should we also measure it?', *SelfCare*, 4(5), pp. 101–106. Available at: https://selfcarejournal.com/wp-content/uploads/2015/09/Webber-45.101-106-.pdf.

Wenger, N. K. *et al.*(2018) 'Hypertension Across a Woman's Life Cycle', *Journal of the American College of Cardiology*, 71(16), pp. 1797–1813. doi: 10.1016/j.jacc.2018.02.033.

Williams, H. (2015) 'Hypertension: Pathophysiology and diagnosis', *Clinical Pharmacist*, 7(1), pp. 11–14. doi: 10.4172/2155-9562.1000250.

Yann Ng, C., Shiun Lee, Z. and Seong Goh, K. (2016) 'Cross-sectional study on knowledge of chronic kidney disease among medical outpatient clinic patients', *Med J Malaysia*, 71(3), pp. 99–104. Available at: http://www.e-mjm.org/2016/v71n3/chronic-kidney-disease.pdf.

Zhang, W. *et al.* (2016) 'A nationwide cross-sectional survey on prevalence, management and pharmacoepidemiology patterns on hypertension in Chinese patients with chronic kidney

disease', *Scientific Reports*. Nature Publishing Group, 6(December), pp. 1–10. doi: 10.1038/srep38768.

ANNEXES

Informed consent to participate in a research study (English**)**

I am MBABAZI Pierre Marie Theos; I am a student in master's program of nursing nephrology at the University of Rwanda, College of medicine and health sciences. Currently, I am conducting a research study as one of the requirements to fulfill my studies.

Purpose of the study: the purpose of this study is to assess the level of awareness and self-care practices regarding prevention of chronic kidney disease among hypertensive patients, and this will be done at the University Teaching Hospital of Butare'

Study procedures: if you agree to be involved in this research study, you will have to respond to a series of prepared questions, and this will take about 15 minutes.

Risks of participating in this study: there are no expected risks.

Benefits of participating in this study: there is no financial remuneration for being in this study, but if you agree to be involved, the information you provide will help to improve the prevention of Chronic Kidney Disease among hypertensive people.

Confidentiality: your identity will remain anonymous, no names or information that can identify you will be collected. The data generated for this research will be kept in a protected computer.

Participant's rights: your participation has to be voluntary and you can withdraw from this research at any time without any consequence for you. You have also the right to ask any question about this study and you have to be answered.

In case there is any question or concern about this study, you can contact me through:

Email: capttheos@gmail.com Phone numbers: 0788472138 / 0728472130

If you have any concern regarding your rights in participating in this research, you can contact:

Chairperson of UR/CMHS IRB **Deputy Chairperson of UR/CMHS IRB**

0788490522 **0783340040**

CONSENT: if you are understanding all information provided above,and if you freely agree to take part in this research, please give your signature below:

Date: **Participant's signature**:

QUESTIONNAIRE

SECTION I: Socio-Demographic data and background characteristics

Instruction: To answer, you have to choose one response and tick the appropriate box.

NB: Only the information asked below is needed, other kind of information like participant's names have not to be written on this questionnaire.For Yes/no questions, **Yes** = 1 point, **No** = 0

Low score: ≤49% Moderate score: ≥50%-69% High score: ≥70%

1. Age categories (in years)

18-30yrs ☐ 31-40 ☐ 41-50 ☐ 51 -60 ☐ Above 60 ☐

2. Gender

Male ☐ Female ☐

3. Marital status

Single ☐ Married ☐ Divorced ☐ Widowed ☐

4. Educational level

None ☐ Primary education ☐ Secondary education ☐ College/University ☐

5. Employment

Employed ☐ Self- employed ☐ Unemployed ☐

6. Occupation

Manual labor ☐ Student ☐ Clerical ☐ Professional ☐ Tradesperson ☐ None ☐

7. Residence

Rural area ☐ urban area ☐

8. Distance from home to nearest health facility

0-2 km ☐ 2-5 km ☐ above 5 km ☐

9. Mode of transport

Public ☐ Private ☐

10. Family history of hypertension Yes ☐ No ☐

11. Duration of hypertension diagnosis

0- 2 years ☐ 2-5 years ☐ 5-10 years ☐ More than 10 years ☐

Section II. Questionnaire: Awareness regarding prevention of chronic kidney disease among hypertensive patients

I. Awareness about hypertension and chronic kidney disease		
I am aware that	**Yes**	**No**
1. Hypertension is a serious disease and a threat to my life		
2. Chronic kidney is a serious complication of hypertension		
3. Kidney disease is a serious and irreversible disease		
4. Hypertension can silently (without symptoms) lead me to having kidney disease		
5Having uncontrolled high blood pressure make me more likely to get kidney disease		
6. Having untreated hypertension will increase my chances of getting kidney disease.		
7. Obesity increases risk of getting kidney disease for hypertensive patients		
8. Having elevated lipid in my blood will increase my risk of getting kidney disease		
9. Not having a regular physical activity increases my risk of getting kidney disease		
10. Smoking increases the risk of getting kidney disease		
11. High intake of alcohol increases the risk of getting chronic kidney disease		
12. High intake of salt increases risk of getting chronic kidney disease		
13. Regular checkup of blood pressure isneeded to prevent chronic kidney disease		
14. Prevention of high blood pressure complications is also patient's responsibility		
15. Family can assist me in the prevention of chronic kidney disease		
16. Prevention of chronic kidney disease through respecting medical regimens and advices is less expensive than treating chronic kidney disease		
17. Drinking at least 2 liters of water helps in prevention of chronic kidney disease		

Section III. Questionnaire: Self-care practices to prevent chronic kidney disease among hypertensive patients

III.1. Dietary

Dietary self-care practices		
I do	**Yes**	**No**
1. Respect food restrictions like low salt diet		
2. Limiting daily sodium intake to no more than 1500 mgs		
3. Eating a healthy diet, including fruits, vegetables, proteins, carbohydrates and low-fat food		
4. Drink at least 2 liters of water per day		

III.2 Lifestyle changes

Physical exercises		
I do	**Yes**	**No**
1. Regular physical activities		
2. Walking		
3. Jogging		
4. Running		
Others		
5. Reduce weight if I am overweight or obese		
6. Not smoke or have stopped to do it		
7. Not drinking alcohol or limiting alcohol to two drinks a day for men, one drink a day for women		
8. Not using herbal medicines		

III.3 Adherence to medication

Adherence to antihypertensive medication		
You indicated that you are taking antihypertensive medication. Individuals have identified several issues regarding their medication-taking behavior and we are interested in your experiences. There is no right or wrong answer. Please answer each question based on your personal experience with your antihypertensive medication.		
	Yes	**No**
1. Do you sometimes forget to take your antihypertensive drugs?		
2. Sometimes people miss to take their BP medication for other reasons than forgetting. Did you not take your BP medication over the last two weeks?		

3. Did you take your BP medication yesterday?		
4. When you travel or leave home, do you sometimes forget to bring along your BP drugs?		
5. Have you ever cut back or stopped taking your BP drugs without telling your doctor, because you felt worse when you took it?		
6. When you feel like your BP is under control, do you sometimes stop taking your BP medication?		
7. Taking BP drugs every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?		
8. How often do you have difficulty remembering to take all your BP drugs? Never ☐ Once in a while ☐ Sometimes ☐ Usually ☐ All the times ☐		

II.4 Healthcare seeking

Healthcare seeking		
I do	**Yes**	**No**
1. Have regular medical visits even when I'm not sick		
2. Regular check my blood pressure		
3. Get medical checkup and advices when abnormal signs like nausea, vomiting, reduced urine, breath troubles, feet and ankle swelling, sleeping troubles, … are noticed		
4. Do the laboratory exams proposed to me		
5. Not consulting traditional healers before going to modern healthcare settings		

.

Thank you

PROJECT ACTIVITY PLAN

Activity by months from the start to the end of the project 2018-2019							
Activity	**Personnel**	**May-July 2018**	**Aug-Sept 2018**	**Oct – Nov 2018**	**Jan-Feb 2019**	**Mar 2019**	**Apr-May 2019**
1. Proposal and Data collection development	1	■					
2. Ethical clearance	1	■					
3. Recruitment and training of research assistants	1		■				
4. Conducting a pilot study	2			■			
5. Recruitment of study participants	2				■		
6. Data collection	3				■		
7. Data analysis	2					■	
8. Report writing and findings disseminating	2						■

PROJECT BUDGET

Item	Number	Unit Cost (RWF)	Total (RWF)
Project Personnel			
Principal Investigator	1	0	0
Research assistants	2	250000	500000
Statistician	1	300000	300000
SUBTOTAL 1			**800000**
Other requirements (equipment/services)			
Laptop	1	200000	200000
Copy papers	5 reams	5000	25000
Printing		30000	30000
Writing materials: notebooks, diary, pens		10000	10000
Travelling		200000	200000
Report writing and dissemination		500000	500000
SUBTOTAL 2			**965000**
GRAND TOTAL			**1765000**

THE SCIENCE OF IMPROVING LIVES

FHI 360

certifies that

MBABAZI PIERRE MARIE THEOS

has completed the

RESEARCH ETHICS TRAINING CURRICULUM

October 19, 2018

UNIVERSITY OF RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 12/02/2019
Ref: CMHS/IRB/**076**/2019

MBABAZI Pierre Marie Theos
School of Nursing and Midwifery, CMHS, UR

Dear MBABAZI Pierre Marie Theos

RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled ***"Awareness And Self Care Practices Regarding Prevention Of Chronic Kidney Disease Among Hypertensive Patients At The University Teaching Hospital Of Butare."***

Having reviewed your protocol and found it satisfying the ethical requirements, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.

Professor Jean Bosco GAHUTU
Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR

Cc:
- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR

CENTRE HOSPITALIER UNIVERSITAIRE
UNIVERSITY TEACHING HOSPITAL

CENTRE HOSPITALIER UNIVERSITAIRE DE BUTARE (CHUB)
OFFICE OF DIRECTOR GENERAL

Huye, 08/05/19

N° Ref: CHUB/DG/SA/05 0777 /2019

Pierre Marie Theos Mbabazi
Phone: +250788472138

Dear Mbabazi

Re: Your request for data collection

Reference made to your letter requesting for permission to collect the data within University Teaching Hospital of Butare for your research proposal entitled ***"Awareness and self care practices regarding prevention of chronic kidney disease among hypertensive patients at the University Teaching Hospital of Butare"***, based to the approvals No: CMHS/IRB/076/2019 from Institution Review Board of University of Rwanda and No: RC/UTHB/033/2019 from our Research-Ethics committee, we are pleased to inform you that you are accepted to collect data within University Teaching Hospital of Butare. Please note that your final document will be submitted in our Research Office.

Sincerely,

Dr. Augustin SENDEGEYA
Director General of CHUB

Cc:

- Head of Clinical Education and Research Division
- Director of Research
- Chairperson of Research-Ethics Committee
- Research officer

CHUB