UNIVERSITY of
RWANDA

LIFESTYLE PRACTICES AMONG HYPERTENSIVE PATIENTS AT A SELECTED DISTRICT HOSPITAL IN RWANDA

NIYITEGEKA Perpetue

COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

MASTERS OF MEDICAL SURGICAL NURSING

2019

UNIVERSITY of RWANDA

LIFESTYLE PRACTICES AMONG HYPERTENSIVE PATIENTS AT A SELECTED DISTRICT HOSPITAL IN RWANDA

By

NIYITEGEKA Perpetue

218000205

A dissertation submitted in partial fulfillment of the requirements for the degree of

MASTER OF MEDICAL SURGICAL NURSING

In College of Medicine and Health Sciences

Supervisor: Dr. Anita Collins

Co-supervisor: Mr. BAGWENEZA Vedaste

September, 2019

DECLARATION

I do hereby declare that this dissertation titled "Lifestyle practices among hypertensive patients at a selected District Hospital in Rwanda " submitted in partial fulfillment of the requirements for the degree of MASTERS OF SCIENCES in MEDICAL SURGICAL NURSING at the University of Rwanda, College of Medicine and Health Sciences, is my original work and has not been submitted anywhere else. The references of content were provided indicating the source of information cited.

NIYITEGEKA Perpetue, 218000205

Signature………………

Date: 12/6/2019

DEDICATION

Sincerely, the work is dedicated:

To my husband

To my children

To my parents

To my sister

To all my colleagues

To GAKINDI Jean Marie Vianney

God bless you all

ACKNOWLEDGEMENTS

ABSTRACT

Background: Hypertension is a concern, affecting all categories of people in all countries together with other non-communicable diseases. Adherence to lifestyle practices this condition can be managed and controlled.

Aim: To assess the lifestyle practices among hypertensive patients in management of hypertension

Research question: What are the lifestyle practices that hypertensive patients adopt in management of hypertension?

Significance of the study: Findings of the study on lifestyle practices among hypertensive patients will show how much lifestyle practices are needed in clinical, education and in research areas.

Methodology: Descriptive quantitative study was used with cross-sectional design. The study was conducted among hypertensive patients at Masaka district hospital to assess the lifestyle practices in management of hypertension. Self-administered questionnaire was used as a research instrument. A convenient sampling strategy was used to select respondent. SPSS version 21 was used to analyze the data. The relationship between lifestyle practices were analyzed by using chi-square test of independence.

Results: The findings from this study revealed that some hypertensive patients do not adhere to lifestyle practices and mentioned different barriers. Adherence varied with the components of self-care management, with the worst poor adherence on self-monitoring of blood pressure at home at 94% of the respondents. Similarly, 78% of the respondents do not manage stress, 56% do not read food labels at the grocer's shop while 55% do not exercise in order to manage weight. Finally, 42% of the respondents keep drinking alcohol inappropriately. Regarding the barriers to self-management of HTN, they vary and the most reported barrier was financial constraints where 85.9% of the respondents reported lack of materials for self-monitoring of blood pressure while 60.8% reported physical condition as a barrier to physical exercise. Concerning the relationship, some barriers had a relationship with the socio-demographic characteristics of the respondents while others were not related.

Conclusion: Adherence to lifestyle practices among hypertensive patients was not adequate and it should be attained at %. Therefore, there is a need to emphasize on education about lifestyle practices among hypertensive patients.

KEY WORDS

Hypertension

Hypertensive patients

Lifestyle practices

LIST OF SYMBOLS AND ACRONYMS /ABBREVIATIONS

BP: Blood Pressure

CAD: Coronary Artery Disease

CNCDs: Chronic Non communicable Diseases

CVD: Cardiovascular diseases

DASH: Dietary Approaches to Stop Hypertension

HBM: Health Believe Model

HBP: High Blood Pressure

HTN: Hypertension

IRB: Institutional Review Board

MOH: Ministry of Health

NCDs: Non communicable Diseases

RAAS: Renin Angiotensin-Aldosterone System

SSA: Sub Sahara Africa

SPSS: Statistical Package for Social Sciences

UR: University of Rwanda

WHO: World Health Organization

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXES

CHAPTER ONE: INTRODUCTION

1.1. INTRODUCTION

Hypertension is one of modifiable risk factor of cardiovascular diseases which is the global causes of mortality and morbidity (Poulter, 2015).Premature death are caused by hypertension worldwide, estimation shows that 1.13 billion of people have hypertension worldwide and the majority of them living in low and middle income countries (WHO, 2019). It is found to be the first risk factor of cardiovascular diseases like renal diseases and stroke (WHO, 2019).This causes mortality and disability in the countries. Rwanda, one of the low income countries is also faces the same challenge of non-communicable diseases.

Hypertension management not only focuses on the drugs but also on lifestyle practices also called non-pharmacological approaches which are very essential in prevention and control of hypertension (Buda et al,.2017). The same author states that it is of great importance for people to know lifestyle practices that can contribute to the control of hypertension and possibly delay hypertension-related complications.

Patients with hypertension can take part in their management when they adhere to lifestyle practices. These lifestyle practices in combination with drug management will result in optimal hypertension control with normal or near normal blood pressure values.

1.2. BACKGROUND FOR THE STUDY

Non-communicable diseases (NCDs) have the greatest impact in the twenty first century, in terms of both human experience of pain that they cause and damage they impose on socioeconomic structure of each country, mostly in developing countries (WHO, 2014). NCDs combined, namely cardiovascular diseases, diabetes, chronic respiratory diseases and cancer and their key risk factors such as harmful use of alcohol, tobacco, unhealthy diet as well as physical inactivity were responsible for almost 70% of global deaths (World Health Organization, 2015).

With other non-communicable diseases, hypertension causes a massive burden across the world. It is included in cardiovascular diseases and alone, it is considered as an essential contributor to worldwide accountings for 7% of global disability (Peberdy, 2016). Hypertension is recognized as the disease that has a negative impact on people's well-being,

affecting the quality of life (Ha, Duy,et al., 2014). Estimations showed that 17.9 million of people died from cardiovascular diseases (CVDs) in 2016 where hypertension is included (WHO, 2017). These people who died represent 31% of all global deaths and the majority of them take place in low income countries. Around 17 million premature deaths under 70 years old due to NCDs in 2015,82% are in low income countries and they are caused by CVDs (WHO, 2017).

According to the statistics of the WHO in 2014, it was revealed that hypertension was increasing in developing countries compared to developed countries (WHO, 2014). This shows how the burden is shifting from developed countries to developing countries where control measures are scarce.

In Nigeria a study revealed that most of patients with HTN do not adhere to lifestyle practices like eating vegetables, fruits, unsaturated oil; reduced dairy food intake; and reduction of alcohol intake (Okwuonu et al.,2014).The main identified barrier in that study was poor knowledge since it revealed that patients did not adhere to these lifestyle practices because they were not aware of them as measures of controlling the hypertension (Okwuonu et al.,2014).

In Sub-Saharan region, many studies were done and the literature indicates that hypertension in Sub-Saharan Africa (SSA) is a big challenge so that it has been reported to be as high as 38% in some communities(Mills *et al.*, 2017). Estimates showed that out of the approximately 650 million people living in SSA in 2014, between 10 to 20 million might have hypertension (WHO, 2014). Literature highlights the importance of adopting lifestyle practices among hypertensive patients in order to hypertension under control and prevent or delay complications (Tesema et al.,2016).

The essential choice of fighting against the increase of hypertension all counties is performing the lifestyle practices like maintenance of normal body weight , reduction of salt intake, increased potassium intake, increased physical activity, limited alcohol consumption, and consumption of healthy foods like a diet high in fruits, vegetables, and low fat dairy products, and low in saturated and total fat should be applied (Mills *et al.*, 2017).The study conducted in Addis Ababa, Ethiopia showed that adherence exercise, to diet, smoking and alcohol consumption were very low (Tibebu and Mengistu, 2017).

In Rwanda , the study conducted among employees in Rwanda showed that the prevalence of hypertension was 36%, and 33% of them were not aware of their high blood pressure (Banyangiriki and Phillips, 2013).The study highlighted that there is increase of hypertension was associated with lifestyle change which results in increased prevalence of obesity, alcohol and tobacco consumption as well as physical inactivity (Nahimana *et al.*, 2018).

Rwanda took the measures of putting NCDs services at every district hospital in order to help the patients to seek care near their community without necessarily consulting the referral hospitals. Also, the country organizes the day of mass sport when all people gather together in a specified area and do different sports and screening services for all which is provided for free. The purpose of this car free day in not physical activities only but also to make the community aware of those modifiable risk factors. The car free day started in 2016 and it was also happened monthly. These are ones of several ways of control NCDs including hypertension (Atieno, 2018). Hypertensive patients are accessing the NCDs services easily and they receive care without using long time to reach referral hospitals (MOH, 2015).

At Masaka district hospital, around 700 hypertensive patients consult NCDs service of this hospital monthly. The researcher decided to conduct her study at that hospital after realizing that the hospital follows a large number of hypertensive patients, who usually come on appointments with persistently high blood pressure values. Her intent is to assess whether these patients are aware of lifestyle practices to control the disease. Additionally, the researcher will assess if these patients adhere to these lifestyle practices or have barriers to adherence.

1.3. PROBLEM STATEMENT

Nearly seven in ten deaths that occur worldwide, around 40% of these deaths are premature due to chronic non-communicable diseases (CNCDs), most of them occurring in developing countries. Cardiovascular diseases are the leading cause of deaths from CNCDs, contributing for nearly half of the deaths (Gebrihet *et al.*, 2017). Hypertension, one of CNCDs constitutes a global burden, more particularly in low and middle income countries (Gebrihet et al., 2017).

In Rwanda, people are shifting to the urban area coupled with changes in lifestyles, with a higher risk of getting hypertension. Statistics showed that 11.2% of adult population have been diagnosed with hypertension in Rwanda in 2015 (MOH, 2015).

Considering these statistics, it is obvious that NCDs are steadily increasing in Rwanda, with anecdotal observations of the researcher having revealed that many patients consult the NCDs service at Masaka district hospital, with around 700 hypertensive patients consulting NCDs service of the above mentioned hospital monthly (Masaka report, 2017). The researcher, in her anecdotal observation realized that most of the patients attend the hospital on appointments with high blood pressure values, and probable poor adherence to lifestyle changes. Lifestyle practices among hypertensive patients play a big role in the management and control of hypertension, especially with regard to the values of the blood pressure despite some patients not adhering to lifestyle practices (Njambi and Tanui, 2014).

The studies done in Rwanda regarding hypertension only revealed general statistics but do not focus on patients' life style practices. Again, we do not know whether hypertensive patients conform to lifestyle practices in management of their condition. Therefore, this study was conducted to assess lifestyle practices among hypertensive patients.

1.4. AIM OF THE STUDY

The aim of the study was to determine lifestyle practices among hypertensive patients at Masaka district hospital.

1.5. RESEARCH OBJECTIVES

To identify lifestyle practices among hypertensive patients.
To identify the barriers to lifestyle practices among hypertensive patients.

To establish the relationship between hypertensive patient's lifestyle practices and sociodemographic characteristics.

1.6. RESEARCH QUESTIONS

What are the lifestyle practices that hypertensive patients adopt in management of hypertension?

What are the barriers to lifestyle practices among hypertensive patients?

Is there any relationship between hypertensive patients' lifestyle practices and socio-demographic characteristics?

1.7. SIGNIFICANCE OF THE STUDY

The increase of NCDs including hypertension is globally affecting personal income for those who are diagnosed with NCDs and their families. Globally, the concern about the effect of hypertension is needed but sustainable development due to long term treatment, possible repeated admissions and care costs which is special. The results of the study on lifestyle practices among hypertensive patients will show how much lifestyle practices are needed and important.

The findings of this study will highlight the recommendations and show evidence based data to policy makers regarding advocacy for the benefits of patients with hypertension, especially on measures related to lifestyle practices. The results of the study will help the decision makers at all levels to promote lifestyle practices, mainly with emphasis on health education of the community, and its incorporation in health guidelines.

The results of this study will also help other researchers to conduct future researches. Other researchers will use the findings of the current study so as to expand studies to other sites, population or hypertension context. Again, it will be the basis to conduct comparative studies or explore some aspects that cannot be explored in this study.

Finally, the results of the study will inform the health care providers especially nurses and midwives on aspects of giving health education to patients regarding hypertension self-care practices. As the results of this study will be shared with the hospital administration, the hospital authorities will identify the gaps and look at ways to fill them accordingly. This will ultimately result in good outcomes among patients because they will benefit for quality care

including health education with possible reduction in hospital admissions or care costs related to hypertension.

1.8. DEFINITIONS OF CONCEPTS

Hypertension (HTN) is defined as a medical condition where the blood pressure in the arteries is elevated above 140 over 90 mmHg, requiring the heart to work harder than usual to circulate blood through the blood vessels (El-hay and Mezayen, 2015).

Lifestyle practices: ways of behaviors person, people, groups and nations may use to improve their daily life (Farhud, 2015).

Lifestyle practices in the context of this study are all changes that the hypertensive patients adopt to keep their disease under control, and or keep the BP values normal or near-normal. Normal BP value is less than 140/90mmHg. The lifestyle practices in this study are the smoking cessation, physical exercise, adherence to diet, salt intake, avoid alcohol, stress management, weight control, and self-monitoring.

Patient: A person who is the recipient of health care from health care providers(World Health Organization, 2011). In the context of this study, hypertensive patient is any person enrolled in the program of NCDs due to hypertension at Masaka hospital, with a diagnosis of hypertension and with follow up at that hospital for the disease management. Hypertensive patients were the respondents who were targeted in the current study.

1.9. ORGANIZATION OF THE STUDY

The study is divided into five chapters. Chapter one: Introduction; Chapter two: Literature review; Chapter three: Methodology; Chapter four: Presentation of the results Chapter five: discussion of the findings, Lastly chapter six: Conclusion and recommendations.

1.10. CONCLUSION

The above chapter gives an orientation of the study that was done. It shows introduction of the study, background of the study, problem statement, aim and research objectives, research questions, significance of the study, definition of concepts and structure of the study.

CHAPTER TWO: LITERATURE REVIEW

2.1. INTRODUCTION

The aim of this chapter is to present different data with information pertaining to how much hypertensive patients adhere to and practice lifestyle behaviors to control hypertension. This chapter starts by providing general view on hypertension and lifestyle practices.   It will give a review of the empirical literature on the topic of hypertensive patients' lifestyle practices regarding management of hypertension. It will also tackle in a more detailed way about studies done regarding the above topic and research gap identification across these studies. Finally, the conceptual framework that summarizes the intent of the current study will be provided.

2.2. THEORETICAL LITERATURE ON HYPERTENSION

Hypertension is (BP) $\geq$140/90 and is expressed in millimeters of mercury (mmHg) or the presence of a chronic elevation of systemic arterial pressure above the normal range (Bell, Twiggs and Olin, 2015). Dorans *et al* defined hypertension as mean systolic BP $\geq$130 mm Hg, mean diastolic BP $\geq$80 mm Hg, or self-reported current use of antihypertensive medications (Dorans *et al.*, 2018).

Hypertension is classified into 3 clinical stages. The first stage which is prehypertension is characterized by systolic blood pressure (SBP) varying between 120-139 mmHg, or diastolic blood pressure (DBP) varying between 80-89mmHg. It is not actually considered as a disease, but identifies those who are likely to progress to stage 1 or stage 2 hypertension in the future. The second clinical stage known as stage I HTN is characterized by systolic blood pressure that varies between 140-159 mmHg or DBP varying between 90-99 mmHg.
The third and last stage is stage II HTN whose features are the systolic blood pressure (SBP) equaling or exceeding 160 while DBP is 100 or even above (Bell, Twiggs and Olin, 2015).

The main reported cause among 57% of stroke death was hypertension and 24%of all cardiovascular death in East Asians, It was revealed that 71.2% of the hypertensive patients die due to hypertension-related complications with the stroke ranking first at 33.3%, followed by coronary artery disease (CAD) at 20.3% and, finally chronic renal failure statistically representing 17.8% of all death cases (Mondal *et al.*, 2017).

Globally one billion of individuals were affected by hypertension and it was ranked as the leading cause of global burden of disease mostly in sub-Saharan Africa and South Asia where large population lives. The prevalence of hypertension was around 30# In Sub-Saharan Africa (Abegaz et al., 2017).

Estimations showed that, by 2025, males be 41.7% and female will be 38.7% in SSA will develop high blood pressure (HBP) (Katende et al., 2014). A study done in Uganda showed that this is particularly right where hypertension prevalence rates were estimated to range from 22.5% to 30.5% (Katende, Groves and Becker, 2014).

A study conducted in Rwanda regarding non-communicable diseases (NCDs) demonstrated that males were 34% more likely to have hypertension compared to women (Ministry of Health, 2015). This applies to the context of Rwanda where NCDs survey demonstrated that the adjusted odd ratio of the age group 45-64 is more than 4 folds the one of the age group 15-24 years. Additionally, alcohol consumption, body mass index, and urine albumin were associated with hypertension (Ministry of Health, 2015).

In his book on *"Pathophysiology of Hypertension and Hypertension Management"*, Chisolm, 2017 listed the following causes of hypertension: renal problems, endocrine problems, vascular problems over the counter medication, obesity ,genetic, stress and alcohol (Chisolm, 2017).

Hypertension is a complex, chronic illness requiring medical management involving different team members that may need involvement of nurses, physicians, dietitians, pharmacists and counselors (Jardim *et al.*, 2018).

Hypertension can be managed starting by lifestyle measures and medications. In some patients, those lifestyle measures are insufficient and they need medications to control BP (Buda *et al.*, 2017).

In lifestyle measures, patients should abide by salt restriction, limit intake of alcohol, consider high consumption of vegetables and fruits and low-fat diet, reduce weight and maintain it, do regular physical exercise and stop smoking and use of other tobacco products (Aronow, 2017).

Salt work on the body especially on the kidney   by holding or   moving water in the body. By this extra stored water raises the blood pressure and puts strains on the kidney, arteries, heart and brain. The extra blood pressure caused by eating much salt puts extra strains on the insides of the arteries (A Lala, 2015). The body by coping with this extra strain   the tiny muscles in the artery walls become stronger and thicker. This only makes the space inside the arteries smaller and raise the blood pressure. This rotation of increasing blood pressure which occur slowly over a long time can lead to the arteries bursting or becoming too narrow that they clog up entirely. In this situation, all organs of the body which receive the blood via the arteries become starved of oxygen and other nutrients that they need(A Lala, 2015).

The hypertension caused by eating too much salt damage the arteries and also leading to the heart problems. It can cause a slight reduction in amount of blood reaching to the heart. The cells within the heart doesn't work due to this condition because they are not receiving much oxygen and nutrients. By this if the blood pressure decreased it help in alleviation of some complication. If there is increase of salt intake for long time the arteries become burst or completely clogged (A Lala, 2015).

Keeping food which have the salt less than 5 g per day is important because it helps prevent hypertension and it reduces the risk of heart disease and stroke in the adult population and taking food which has few potassium (less than 3.5 grams/day) contribute to high blood pressure and increase the risk of heart disease and stroke (WHO, 2018).

Alcohol can temporarily elevate blood pressure, the effect will disappear when drinking is stopped and the liver processes alcohol out of the body. Excessive consumption of alcohol lead to high blood pressure as side effect and may become chronic problem (Roerecke et al., 2017). When the amount of alcohol is reduced also systolic blood pressure reduced. This is associated with vasodilation or the tightening of blood pressure when the alcohol is consumed. Yet the alcohol is also high in calories and sugar, this can increase the risk of high blood pressure on the long term basis by adding to the body fat.

Alcohol consumption increase the amount of lipids or fat that are in the bloodstream this can damage the arteries leading to hardening of arteries and can lead to the increase of blood pressure. (Roerecke et al., 2017) .

For men an average of no more than two drinks per day which is equal to28g per day, for women an average of less than one standard drink per day which is equal to 14g per day (Roerecke *et al.*, 2017).

Regular physical exercise helps to burn the calories and also in avoiding hypertension. Minimum 30 minutes of exercise is useful. If not daily, then one should exercise at least thrice a week. Brisk walking, swimming, aerobics, light running and yoga, are beneficial exercises to help avoid or control high blood pressure (WHO,2018).

In addition to the emotional discomfort we feel when faced with a stressful situation, the body react by releasing stress hormones like adrenaline and cortisol into the blood. These hormones prepare the body for the "fight or flight" response by making the heart beat faster and constricting blood vessels to get more blood to the core of the body instead of the extremities (A. Logvinenko et al.,2017). Constriction of blood vessels and increase in heart rate does raise blood pressure, but only temporarily when the stress reaction goes away, blood pressure returns to its pre-stress level. This is called situational stress, and its effects are generally short-lived and disappear when the stressful event is over (A. Logvinenko et al.,2017).

Smoking is bad for the lung, in cigarette there is nicotine. This nicotine raises the blood pressure and heart attack. It causes narrowing of arteries and hardens those arteries, this makes the blood more likely to clot (Lenneberg, 2015).

2.3. EMPIRICAL LITERATURE REGARDING HYPERTENSIVE PATIENTS LIFESYLE PRACTICES

Hypertension affects nearly 26 per cent of the adult population worldwide. Estimations of Kearney and colleagues showed that the prevalence of hypertension in 2000 was 26% of the adult population globally and that in 2025 the prevalence would increase by 24% in developed countries and 80% in developing countries (Mondal *et al.*, 2017).

The figures show the threat that hypertension causes across the world, and more particularly in developing countries where Rwanda is situated. Same authors highlight that a nationwide survey conducted in Bangladesh in 2010 revealed the prevalence of hypertension to stand at 17.9%.

According to Bell et al., 2015, statistics demonstrated that 1 in 3 people suffered from hypertension in 2015 in America, with an alarming number of 77.9 million American adults suffering from the disease (Bell et al., 2015). The same authors also highlight that 970 million people worldwide had hypertension, and the statistics showed that by 2025, an estimated 1.56 billion adults would be living with HTN worldwide. It was revealed that the elevation occurrence is similar between both genders but differs with age (Bell et al., 2015).

On one hand, for people aged less than 45 years old, high numbers of high blood pressure are more common in men than women. On the other hand, those with 65 years old or older, high blood pressure affects women more than men (Bell et al., 2015. Additionally, BP values increase with age, and HTN is very common among the elderly (Bell, Twiggs and Olin, 2015). According to the WHO, hypertensive patients aged more than 25 years were at 40 (Kishore et al., 2016).

The study conducted in Canada revealed that 89.6% accepted that blood pressure can be controlled in order improve health of hypertensive patient,81.8% did not know that high blood pressure is hypertension,78.3% did not the important of medication ,97.1%,96.8 did not know the maxima and minima values of blood pressure respectively (Bilal *et al.*, 2015).

In California, the study showed that 50% of the respondents had fats which were saturated, and 73% consumed 2.300mg per day and 84% had cholesterol intake, the study highlighted that 10% of the participants consumed the recommended serving of fruit and vegetables per day (Bergeron et al., 2017).The similar study revealed that only 10% and 14% of male and female adhere to the recommended fiber intake.

The study conducted in Nigeria about perception and practice of lifestyle modification in the management of hypertension among hypertensive patients in south-east Nigeria showed that sixty-five point three percent and 87.1% were knew the best way to attain the healthy weight and they were not aware of salt restriction as the style to control hypertension (Okwuonu et al.,2014).

Though, 12.9% and 44.6% of the participants were aware of regular exercise and smoking cessation respectively are important for good blood pressure control. Furthermore, up to 80% of respondents were not aware of the roles of fruits, vegetables, unsaturated oil and reduced dairy food intake in the control of blood pressure. Lastly, others were not know that reduction of alcohol intake is a part of lifestyle modification in hypertensive patients

(Okwuonu, Emmanuel and Ojimadu, 2014). This shows that the large number of the participants had knowledge gap that can lead to poor adherence to lifestyle practices.

The findings from a study conducted in Ilorin, Nigeria for bankers highlighted alcohol, obesity, high salt intake, certain drugs, stress, emotional problems, and cigarette smoking as the risk factors of hypertension(Salaudeen *et al.*, 2014). Bell et al. 2015' s study demonstrated almost similar findings whereby the risk factors appeared to be overweight or obesity, sedentary lifestyle, tobacco usage, unhealthy diet that is mainly high in sodium, excessive alcohol usage, stress, and diabetes. These same factors need to be controlled for patients with hypertension. They need to adhere to special lifestyle practices that intend to make patients well and more productive. These factors include healthful weight, practice physical regular exercise, to quit smoking, to adopt a healthy diet with low or no sodium, reduction of alcohol consumption and reduction of stress.

In their study, Patnaik et al., 2017 showed that there were increased salt intake (61.8%), obesity (58.8%), family history of HTN (52%), lack of regular exercise (43%), tobacco (39.2%) and alcohol intake (28.4%) among diagnosed Patients of Hypertension (Patnaik et al.,2017) .

In a similar study conducted at Gulf Medical University Ajman, United Arab Emirates, the risk factors known to patients were stress (75.5%), high cholesterol (73.6%), obesity (73.6%), smoking (71.8%), increased salt intake (69.1%), high calorie diet (62.7%) and physical inactivity (47%) (Patnaik *et al.*, 2017) . The national study found that the prevalence of hypertension among people aged 45 years or older was nearly 40% and that over 40% of the hypertensive patients were unaware of their condition, with about half not receiving any medication and in 80% of all the patients, the hypertension was not effectively controlled (Shaya *et al.*, 2013). Poorly controlled hypertension implies poor adherence to lifestyle practices that usually play an important role in keeping hypertension under control.

The patient must be educated by health care providers on these changes like the adoption of the Dietary Approaches to Stop Hypertension (DASH), control of weight in patients who are overweight or obese and reduced salt intake, in those with little physical activity, limited alcohol consumption, smoking cessation and reducing stress (Wright, Main and Branstetter, 2015).

Changes to diet and level of physical activity, and medication is helpful in managing blood pressure for those who are diagnosed with hypertension.

There is much evidence that raised BP throughout its range, starting at 115/75 mmHg, is a major cause of CVD (Wright, Main and Branstetter, 2015).

Based on the fall in BP from a meta-analysis of randomized salt reduction trials, it was estimated that a reduction in salt intake of 6 g/day would reduce strokes by 24% and coronary heart disease by 18%. This reduction would prevent 35 000 deaths due to stroke and coronary heart disease each year in the United Kingdom and 2.5 million deaths worldwide (Hyseni *et al.*, 2017). Another study conducted in Italy evidenced that smoking cession has the impact in reducing BP in a medical records review of patients with hypertension, regularly smoking hypertensive patients were included as a reference group (Polosa *et al.*, 2016). Compared to baseline, at 12 months of follow-up visit 2, decline in cigarette consumption was associated with significant reductions in median (25th-, 75th-centile) systolic BP (140 (134.5, 144) to 130 (123.5, 138.5) mmHg; p< 0.001) and diastolic BP (86 (78, 90) to 80 (74.5, 90) mmHg; p= 0.006).
No significant changes were observed in the control group (Polosa *et al.*, 2016).

Study done in South Korea showed that self-management of hypertension, consisting of regular self-measurements of blood pressure and a simple predetermined titration plan for anti-hypertensive drugs, is more effective in lowering systolic blood pressure than is usual care during 1 year (Han and Park, 2016). The absolute reduction in blood pressure which is equivalent to a reduction in risk of stroke of more than 20% and in coronary heart disease of more than 10% (Han and Park, 2016). Furthermore randomized controlled trials have shown that self-monitoring of blood pressure can lead to blood pressure control that is at least as good as office-monitored blood pressure; it can also result in slightly better control, possibly as a result of better adherence to treatment (Mcmanus *et al.*, 2018).

Different publications have established that multiple factors affect personal attitude towards hypertensions self-management. Those factors include patient 's age, duration since diagnosed with hypertension, education level, income status as well as gender. However family member can also influence such positive behavior toward self -management of hypertensive patient, this was found in cross sectional study done among black living in USA where respondents identified several facilitators including family members' support and positive relationships with doctors and barriers like competing health priorities, lack of knowledge about hypertension, and poor accessibility to community resources that affect

their hypertension self-management (Flynn *et al.*, 2013).

A study conducted in Korea showed that health eating, weight management, and appropriate physical activity are crucial for the managing hypertension in adults, therefore those lifestyle practices reduce the need for medications (Yang *et al.*, 2017)

In Africa, a cross sectional study done in Egypt regarding self-management of hypertensive diseases showed that most of patients (73.4%) had known their diagnosis as hypertensive for more than five years. Forty-one point one percent (41.1%) of participants were nonsmokers, 45.2% stopped smoking and 13.7% continue smoking. This study also found that age, gender and income status were the main factors affecting attitude toward hypertension self-management where young (2.60 ± 0.37) and middle aged patients (2.30 ± 0.42) had significantly higher score than older age (2.10 ± 0.58) and (P= 0.010). Women (2.47 ± 0.40) had significantly higher self- management score than men (2.08 ± 0.54) and (p= 0.000) (Neminqani, El-shereef and Thubiany, 2015). Patients who diagnosed for more than 5 years had significantly higher self-management score (2.28 ± 0.51) than those who diagnosed for less than five years (2.06 ± 0.55) and (P= 0.038)(Neminqani, El-shereef and Thubiany, 2015). In study done among patients among prescribed antihypertensive agents in Korea showed BMI negatively connected with adequate blood pressure control(Yang *et al.*, 2017).

The same study highlights that dietary modifications are known to be beneficial in the treatment of hypertension, including reduction of sodium intake; moderation of alcohol intake; weight loss in overweight or obese individuals; and a diet rich in fruits, vegetables, legumes, and low-fat dairy products, and also low in snacks, sweets, meat, and saturated fat. Individual dietary factors may also be helpful in lowering blood pressure(Yang *et al.*, 2017).

In India, the study on lifestyle pattern and hypertension related knowledge, attitude and practices among diagnosed patients of hypertension attending a tertiary care hospital showed that 50% of hypertensive patients were leading sedentary life and 13.7% of them were practicing fitness activities daily(Patnaik *et al.*, 2017). Eighty-six point three (86.3%) were not practicing regular walking or any fitness activities. Diet were taken in disorder at 78.4%, only 18.6% were taking fruits daily and 81.4% were not taking fruits. Around 41% of the study subjects never used tobacco in any form and 22.5% were smokers. Eight point eight of the subject consumed alcohol , again passive smoking was reported at 12.7% at work place or at home (Patnaik *et al.*, 2017).

The study done in South Ethiopia on lifestyle modification practice and associated factors among diagnosed hypertensive patients in selected hospitals, showed that the mean score for lifestyle modification practice was 40(SD ± 14.36). Only 56(27.3%) patients practiced recommended lifestyle modification. The mean (+SD) score for physical activity was 4.46(±3.45) with the maximum score of 14. Only 33 (16.1%) practiced physical activity for 30 min per day. The mean (+SD) score of weight management practice of the patients were 29.36(±13.43) with the maximum score of 50. Eighty-six (41.9%) had good weight management practice. The mean (±SD) score for low salt diet was 4.59(±2.03). From the patients, 118 (57.5%) practiced recommended low diet salt. One hundred eighty (87.9%) did not drink alcohol in the last 7 days. One hundred eighty-seven (91.2%) were not a smoker(Buda *et al.*, 2017).

Moreover 23 (25%) practiced good lifestyle modification and those who were in treatment for 5 to 10 years (13.6%) practiced good lifestyle modification (Buda *et al.*, 2017).. Those who had a family history of hypertension 20(31.7%) practiced good lifestyle modification. From those who were informed by health professionals 31(35.2%) practiced good lifestyle modification. Twenty three (25.8%) of patients with co-morbidity practiced good lifestyle modification(Buda *et al.*, 2017).

In the same settings the study highlight that the adherence to lifestyle were low (Tibebu and Mengistu, 2017) . The participants' adherence to lifestyle modifications was 23%. The lifestyle adherence was found to be better in females, 69.1% of the respondents adhered to diet-related recommendations, 85.9% of participants were nonsmokers or ceased smoking, and 74.8% of the participants were adherent to moderation of alcohol consumption. Majority (68.6%) of the subjects did not engage in regular physical exercise for at least 3 days of the week with a minimum of 30 min duration. Walking (55.3%) was the most common physical activity among those who were found to be adherent. The study found that the adherence rates of recommended HTN lifestyle modifications were 60% for behaviors related to dietary modification, smoking, and alcohol consumption and were much lower for activities related to physical exercise (Tibebu and Mengistu, 2017) . Majority (34.9%) of the study participants adhered to two components of recommended lifestyle modification followed by those who adhered to three components (29.7%). Respondents who were non adherent to all components of lifestyle modification were 2.2%, and 10.1% were adherent to only one type of recommendation (Tibebu and Mengistu, 2017).

Hypertensive patients get the barriers which prevent them to adhere to lifestyle practice.

In the study conducted in Denmark revealed different barriers which prevent them to not perform physical exercises. The most barriers reported were lack of time, not involve them in doing exercises and the cost to participate in organized activities (Nielsen *et al.*, 2017). Herazo-Beltrán et al., 2017 showed that lack of energy associated with physical condition are the barriers that prevent to do physical activities or exercises. Nielsen et al., 2017, in his study showed that 35% of respondents reported that healthy food takes long time to prepare, and low fat food being too expensive as the barriers that prevent them to not adhere to diet. Financial constraints inhibit hypertensive patients to follow diet which was recommended (Gebrezgi, Trepka and Kidane, 2017).

Respondents reported that alcohol is good for hem even if health care providers advised them to stop. Respondents reported that they stop it when they are at health facility and continue to drink at home (Naanyu *et al.*, 2016). However, the respondent reported that alcohol create for them the time of meeting with their friend (Shrestha *et al.*, 2018).

In Nepal the findings from the study highlighted that respondents were not explained or were not aware on the quantity of salt to taken yet, others reported that their culture oblige them to share the same food, followed with those who said that their family members refused to prepare their own food (Shrestha *et al.*, 2018).

In Nepal, respondents had the barrier to treatment of long term using of antihypertensive drugs, adverse effect of medicine (Devkota *et al.*, 2016). Again in Asmara , respondents reported that they preferred to use traditional medicine like Moringa (Gebrezgi, Trepka and Kidane, 2017).

In Australia, hypertensive patients report that smoking help them for stress management, they reported that it help them to manage their emotions and mood (Twyman *et al.*, 2014).

To manage stress it is not easy in Asmara because hypertensive patients report that they had the responsibility of caring their family members and fear of complications of their condition (Gebrezgi, Trepka and Kidane, 2017).

Hypertensive patients claim lack of blood pressure cuff as barrier to self-monitor at their home (George S. Stergiou et al.,2018).

In Rwanda, the study conducted among employees in Rwanda showed that the prevalence among employees was 36% and the prevalence of employees who were not aware of having hypertension were 33% (Banyangiriki and Phillips, 2013). Again the study found that age, dietary intake, overweight, and physical inactivity were identified as the risk factors of hypertension (Nahimana *et al.*, 2018).The same author have said that increase of hypertension was associated with changing lifestyle resulting in increased prevalence of obesity, alcohol and tobacco consumption as well as physical inactivity.

2.4. CRITICAL REVIEW AND RESEARCH GAP IDENTIFICATION

Different literatures and studies that were consulted demonstrated that hypertensive patients exhibit low adherence to lifestyle practices as a way of controlling hypertension (Nargis Akhter, 2010, Flynn *et al.*, 2013, Han and Park, 2016). It is of paramount importance for healthcare providers to do the needful so that hypertensive patients adopt lifestyle modifications in order to maintain hypertension under control. According to Jiapeng Lu et al., 2017, there is a high prevalence of hypertension among adult people. However, a large majority of them were unaware of their condition, with about half not receiving any medication. Alarmingly, among nearly 80% of all the hypertensive patients, the hypertension was not effectively controlled yet it can be controlled by necessary measures, including non-pharmacological interventions (Jiapeng Lu et al., 2017).

Looking at the literature from Rwanda, there are a lot of gaps with regard to the studies conducted in Rwanda regarding lifestyle practices among hypertensive patients. Therefore, the researcher mitigated this issue by citing some of the content from the developed countries where a lot of studies similar to the current study were conducted.

Additionally, another important content was sourced from African countries that have similarities with Rwanda, including Ethiopia and Kenya among others.

2.5. CONCEPTUAL FRAMEWORK

The conceptual framework was adopted from Health Belief Model(HBM) .It is a framework for motivating people to take positive health action that use the desire to avoid the negative health consequences as the prime motivation (Abraham and Sheeran, 2016). It is important to note that avoiding the negative health consequence is the key element of HBM that helps to control different diseases including chronic non communicable disease like hypertension. HBM was developed in early 1950s by social psychologists Hochbaum,Rosenstock and Kegels (Abraham and Sheeran, 2016).

It has been used with great success for almost half a century to promote greater condom use, seat belt use, medical compliance including adherence to lifestyle practices in chronic diseases such as hypertension ,and health screening use among others.

The components of HBM are six key concepts which are perceived susceptibility, perceived benefits, perveived barriers, perceived severity cues to action and self-efficacy (Abraham and Sheeran, 2016).

The researcher realized that the HBM would guide the study to respond to research questions because lifestyle practices in management of hypertension require the patient to adapt to 6 concepts of HBM. The researcher also believes that through information about life style practices, perceived barriers and cues to action about life style can help hypertensive patients to adhere to the heathy life style practices in managing hypertension as summarized in the figure below, representing the Conceptual framework adopted from Health Belief Model (Abraham and Sheeran, 2016).

HIGH BLOOD PRESURE

PERCEIVED SUSCEPTIBILITY

Socio-demographic factors
Psychosocial factors

PERCEIVED SEVERITY
Complications: stroke, Kidney failure, heart failure
Repeated admissions
Impoverishing expenditures (costs for drugs, hospitalizations and medical/nursing actions)

PERCEIVED BENEFITS OF HTN CONTROL

Physical wellbeing
Psychological wellbeing
Reduced care costs
Reduced hospitalizations
Reduced complications
Increased productivity
Increased socialization

PERCEIVED BARRIERS
Lack of information
Lack of will power
Financial constraints
Time constraints
Service unavailability
Disability

SELF EFFICACY
Training of others
Guidance to peers
Positive reinforcement to self and others

ACTION TAKEN

Salt reduction
Participation in physical activity
Adherence to healthy diet
Adherence to normal weight
Self-monitoring of BP

CUES TO ACTION

Through mass media
Health education from health care providers

BLOOD PRESSURE LOWERING

Figure 1: Conceptual framework : Adopted from Health Belief Model (Abraham and Sheeran, 2016)

CHAPTER THREE: METHODOLOGY

3.1. INTRODUCTION

This chapter provides the description on the site where the study was conducted, the study design, study population and the sampling technique. This chapter also describes the data collection procedures, data collection tool, and the methods that was used in data analysis, the limitations and as well as ethical considerations.

3.2. STUDY DESIGN

The study used a descriptive cross-sectional design which refers to data collected by observing many subjects. The cross-sectional study design helps the research to collect the data at one point in time, allowing the possibility to collect data with limited time that the researcher has.

3.3. STUDY APPROACH

The research approach was quantitative in order to identify lifestyle practices among hypertensive patients.

3.4. RESEARCH SETTING

The study was conducted at Masaka district hospital. Masaka district hospital is a new hospital that has started since 2011. The hospital was built by the Chinese Government in partnership with the Government of Rwanda through the MOH. The hospital was initiated by Rwanda Military Hospital from the beginning up to 2012.

It is the hospital of Kicukiro administrative District located in Kigali City Province with a 162- bed capacity. It is located in Murambi village, Cyimo cell, Masaka sector, Kicukiro District, Kigali City.

3.5. POPULATION

Adult hypertensive patients aged more than 18 years of both genders were the population of this study. To be eligible for the study, this population must be coming `for Non-communicable diseases (NCDs) service visit at Masaka hospital. Any hypertensive patient who comes for NCDs service visit and voluntarily consented for the study was eligible for the study, provided that he/she meets the sampling requirements. This NCDs service allowed the researcher to have maximum number and chance of patients with hypertension since it is one of the most common NCDs. Again, this service receives NCDs patients with different backgrounds and disease condition, rendering possible to have diverse yet necessary information.

3.6. SAMPLING

3.6.1. SAMPLE SIZE

The researcher was used Yamane's formula to calculate the sample size

$$n = \frac{N}{1+N(e)2} = \frac{700}{1+700(0.05)2} = 254.54 \approx 255$$

 n is the sample size

N was the total population

e was the margin error= 0.05

3.6.2. SAMPLING STRATEGY

The researcher used convenience sampling technique depending on the availability of participants at time of researcher visit. The researcher went at the study site from Monday to Wednesday, participants who were available and consented to participate in the study were recruted. The researcher made sure that no participants was duplicated in sampling. This was possible by explaining to the new participants that whoever completed the questionnaire should not complete another one. Two hundred fifty-five hypertensive patients were included in this study after having their signed consent forms as evidence of willing to participate in the study. No hypertensive patients were excluded because of gender.

This convenience sampling was selected by the researcher because there are fixed days that the researcher was at the study site and data were collected in a limited time.

3.6.2.1. Inclusion criteria

The study included adult hypertensive patients aged more than 18 years, coming for their follow-up in the NCDs service. Patients who participate voluntarily in the study as evidenced by the consent form which was signed.

3.6.2.2. Exclusion criteria

Patients who were under 18 years old and who still depend on the parents even if followed at selected area. Patients who were not consented to participate in the study. Participants who come for the first visit at the NCDs service.

3.7. VALIDITY AND RELIABILITY OF RESEARCH INSTRUMENT

Data were collected using a self-administered questionnaire obtained from modifications of a tool from another study. The researcher got the permission to use the tool from the authors of the study entitled" Lifestyle modification practices and associated factors among diagnosed hypertensive patients in selected hospitals, South Ethiopia" (Buda *et al.*, 2017).

The email requesting for the tool was addressed to Lolemo Kelbiso Hanfore on his email address who responded positively granting the permission to use the tool.

The tool of the previous study was made of 29 questions that assessed Socio-demographic characteristics of respondents, Basic Knowledge of Respondents on hypertension, Source of information about lifestyles, health profile of patients and Lifestyle practices.

The tool was valid because it was made of questions adapted from the joint Ethiopian national committee on detection, prevention evaluation and treatment of hypertension. In its added value, the tool also comprised questions from the WHO STEP wise approach to surveillance of non-communicable diseases (Buda *et al.*, 2017).

The reliability and feasibility of the previous study tool were granted by its pre-testing in 5% of total eligible patients in Butajira hospital, which was different from the study setting. The tool was then found to be reliable and consistent before the authors started to collect data of their study (Buda *et al.*, 2017).

Regarding the current study, its tool has two main parts which are of socio-demographic data and lifestyle practices and barriers to lifestyle practices among hypertensive patients.

The questionnaire was made of 39 questions that assessed different aspects related to hypertension, with the focus on lifestyle practices among hypertensive patients. The demographics form included age, sex, marital status, education level, occupation, religion, duration of diagnosis and family history on hypertension. Participants were also questioned whether they had anyone in their family who had hypertension in any form.

The second part is about lifestyle practices and barriers to lifestyle practices among hypertensive patients. Modifications to the previous tool were done by the researcher in order to adapt it to the present study. The reliability and feasibility of the tool was verified by testing the tool, where the Cronbach alpha was reported to be 0.761 making it useful for the current study.

Again, for the current study, some questions removed from the previous tool because they were not meeting the study objectives. Other questions were modified while other new questions were added to the instrument by the researcher to meet the intent of the current study.

The questionnaire was translated in Kinyarwanda as the local language, allowing most of patients to read and understand so as to provide adequate information. The researcher assisted to read and record information for people who were not able to read. Participants who could only read English still had chance to answer questions because the tool was in both English and Kinyarwanda languages. All participants could read and understand Kinyarwanda. However, participants were given details on some technical terms that could not be easily understood or appeared complicated.

In order to ensure confidentiality and anonymity, the respondents were requested to leave the questionnaires in a specified place of the NCDs service after completing and filling them. Furthermore, the questionnaires only contained the code of the respondents so that the researcher could not know who filled the questionnaire.

The questionnaire return rate was 100% because all 255 questionnaires that were distributed to the respondents were returned in entirety.

To assess reliability of the tool, a pilot study was conducted on 20 participants two weeks before data collection. This pilot study was conducted in medical and surgical wards, where some adult patients with hypertension were admitted.

A test re-test reliability was computed using SPSS version 21 in order to get the Cronbach's alpha value which was 0.761. This Cronbach value also helps to grant the feasibility of the study and questions of the tool were understandable.

As the researcher got the permission to use the tool from another researcher, the previous tool had content validity as it was validated by joint national committee on detection, prevention evaluation and treatment of hypertension (JNC7) and WHO STEP wise approach to surveillance of non-communicable diseases (Buda *et al.*, 2017).

The validity of the tool for current study granted since it was revised with the help of the supervisors and amendments were done after the pilot study.

3.8. DATA COLLECTION

A convenience sampling technique was used to collect the data. The researcher went to the study site on three consecutive days of the week, allowing the chance to get the required sample. Since the researcher did not go at the study area all days of the week, the researcher distributed questionnaires to participants who were available at days of site visit, attending the NCDs service.

Patients with hypertension who had inclusion criteria were allowed to participate in the research by using the above sampling strategy. All the necessary information about the study was given to the patients. Participants signed the consent form before participating in the study, demonstrating willingness to participate in this study because participation was voluntary.

Data collection was carried out by the researcher herself. No need of research assistant because the researcher was able to collect the data.

The researcher visited the site after getting letters from the UR administration, requesting permission from the site to allow the researcher to conduct her study. The researcher took the approval letter from the hospital administration. After the permission to conduct the study was granted, the researcher approached the director of nursing of the hospital to orient the researcher to the service staff and participants. The research was conducted on Monday to Wednesday for a two-month period. It took approximately 30-45 minutes for the respondent to complete the questionnaire.

3.9. DATA ANALYSIS

The collected data were summarized and analyzed using descriptive statistics. Tables and graphs were generated.

Association and relationship between variables were analyzed using Statistical Package for the Social Sciences (SPSS) version 21, with the use of Chi-Square tests. The descriptive analysis of the data was performed to all variables. Mean and standard deviation were calculated for continuous variables, especially for dependent variables and some of the independent variables. Tables and line graphs were used for primary data analysis.

3.10. ETHICAL CONSIDERATIONS

The written permission offered by UR to carry out the research was given to the researcher with reference of CMHS/IRB/021/2019.

The researcher submitted the requesting letter to the hospital administration. The letter from the study site authorizing the researcher to conduct the research was given.

All patients were given all details and explanation about the study and sign a consent before participating in the study.

They were explained about the benefits of the study for Rwandan population. They were clearly informed that no remuneration would be given for participation. Participation was totally voluntary and the participant had rights to withdraw at any stage of the study without any consequence.

Participants were informed about the confidentiality of data and anonymity was maintained. No names were required and the information provided was kept for research purposes and not disseminated to other people.

3.11. DATA MANAGEMENT

Data were kept for study use only and they will not be used conflicting to the purpose of the study. They will still be kept unnamed and protected. The questionnaires which were completed were secured in protected area where they should not be available to everybody. Individual laptop was used to keep the data and was saved on the researcher's email in order to prevent the missing of the data. If the laptop is missed or damaged, there will be option to recuperate the data. The data were recorded again and compared to the first ones in order to minimize the possibility of errors.

3.12. DATA DISSEMINATION

After data analysis and discussion of the results, data will be shared to the concerned levels of administration. The researcher disseminated the data, by giving the hard copy of the final project to school level and Masaka hospital. The findings will also be disseminated later via publication in a peer-reviewed journal. The recommendations were given to the different administrations including Masaka district Hospital, UR–CMHS especially the School of Nursing and Midwifery. Recommendations were also addressed to the nurses working at the clinical setting, to the Ministry of Health as well as the University of Rwanda to emphasize on education about lifestyle practices, especially health education to hypertensive patients.

3.13. LIMITATIONS AND CHALLENGES

The challenge of the study is that there were no enough studies about lifestyle practices on hypertension in Rwanda. On the management of hypertension, the protocols indicate that the patient diagnosed with hypertension should start with lifestyles according to the stage of hypertension.

However, no studies have been conducted on lifestyle practices among hypertensive patients in in Rwanda. The researcher used the literature from other countries to mitigate this issue.

During data collection, some patients were not able to fill the tool because of the level of education, while the patients were required to complete the questionnaire at their own. This challenge was mitigated by the researcher who then assisted the respondent to fill the questionnaire. Due to the limitation of time the cross sectional study design was used, limiting the possibility to generalize the findings.

Other challenge for the researcher was to combine the research and the job while the concentration on research was needed. This challenge was mitigated by scheduling activities of the week, whereby the researcher used maximally the first three days of the week for research, and the remaining 2 workdays were devoted to the job issues.

3.14. CONCLUSION TO CHAPTER THREE

The contents of methodology like research design, study area, target population, study sample size, sampling techniques, methods of data collection, data collection instruments and procedures, the data analysis, problems and limitations of the study, as well as ethical consideration were described well in the above contents

CHAPTER FOUR: PRESENTATION OF THE RESULTS

4. 0. INTRODUCTION

This chapter presents the study results obtained after data collection, entering and analysis of those data. These data were analyzed quantitatively by using different series of the computer software. The analysis intended to evaluate the objectives of the research and how they were answered.

The study's main objective was to determine the lifestyle practices among hypertensive patients at Masaka district hospital. The collected data from all participants were analyzed using the Statistical Package for Social Sciences (SPSS), version 21.

Data were presented and analyzed using charts, percentages and frequencies by SPSS software.

The data presented in this chapter came from the hypertensive patients who were available at days of researcher visit to the site in the service of NCDs.

This section intends to demonstrate the demographic information of participants including sex, age, marital status, education level, occupation, religion, duration of diagnosis, as well as family history diagnosis about hypertension.

Sociodemographic characteristics of the respondents are important because some of them can be the risk factors of hypertension.

The table 1 shows the findings from the sociodemographic characteristics of the respondents. Age and sex of participants are important as they can help the researcher to know the participants who are at risk of getting hypertension. Furthermore, they can help the researcher to evaluate those who are able to perform lifestyle practices in order to manage and control hypertension. Marital status is an important factor to evaluate if patient is able to perform lifestyle practices because if a hypertensive patient is a widow and has financial constraints, that patient will not be able to adhere to some of the lifestyles such as affording the costs of fruits and vegetables as well as getting prescribed drugs among others. A married person would more likely get the support from the spouse, and this can impact positively to adherence to lifestyle practices among hypertensive patients.

Education level plays a role in self-care management of hypertension because of different reasons. A person with an advanced level of education may have knowledge on the condition like causes and risk factors for hypertension, preventive measures as well as complications of the disease, which can lead to better management of the condition. In addition, delivering health education regarding self-management of hypertension to a literate person would be easy for him to learn easily and practice. In the opposite way, an illiterate person would learn difficultly and poorly use the information he gets.

Occupation is another fundamental component of sociodemographic characteristics that can impact on self-management of hypertension. With urbanization, some workers can now have jobs which do not allow them move. Some of them are confined in the offices, others drive vehicles because of work requirements, preventing them from regularly exercising, which can then impact negatively on hypertension prevention or its management.

The table 1 which is about sociodemographic characteristics of the respondents demonstrates that the majority of patients were males at 75.3% (n=192) while the females were 24.7% (n=63) of the respondents. Additionally, respondents were predominantly at the primary level of education represented by 54.1% (n=138) of the respondents followed by 9.4% (n=24) at the secondary level of education. Only 7.5% (n=19) of the respondents attended Technical and Vocational Education and Training (TVET) while 2.4% (n=6) of the respondents were at the University level of education. Finally, 26.7% (n=68) of the respondents were not educated.

Regarding the age of the respondents, more than a half of the them were in the age range of 51 to 70 years old, statistically representing 56.7% (n=144) of the respondents. In addition, 16.3% (n=42) of the respondents were aged more than 70 years while the remaining 27 % (n=69) of the respondents were aged less than 51 years, showing the likelihood of getting HTN as the person ages. Without any surprise, there was no respondent whose the age was below 20 years.

Regarding the occupation of the respondents, the table still shows that most of the respondents were crop famers at 81.6% (n=208) and only 0.8% (n=2) of the respondents were educators. Some respondents were business people, drivers and cattle ranchers represented at 9.8% (n=25), 4.3% (n=11) and 3.5% (n=9) respectively.

Concerning the marital status of the respondents, the table 1 shows that the respondents were predominantly married people statistically represented at 50.2% (n=128) of the total respondents. Other marital status categories were widows/widowers represented at 42% (n=107), single people represented at 4.3 % (n=11) and the divorced represented at 3.5% (n=9) of the respondents.

Regarding the religion, the majority of respondents were from Catholic Church at 53.7 %(n=137). They were followed by those from Pentecostal church representing 18.8% (n= 48) of the respondents while 16.5% (n=42) were from the protestant church. Finally, seventh day Adventist and Muslims occupied 7.5% (n=19) and 3.5% (n=9) respectively.

Concerning the duration of HTN diagnosis, the majority of the participants have been diagnosed with HTN in fewer than 5 years from the time of the study as more than 81.6 %(n=208) of the respondents were diagnosed with the disease less than 5 years as in table 1 shows.

Finally, with family background on hypertension, the table 1 also reveals that the majority of the respondents didn't have the hypertension in their family as it is showed at 62% (n=158) of the respondents while 38% (n=97) of the respondents have hypertensive patient(s) in their families.

Table 1: Sociodemographic characteristics of respondents (N=255)

Sociodemographic characteristics	Specifications	Frequency (%)
Age	Less than 20 years	0 (0%)
	21 to 30 years	1 (0.4%)
	31 to 40 years	19 (7.5%)
	41 to 50 years	49 (19.2%)
	51 to 60 years	76 (29.8%)
	61 to 70 years	68 (26.7%)
	71 to 80 years	33 (12.9%)
	81 years and the above	9 (3.5%)
Sex	Female	63(24.7%)
	Male	192(75.3%)
Occupation	Crop farmer	208 (81.6%)
	Cattle rancher	9 (3.5%)
	Educator	2 (0.8%)
	Bus conductor/driver	11 (4.3%)
	Business person	25 (9.8%)
	Other	0 (0%)
Marital status	Single	11 (4.3%)
	Married	128 (50.2%)
	Divorced	9 (3.5%)
	Widow/widower	107 (42%)
Educational level	Primary	138 (54.1%)
	Secondary	24 (9.4%)
	TVET	19 (7.5%)
	University	6 (2.4%)
	No education level	68 (26.7%)
Religion	Catholic	137 (53.7%)
	Protestant	42 (16.5%)
	Seventh-day Adventist	19 (7.5%)
	Pentecostal church	48 (18.8%)

		Muslim	9 (3.5%)
		<2 years	105 (41.2%)
Duration	of	2-5 years	103 (40.4%)
diagnosis		5-10 years	25 (9.8%)
		10 years and above	22 (8.6%)
Family history of		Yes	97 (38%)
HTN		No	158 (62%)

Table 2 is about the lifestyle practices among hypertensive patients. As the table below shows, the patients do not adequately adhere to lifestyle practices. Regarding smoking before getting hypertensive the statistics show that 15% (n=38) of the respondents accepted that they were smokers before they got hypertension while 85 % (n=217) of them reported no history of smoking before getting hypertension. Regarding physical exercise, the findings revealed that 33% (n=83) of the respondents agreed to not do a 30-minute physical activity in the last 7 days of their participation in the study while 67 % (n=172) of the respondents adhere to 30-minute physical activity. Similarly, regarding physical exercise, 26% (n=67) of the respondents accepted to not do specific exercise activity like swimming, walking and others as a way of managing hypertension while the majority represented at 74%(n=188) of the respondents accepted to do specific exercise physical activities.

Regarding drinking alcohol, 42% (n=106) of the respondents accepted to drink more than 2 drinks per day while 58% (n=149) mentioned that they adhere to healthful practice of not drinking excessive alcohol.

On the question that assesses whether respondents have stopped or limited alcohol consumption, the findings revealed that 93% (n=237) of the respondents adhere to healthful lifestyle regarding that aspect while 7% (n=18) of the respondents agreed to stop or limit alcohol consumption to help control of blood pressure.

Regarding taking smoked meats, the respondents accepted that they eat smoked meats at 22% (n=55) while 78% (n=200) of the respondents agreed that they do not eat smoked meats. Regarding eating fruits and vegetables, the respondents mentioned that they do not eat more

than five servings of fruits and vegetables per week at 29% (n=74), while 71% (n=181) of the respondents reported to eat more than five servings of fruits and vegetables per week.

Regarding eating frozen foods, 17% (n=44) of the respondents agreed that they eat the frozen food while83% (n=211) of the respondents accepted to not eat frozen foods.

Ten percent of the respondents (n=26) accepted that they salt the food at the table while 90% (n=229) of respondents do not salt the food at the table.

About eating fatty foods, only 34 % (n=86) of the respondents responded that they eat fatty foods, 66% (n=169) reported that they avoid eating fatty foods. Thirty-one percent (n=78) of respondents agreed that they are not careful about what they eat to manage weight, while 69% (n=177) of the respondents agreed to be careful about what they eat to manage weight.

Most of the respondents reported that they do not read food label at the grocer's shop in order to manage weight at 56%(n=143) while 44%(n=112) of the respondents read food label at the grocer's shop in order to manage weight.

Again, 55% (n=140) of the respondents agreed that they do not do exercise in order to lose or maintain weight while 45% (n=115) of respondents exercise in order to lose or maintain weight while.

Regarding stopping sugar sodas and sweet tea, respondents agreed that they do not stop sugar sodas and sweet tea to manage weight at 33% (n=84, while 67% (n=171) of respondents stop sugar sodas and sweet tea to manage weigh. Thirty percent (n=77) agreed that   that they do not eat smaller portions or eat few portion to manage weight while 70% (n=178) of respondents eat small portions or eat few portion to manage weight.

Regarding medications, the findings reveal that 11% (n=27) of respondents agreed that they do not take medication as prescribed, while   89%(n=228) of respondents agreed to take medication as prescribed.

About smoking, 18% (n=7) of the respondents do not quit or cut down on smoking in order to help control of blood pressure while 82% (n=31) of respondents accepted to quit smoking to help blood pressure control.   Statistic of current study revealed that the majority of respondent do not smoke, the few respondents did not adequately quit smoking

Regarding stress in HTN self-management, 78%(n=199) of the respondents agreed that they get excessively stressed in daily life and few 22% (n=56) of responded are not getting excessively stressed in daily life similar to stress management 59% (n=151) of respondents agreed that they manage the stress and 41% (n=104) of the respondents could not manage stress as measure of controlling blood pressure.

Table 2: The lifestyle practices among hypertensive patients (N=255)

Components of LP	Healthful lifestyle practice		Unhealthful lifestyle practice	
	Frequency	Percentage	Frequency	Percentage
History of smoking before getting hypertensive	217	85%	38	15%
Doing a 30 minute physical activity in the last 7 days	172	67%	83	33%
Doing specific exercise activity like swimming, walking and others	188	74%	67	26%
Drinking regularly more than 2 drinks per day	149	58%	106	42%
Stopping drinking or limiting alcohol consumption to help control blood pressure	237	93%	18	7%
Eating smoked meats	200	78%	55	22%
Eating ≥5 servings of fruits and vegetables per week	181	71%	74	29%
Eating frozen prepared dinners or frozen foods	211	83%	44	17%
Salting the food at the table	229	90%	26	10%
Avoiding eating fatty foods	169	66%	86	34%
Being careful about what the respondent eats to manage weight	177	69%	78	31%
Reading food labels at the grocer's shop in order to manage weight	112	44%	143	56%
Exercising in order to lose or maintain weight	115	45%	140	55%
Stopping sugary sodas and sweet tea to manage weight	171	67%	84	33%
Eating smaller portions or eating fewer portions to manage weight	178	70%	77	30%
Taking blood pressure medications as prescribed	228	89%	27	11%
Quitting smoking or cutting down on smoking to help control blood pressure	31	82%	7	18%
Getting excessively stressed in daily life	56	22%	199	78%

Managing stress as a measure of controlling blood pressure	151	59%	104	41%
Self-monitoring of blood pressure at home	15	6%	240	94%

LP: Lifestyle practices

Regarding an important component of self-monitoring of hypertension, an alarming94% (n=240) of the respondents do not do self-monitoring of blood pressure at home while only 6% (n=15) of the respondents agreed to monitor blood pressure at home as seen in figure 1.

Figure 2. Self-monitoring of blood pressure at home among hypertensive patients (N=255)

Do you perform self-monitoring of blood pressure at home?
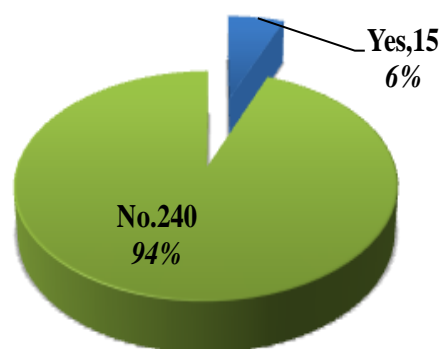
Yes,15
6%

No.240
94%

Table 3 is about getting information to the respondents regarding lifestyle practices
The findings revealed that 100% (n=255) of respondents mentioned that they had heard about lifestyle practices before and 65% (n=165) of them acknowledged to have heard information from the nurses while only 35% (n=90) of the respondents heard information from other sources. Most of the respondents, statistically represented at 89% (n=226) of the respondents, agreed that they were told the blood pressure value in numbers while 11% (n=29) of the respondents were not.

Regarding the target value of blood pressure, the majority of the respondents at 80%(n=203) said that they discussed the target value of blood pressure that is best for them with the health professional, and 20%(52) of the respondents mentioned that they did not discuss the target value of blood pressure with the health professional.

Regarding education, most of the respondents (87% (n=221) agreed that they were educated on types of foods which would help them to control the blood pressure, while the minority represented at 13%(n=34) of the respondents revealed that they were not educated on types of foods which would help them to control the blood pressure.

Table 3: Getting information to the respondents regarding lifestyle practice (N=255)

Getting information to the respondents regarding lifestyle practices		Yes		No	
Components		**Frequency**	**Percentage**	**Frequency**	**Percentage**
Did you hear about lifestyle practices among hypertensive patients before?		255	100%	0	0%
From where did you get information about lifestyle practices in management of hypertension?	From the nurses	165	65%		
	From other source	90	35%		
The last time your blood pressure was measured by a health professional, were you told your blood pressure in numbers?		226	89%	29	11%
Has a health professional ever discussed a target value for your blood pressure, that is, the blood pressure level that is best for you?		203	80%	52	20%
Were you educated on types of food which will help you to control your blood pressure?		221	87%	34	13%

Table 4 shows the barriers that prevent hypertensive patients from adhering to lifestyle practices in the management of their condition. Regarding physical activity, 8.2% (n=21) and 24.3% (n=62) of the respondents reported not to like physical activity and facing time constraints respectively as barriers regarding adherence to lifestyle practices.

Again, 60.8% (n=155) of the respondents highlighted physical condition or health problem as a barrier to lifestyle practices among hypertensive patients. Finally, 6.7% (n=17) of the respondents pointed absence of area for physical exercise as a barrier on adherence to lifestyle practices.

Regarding regularly drinking more than 2 drinks per day, 6% (n=2.4) of the respondents reported not to want to stop /limit alcohol consumption. One point six (n=4) of the respondents believe that alcohol consumption is good for health. Two-point four (n=6), and 0.8(n=2) of the respondents reported not to think that limiting alcohol consumption is important and other reason respectively as barriers on adherence to lifestyle practices.

Regarding limiting the daily salt intake, 35.7% (n=91) of the respondents highlighted that they were not explained the importance of limiting salt followed by those who reported that their family members refuse to prepare their own food at 28.2% (n=72). Lastly, 15.7% (n=40) of the respondents reported that whenever they feel that their blood pressure is controlled well, they eat food with salt while 10.6 % (n=27) of them do not frankly care about salt intake. These have been identified as main barriers to lifestyle practices among hypertensive patients.

Concerning barriers pertaining to weight control, 16.5% (n=42) of the respondents reported that they do not think that weight control or loss is important. Eight point six percent (n=22) of them assume that taking medications to control blood pressure is enough to them while 3.9% (n=10) tried to control their weight but it didn't work. Furthermore, 1.2% (n=3) of the respondents   reported that they do not want to lose their weight. Finally, 69.8% (n=178) of the respondents reported that they managed to control their weight.

Regarding blood pressure medication and barriers to self-management of hypertension, 5.5% (n=14), and 3.5% (n=9) of the respondents reported   to forget to take medication and to reduce dose when they feel well respectively. Finally, 1.6%(n=4) of the respondents mentioned that they do not like tablets. All these barriers that prevent patients from taking medications as prescribed impact negatively to the control of hypertension.

Regarding education on types of food, the findings show that12.5 % (n=32) highlighted the financial constraints as a barrier to self-management of HTN while 7.5% (n=19) of the respondents mentioned that they do not like to eat types of foods specific at controlling

HTN., Statistically, 1.2 (n=3) of the respondents reported that they do not know the kind of food that is recommended for HTN self-management. Finally, 13.3% (n=34) of the respondents mentioned that there are barriers that prevent from adhering to HTN self-management in addition to those mentioned above.

Barriers concerning quitting smoking, 2.4% (n=6) of the respondents considered medications to be enough for managing hypertension, which is not true because self-management of HNT involves multiple approaches.

Regarding stress management, 42.4% (n=108) of the respondents reported family problems, followed by financial constraints at 18% (n=46). Fourteen point one (n=36) of the respondents reported that they were not told that stress can impact negatively the blood pressure, while 3.9% (n=10) of the respondents reported that being diagnosed with hypertension was a challenge to them so that managing hypertension becomes quite difficult to them.

Concerning   self-monitoring of blood pressure at home, an alarming 85.9%(n=219) of the respondents reported lack of materials for self-monitoring of blood pressure as a barrier, and 4.7%(n=12) of the respondents mentioned that they were not told that self-monitoring of blood pressure is important. Lastly 3.5% (n=9) of the respondents reported that they were not educated on the use of materials of taking blood pressure and how to interpret the values, which can have an obvious negative impact on self-monitoring of blood pressure.

Table 4: Barriers to lifestyle practices among hypertensive respondents (N=255)

Barriers to lifestyle practices among hypertensive respondents

Components	Barriers	Frequency	Percentage
Physical exercise	I do not like to physical exercise	21	8.2%
	Time constraints	62	24.3%
	Physical condition or a health problem	155	60.8%
	No available area for physical exercise	17	6.7%
	Other barriers	0	0.0%
Regularly drinking more than 2 drinks per day	I do not want to stop / limit alcohol consumption	6	2.4%
	I believe alcohol is good for health	4	1.6%
	I do not think that limiting alcohol consumption is important	6	2.4%
	Other reasons	2	0.8%
Limiting the daily salt intake	I was not well explained the importance of limiting salt	91	35.7%
	I do not care about salt intake	27	10.6%
	Family members refuse to prepare my own food	72	28.2%
	If I feel my blood pressure is well controlled, I eat food with salt	40	15.7%
	Other reasons	0	0.0%
Control the weight or lose weight	I Control my weight	178	69.8%
	I do not want to control / lose weight	3	1.2%
	I tried to control / lose weight but it- didn't work	10	3.9%
	I Assume that taking medications to control blood pressure is enough	22	8.6%
	I do not think that weight control / weight loss is important	42	16.5%
	Other reason	0	0.0%
Blood pressure	I forget to take my medications	14	5.5%

medications exactly as prescribed	If I feel my blood pressure is well controlled I reduce the dose	9	3.5%
	They have many side effects	0	0.0%
	I do not like tablets	4	1.6%
	Other reason	0	0.0%
	Lack of will/ self-discipline	0	0.0%
	I do not like to eat these types of foods	19	7.5%
	Too costly / financial constraints	32	12.5%
Education on types of food	I do not know that eating these types of foods is recommended	3	1.2%
	Other reasons	34	13.3%
	I do not want to quit / cut down on smoking	0	0.0%
	Taking medications to control blood pressure is enough	6	2.4%
Quit smoking or cut down on smoking	I do not think that quitting / cutting down on smoking is important	0	0.0%
	other reason	0	0.0%
	Financial constraints	46	18.0%
	Family problems	108	42.4%
Excessive stress management	As a result of being diagnosed with hypertension or other disease	10	3.9%
	I was not told that stress can have impact on the blood pressure	36	14.1%
	Other reason	0	0.0%
Self-monitoring of blood pressure at home	Lack of materials for self-monitoring of blood pressure	219	85.9%
	I was not told that self-monitoring of blood pressure is important	12	4.7%
	I was not educated on the use of the machine and interpretation of the value	9	3.5%
	Other reason	0	0.0%

Table five is about the association between lifestyle practices and sociodemographic characteristics of the respondents. The analysis was done by using the Chi-Square test of independence which is used when researcher has two categorical variables from a single

population. The Chi-square whose the value is less than 0.05 indicates the significance between two variables

Some findings appeared statistically significant whereas others appeared not statistically significant.

The table five shows that the majority of the sociodemographic characteristics were not associated with lifestyle practices among hypertensive patients.

There was no statistical significance between history of smoking and age, sex, occupation as well as the level of education.

The same table shows that there is no statistical significance between doing a 30-minute physical activity in the last 7 days and age, sex, occupation, education level, and family history.

Statistics show that there was no relationship between doing specific exercise and age, sex, occupation, educational level and family history of hypertension.

The findings revealed that there was no relationship between drinking regularly more than 2 drinks per day and age.

However, it was realized that there was a significance between history of smoking and family history of hypertension with P-value of 0.002.

Again the same table shows that there was relationship between drinking regularly more than 2 drinks per day and sex with P-value of 0.000

It show that there was high significance between eating smoked meats and sex, occupation and level of education with p-value of 0.024,0.000,0.000 consecutively.

The findings showed that there was high significance between eating frozen prepared dinners or frozen foods and education level with p-value of 0.000

The same table show that there was no relationship between being careful about what the respondent eats to manage weight and age, sex and occupation education level but there was a significance between being careful about what the respondent eats to manage and history of hypertension in the family with p-value of 0.04

As shown on the table 5, there was no relationship between reading food labels at the grocer's shop in order to manage weight and age, sex, occupation, and family history of THN in the family, but there was a relationship between reading food labels at the grocer's shop and educational level with a p-value of 0.001.

Table shows that there was no relationship between stopping sugary sodas and sweet tea to manage weight and sociodemographic characteristics such as age, sex, occupation, level of education and family history.

Regarding eating smaller portion, there was no relationship between eating smaller portions or eating fewer portions to manage weight and age,sex, occupation, education level. However, there is a significance between eating smaller portions or eating fewer portions to manage weight and family history of hypertension with a p-value of 0.003.

The table show that there was no significance between taking blood pressure medications as prescribed and all sociodemographic characteristics.

Regarding quitting smoking, the table shows that there is no relationship between quitting smoking or cutting down on smoking to help control blood pressure and age, sex, occupation, level of education but there was relationship between quitting smoking or cutting down on smoking to help control blood pressure and family history of HTN with a p-value of 0.007.

Concerning stress, the table shows that there is no significance between getting excessively stressed in daily life and age, sex and family history of HTN. However there was significance between getting excessively stressed in daily life and occupation and the level of education with a P- value of 0.003and 0.02 respectively.

As table 5 shows, there is no significance between managing stress as a measure of controlling blood pressure and age, sex, educational level and family history of HTN but there was significance between managing stress as a measure of controlling blood pressure and occupation with a P-value of 0.001.

Lastly there was no significance between self-monitoring of blood pressure at home and all sociodemographic characteristics.

Table 5: The relationship between hypertensive patients' lifestyle practices and sociodemographic characteristics (N=255)

Relationship between lifestyle practices and demographic information.

	Age P-Value	Sex P-Value	Occupation P-Value	Education Level P-Value	Family history P-Value
History of smoking before getting hypertensive	0.289	0.167	0.278	0.287	0.002
Doing a 30 minute physical activity in the last 7 days	0.081	0.256	0.063	0.673	0.273
Doing specific exercise like swimming, walking and others	0.689	0.133	0.536	0.771	0.88
Drinking regularly more than 2 drinks per day	0.24	0.000	0.408	0.658	0.055
Stopping drinking or limiting alcohol consumption to help control blood pressure	0.485	0.148	0.513	0.423	0.67
Eating smoked meats	0.085	0.024	0.000	0.000	0.735
Eating ≥5 servings of fruits and vegetables per week	0.065	0.818	0.6	0.719	0.081
Eating frozen prepared dinners or frozen foods	0.212	0.113	0.875	0.000	0.106
Salting the food at the table	0.523	0.782	0.767	0.137	0.42
Avoiding eating fatty foods	0.378	0.94	0.742	0.096	0.533
Being careful about what the respondent eats to manage weight	0.253	0.097	0.266	0.636	0.04
Reading food labels at the grocer's shop in order to manage weight	0.355	0.625	0.274	0.001	0.875
Exercising in order to lose or maintain weight	0.815	0.055	0.463	0.248	0.08
Stopping sugary sodas and sweet tea to manage weight	0.126	0.488	0.641	0.356	0.403
Eating smaller portions or eating fewer portions to manage weight	0.75	0.522	0.316	0.954	0.003
Taking blood pressure medications as prescribed	0.085	0.594	0.55	0.4	0.409
Quitting smoking or cutting down on smoking	0.098	0.104	0.206	0.764	0.007

to help control blood pressure

Getting excessively stressed in daily life	0.2	0.267	0.003	0.02	0.925
Managing stress as a measure of controlling blood pressure	0.085	0.928	0.001	0.117	0.522
Self-monitoring of blood pressure at home	0.96	0.157	0.804	0.239	0.478

CHAPTER FIVE: DISCUSSION OF THE FINDINGS

5.1 INTRODUCTION

The purpose of this chapter is to discuss the findings from this study considering the study objectives. It shows the comparison of findings and other findings from other studies. Some findings are supported by preceding studies while the others are not supported.

5.2.   INTERPRETATION   AND   DISCUSSION   OF   FINDINGS   FROM DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

The aim of this study was to determine the lifestyle practices among hypertensive patients. As shown in table 1, the majority of the respondents were males, with statistics standing at 75.3% (n=192) of the respondents. These findings can be supported by other studies carried out in India and Ethiopia. The findings from the studies in the aforementioned countries revealed that male patients are mostly affected by hypertension at 55.9 and 52% respectively (Patnaik *et al.*, 2017; Tibebu and Mengistu, 2017). Contrarily to the above studies, the study conducted in Nairobi on association of lifestyle modification and pharmacological adherence on blood pressure control among patients with hypertension demonstrated that   females were predominantly affected than males (Kimani et al., 2019) . The reason for hypertension predominance among males in the current study can be related to numeral factors including the stressful life that most of the males live for family survival and exposure to some risk factors such as alcohol or tobacco consumption among the males.

As shown in table 1, the majority of patients' age range was between 51 and 70 years, represented at 56.7% (n=144). These findings are in support of finding from different studies and literature showing that the blood pressure values increase with age. It has been evidenced that the elderly are more prone to hypertension compared to the young because of physiological changes associated with aging (Sun, 2014; Buford, 2016; Shang *et al.*, 2016). This phenomenon of aging and hypertension can also apply to the current study because as the person ages, there are physiological changes associated with aging, especially in the cardiovascular system that can obviously lead to hypertension.

The same table shows that most of the respondents were crop famers by occupation at 81.6%(n=208).The findings are supported by the findings from the study conducted in Madagascar

on High prevalence of hypertension in an agricultural village in Madagascar where they said that   the majority of participants were farming participants   (Manus *et al.*, 2018). In the Rwandan context, the majority of its population are farmers and they were more likely to fall in the study as the predominant category with regard to the occupation.

The majority 50.2 % (128) of the respondents reported that they were married. Considering that we have seen that hypertension affect person who are in advanced age and most of those patients who are on that range of age most of them are married.

Concerning the level of education, the majority 54.1% (n=138) of the respondents were having primary level of education. In study context, those who have the low level will not be able to manage well the condition like hypertension than those with high level. The more you have high level of education the more you are able to control different conditions. This is supported by the author who said that education can create opportunity for better health (Daniel S. Ntwari, 2016).Regarding Religion   53.7%(n=137) of the respondents were catholic this is due to our country have different religious beliefs and catholic Christian are predominated

Regarding the duration of diagnosis, it demonstrated that the majority of therespondents have been diagnosed with HTN in fewer than 5 years from the time of the study as more than   at 81.6 %(n=208) of the respondents this definitely shows that Rwanda is a developing country with gradually increasing number NCDs patients where hypertension is included(Sarki *et al.*, 2015).

Lastly, for the same table reveal that the majority of respondents didn't have the hypertension in their family as it showed at 62% (n=158) of the respondents. The findings are supported by the study conducted in Iran(Zinat Motlagh *et al.*, 2016) . The findings are not supported by the finding from the study conducted in Sri Lankan adults where the results showed that the prevalence of hypertension was significantly higher in those with a family history of hypertension (Ranasinghe *et al.*, 2015).

5.3 LIFESTYLE PRACTICES

According to the table 2 on lifestyle practices among hypertensive patients, the respondents demonstrated that they do not adhere adequately to lifestyle practices, yet it is mandate for all hypertensive patients to fully adhere to lifestyle practices in management of their condition. The statistics from this study show that an averaged 29 % of the respondents do not behave appropriately with regard to physical exercise component. Again thirty-three percent (n=83) respondents reported not to have done a 30-minute physical activity in the last 7 days of their interview. This shows a poor adherence to lifestyle practices because the WHO recommends that adult hypertensive patients are required to practice at least 300 minutes of physical exercise per week, which is actually equivalent to around 43-minute exercise per day(World Health Organization, 2018). However, the findings of this study are supported by the findings of a study conducted in Serdang Hospital, Selangor, Malaysia, that revealed that the majority 53.5% of patients were physically active(Latiff, 2017) .

 These findings from two studies are not supported by the findings from India where 86.3% were not practicing regular physical activities (Patnaik *et al.*, 2017).In Rwandan context this difference can be due to social and cultural practices and it can be due to the range of aging.

The findings from the same table 2 show that the respondents do not adhere adequately to lifestyle practices concerning alcohol consumption, because 42% (n=106) of respondents accepted to drink more than 2 drinks per day. This is a big number of patients who do not adhere to healthful lifestyle practices with risks of hypertension complications. Furthermore, seven percent (n=18) of the respondents agreed not to limit alcohol consumption to help control of blood pressure. Concerning aspects assessing alcohol consumption and its impact on lifestyle practices, an averaged 24.50% of hypertensive patients do not adhere to alcohol consumption. These results portend for negative outcomes to hypertensive patients because according to the American heart association, it is allowed to only take 2 drinks per day for men and one drink per day for women(American addition center, 2018), which was different from the findings of the current study. The findings of current study are supported by the findings from the study conducted in Addis Ababa which showed that 74.8% of the respondents adhere to alcohol consumption (Tibebu and Mengistu, 2017).

This cannot be considered as a completely good finding because even if the majority of respondents adhere to lifestyle practices, not all of them adhere to lifestyle practices with

regard to alcohol consumption. That would impact negatively to the control of hypertension because that remaining portion of patients still needs to adopt healthful measures.

Statistics from the current study reveal that an averaged 22.4% of hypertensive patients do not adhere adequately to diet intake. It was realized that 29%(n=74) of the respondents reported that they do not eat more than five servings of fruit and vegetables per week. These results indicate negative impact to hypertensive patients because the WHO recommends that even healthy individuals should eat at least 400g or five servings or portion of fruit and vegetables per day in order to reduce the risk of NCDs(WHO, 2018).Therefore, if this is recommended for healthy people, it would be more importance if hypertensive patients take same measures or put an addition in consuming fruits/vegetables compared to the healthy people. Ten percent (n=26) of the respondents reported they add salt in the food at the table which is a very bad habit for hypertensive patients. Even if the salt is important in the body to help nerves and muscles to function well, if is taken in excess quantity it leads to cardiovascular problems. Furthermore, in the dietary approach to stop hypertension (DASH), one of the key principles in hypertension management is to stop or reduce remarkably salt, with special focus on avoiding to add salt in food at the table (Kyu, 2014). Again, these results are not good because the literature from the WHO 2018 recommends to take salt less than 5g as the measure of preventing hypertension, and this would now be special for patients who already suffer from the disease (WHO, 2018). Apart from salt intake, the WHO also recommends that fats should be reduced in order to prevent unhealthy weight gain for the adult population. However, and alarmingly, the findings from the current study revealed that 34%(n=86) of the respondents do not avoid to eat fatty foods, which is not good for hypertensive patients. This is not a good finding on the side of hypertensive patients who also face many complications, and fats with excessive weight gain would contribute to numeral complications.

The findings from the current study showed that 22% (n=55) of the respondents reported to eat the smoked meats, yet it was prove by the literature that eating the smoked meats is very dangerous to health in general, and health of hypertensive patients in particular (Lajous *et al.*, 2014). Frozen foods was reported to be eaten by 17% (n=44) of the respondents which is not good for hypertensive patients. Looking at the figures of adherence to diet among hypertensive patients, it can be concluded that there are many aspects for which hypertensive patients do not adhere to eating healthfully as recommend by the literature.

These findings of poor adherence to healthy diet among hypertensive patients are supported by the findings from the studies conducted in Ethiopia and Kenya that revealed that hypertensive patients are characterized by poor adherence to healthy diet (Buda *et al.*, 2017; Kimani *et al.*, 2019).

Regarding weight in self-management of hypertension, an average of 41% of the respondents do not adhere adequately to weight management. The findings show negative outcome to hypertensive patients because being overweight extra strains on the heart and this increases the risk for developing hypertension or getting the disease complicated (American Heart Association, 2016). Therefore, hypertensive patients who get excessive weight have an increased risk of having their disease poorly controlled with almost persistently high BP values and many complications such as stroke and kidney disease among others. Concerning reading the food label, the majority (56%, n=143) of the respondents reported to not read the food label at the grocer's shop for managing the weight which has negative impact to the blood pressure because some types of food can have impact on weight gain, yet the patient is required to control or reduce weight (Roberto and Khandpur, 2014). Therefore, reading the food label is mandate for people who wish to control their weight, especially hypertensive patients, and this if not done would impact negatively on the patient's health or outcome.

Regarding exercise, 55% (n=140) of the respondents reported to not do exercise for weight management which is not good lifestyle because when exercises are done the calories in the body burned (American Heart Association, 2016).

Concerning stopping sugary sodas and sweet tea 33% (n=84) of respondents agreed to not stop sugar and sweet tea which is not good for their health because this can lead to overweight (WHO,2018).

The findings of current study on weight management are supported by the results from the study conducted on Self-Care behaviors in hypertensive patients in Iran (Zinat Motlagh *et al.*, 2016).

However Aaron K Ho etal.,2016 , their findings in U.S among adults obese do not support the current study because there were a need of improving weight management (Aaron K Ho *et al.*, 2016).

In Rwandan context not adhering adequate on weight management can be caused by socio cultural beliefs, aging related issues and behaviors.

Regarding medications, the findings revealed that 11% (n=27) of the respondents agreed that they do not take medication as prescribed while 89% (n=228) of the respondents agreed that they take medication as prescribed. These cannot totally be considered as good findings because hypertensive patients should adhere to lifestyle practices a hundred percent, 11% who do not adhere to medication is an issue which can put them in problems. These findings from current study are supported by the findings from the study conducted in Northwest Ethiopia, Kenya showing that that hypertensive patient adhere to drug medication as prescribed at 67.2% ,85.2% respectively (Mekonnen *et al.*, 2017; Kimani *et al.*, 2019).Contrary to the study conducted in southern Brazil demonstrated that there was a low adherence 42.65% to drug treatment (Barretol *et al.*, 2015).Other study in Ethiopia revealed that the majority were irregular in taking medication (Patnaik *et al.*, 2017).However, some hypertensive patients in Asmara preferred to take tradition medication (Gebrezgi, Trepka and Kidane, 2017). These can be due hypertensive patient's knowledge.

Statistics of the current study revealed that the majority of the respondents at 82% (n=31) do not smoke, while few respondents did not adequately quit smoking at 18% (n=7). Hypertensive patients should not smoke because smoking increase the risk for the buildup of fatty substances inside the arteries which could accelerate hypertension (American Heart Association, 2016). These current findings are supported by the findings from the study conducted in Ethiopia which show that the majority of respondent ceased smoking at 85.8% (Tibebu and Mengistu, 2017). In the Rwandan context this show that many of Rwandan people know disadvantages of smoking and they may be educated and have knowledge related the complications of smoking

The majority 78% (n=199) of the respondent agreed that they are getting excessively stressed in daily life. These findings are not good to the hypertensive patients because the more exposed to stress the more blood pressure increased due increased secretion of adrenaline and cortisol into the blood (A. Logvinenko et al.,2017). In the hypertensive patients who get stressed only 41% (n=104) are able to manage stress which is not good findings because those who are not able to manage their stress are exposed to different conditions included hypertension.

The finding of current study are supported by the findings from the study conducted at tertiary care hospital where the results showed that high stress was significantly associated with hypertension (Bhelkar *et al.*, 2018).

The other authors highlighted that the more stress increases the more blood pressure increases too (Jadhav *et al.*, 2014). Stress can be increased in this context due to the way of living for different respondents.

An alarming number of 94% (n=240) of the respondents reported not to perform self-monitoring of blood pressure at home. This is an issue of great concern since patients with hypertension are obliged to perform self-monitoring of blood pressure at home. This self-monitoring has been proved to have many benefits compared to office blood pressure measurements, especially with regard to increasing compliance with long-term drug treatment as well as improvement of keeping the disease under control(George S. Stergiou et al.,2018)

5.4 GETTING INFORMATION TO THE RESPONDENTS REGARDING LIFESTYLE PRACTICES

Table 3 is about getting information to the respondents regarding lifestyle practices
The statistic from the study revealed that 100% (n=100) of the respondents responds that they heard about lifestyle practices and this was very important for patient with hypertension to know lifestyle practices since they are very important in improving the reduction of hypertension before and after starting the treatment (Yang *et al.*, 2017) . Most 65% (n=165) of the respondents heard lifestyle from nurses. The findings of the current study are supported by Himmelfarb et al.,2016 by explaining that the nurses are the ones who meet frequently with patients during admission ,, taking vital signs and other related nursing care procedures(Himmelfarb, Commodore-Mensah and Hill, 2016) .

And in our context remember that the nurses are the ones who spend enough hours with the patient, this is the reason why the majority heard information on lifestyle practices from nurses.
Findings in the current study reveal that the few ones 35%(n=90) of the respondents heard lifestyle practices from other source. Findings from the current study are supported by the findings on the study conducted in Durame which showed that the sources of information were health care professionals (Buda *et al.*, 2017) where nurses are take a big part . Most of the respondents 89% (n=226) agreed that they were told the blood pressure in number while 11% (n=29) of the respondents were not told the blood pressure in number.

Regarding target value of the blood pressure, the majority of the respondents 80%(n=203) said that they discussed target value of blood pressure with health professional that is best for them with the health professional, and 20%(n=52) of the respondents said that they did not discussed target value of blood pressure that is best for them with the health professional.

These findings are contrary to the findings in the study conducted in Nepal where the majority of respondents reported that due to limited consultation time, doctors do not explain to them enough about hypertension (Shrestha *et al.*, 2018). Regarding education, the most 87%(n=221) of respondents agreed that they were educated on types of foods which help them to control the blood the pressure, while few13%(n=34) of respondents reveal that they were not educated on types of foods which help them to control the blood pressure. The study conducted in Ghana among final year nursing students who were at the end of completing their diploma program showed education on diet should be provided to the patients not only on died but also all lifestyle modification should be given (Nsiah-asamoah, Setorglo and Mie, 2017).

Normally in Rwandan context it is mandatory that if health care providers receive the clients whatever they do to the patients they have to explain and give patient enough information regarding the procedure or action they want to do to the patient.

5.5 BARRIERS TO LIFESTYLE PRACTICES

As shown in table 4 regarding barriers to adherence on lifestyle practices among hypertensive patients, the findings revealed diversity in barriers to adequate adherence among this category of patients. Concerning physical activity, the majority of the respondents (60%, n=155) highlighted physical condition or health problem as the barrier on adherence to lifestyle practices.

This is not an uncommon finding, because hypertension often affects the elderly who are also exposed to many comorbid conditions associated with aging.

These findings are supported by those from a study conducted in Colombia that also showed that one of the barriers to physical activity among hypertensive patients is lack of energy associated with physical condition or health problem (Herazo-Beltrán *et al.*, 2017). Again the current findings are supported by the findings from the study conducted in African American older adult hypertensive patients which showed that the respondents reported the fear of injury or pain from exercise because of their condition like arthritis (Gebrezgi, Trepka and Kidane, 2017).

However, these findings are not similar with those from the study conducted in India which highlighted tiredness, time factors, lack of family support, embarrassment and absence of faith in exercise as main barriers (George *et al.*, 2016).

Another study highlighted the barriers that are quite different from those mentioned above and the authors mentioned that the respondents reported that climate as reason that prevents them from exercising as well as the workload (Shrestha *et al.*, 2018). This shows that there is a diversity of different barriers that can prevent hypertensive patients from adhering adequately to healthful lifestyle practices and this can impact negatively on their blood pressure control with the risk of complications.

Again, regarding the barriers shows that the respondents reported different views of not stopping or limiting alcohol drinking. Two point four percent (n=6) of the respondents reported not to want to stop /limit alcohol consumption simply while 1.6% (n=4) of the respondents believe that alcohol consumption is good for health. Two-point four (n=6) and 0.8% (n=2) of the respondents reported not to think that limiting alcohol consumption is important and other reason respectively as barriers on adherence to lifestyle practices. This shows a big challenge to the healthcare providers who must necessarily educate patients on harmful effects of alcohol consumption for hypertensive patients.

The findings from the current study are not similar to the previous study conducted in Nepal which showed that the respondents reported headache when they do not drink alcohol, resulting in not stopping drinking alcohol (Shrestha *et al.*, 2018).

The same study revealed that the respondents reported that avoiding or reducing alcohol intake is difficult as alcohol allows them to meet with friends (Shrestha *et al.*, 2018).

The findings from another study revealed that the respondents reported that alcohol was good for them even if health care providers advised them to stop it. The respondents of that study reported that they only stop alcohol when they are at the health facility and drinkalcohol at home (Naanyu *et al.*, 2016).

Statistics from the current study revealed that majority of the respondents highlighted that they were not explained the importance of limiting salt at 35.7%(n=91). The current findings are supported by the findings from the study conducted in Nepal where in their study,

Shrestha et al., 2018 reported that the respondents were not aware on quantity of salt to be taken. This same study showed that the respondents reported that their culture obliged them to share the same food in the family and highlighted that preparing the food separately for their family members is time consuming while others said that their family did not consider their food needs (Shrestha *et al.*, 2018). The aforementioned findings are not similar by the findings in the study conducted among Chinese Canadians with hypertension where some participants reported that they eat unhealthy food because of their living condition, like eating foods from restaurants (Zou, 2019). These findings portend for unhealthy behaviors among hypertensive patients because one of the key approaches of HTN control is healthy eating with focus on salt reduction. Therefore, patients eating the same food with other family members or the food from restaurants are more likely to eat much salt which obviously increases the BP value with risk of complications.

The findings for weight control are not supported by the results from the aforementioned previous studies because for most of the respondents, the barriers were family barriers, healthy foods are not tasty and the living conditions (Shrestha *et al.*, 2018; Zou, 2019).

Regarding the barriers on taking blood pressure medications, the respondents reported different barriers as follows: 5.5% (n=14),3.5% (n=9),1.6%(n=4) of respondents reported to forget to take medication, to reduce dose when they feel well as well as they do not like tablets respectively. These findings are supported by the findings from the study conducted in Nepal showed that the respondents had the barrier to treatment of long term using of antihypertensive drugs, adverse effect of medicine (Devkota *et al.*, 2016). The others had the barriers of not aware taking tablets for lifelong, taking more tablets make them to feel depressed, others reported that they bored to take tablets daily (George *et al.*, 2016) .

However, aforementioned findings are not supported by the findings from Asmara where respondents reported to not use medication because their side effects and they reported that those medicine are nor effective the reason why they preferred to use traditional medicine like Moringa (Gebrezgi, Trepka and Kidane, 2017).

Regarding education on types of food, the majority12.5 %(n=32) respond the financial constraints followed by those who do not like to eat these types of foods at 7.5% (n=19). The same findings from the study in Asmara which supporting the currents findings showing that some of respondents reported that financial constraints inhibit them to follow diet which was

recommended (Gebrezgi, Trepka and Kidane, 2017). The same author, the respondents reported that recommended food are not tasty.

For barriers concerning quitting smoking, the respondents 2.4% (n=6) reported that medications are enough for managing hypertension. The current findings are not supported by the findings from the study conducted in Australia which revealed that quitting smoking is the barrier because smoking help them for stress management, they reported that it help them to manage their emotions and mood, again reported that they lack support from health professionals and other service ,lastly they reported the acceptability of smoking within vulnerable communities (Twyman *et al.*, 2014).

Regarding stress management 42.4%(n=108) and 18%(n=46) of the respondent reported family problems, with financial constraints as barriers to not manage their stress. These findings are supported by the findings in the study conducted in Asmara where the respondents reported that they had the responsibility of caring their family members, this can be including in family problems or in financial constraints, again they reported that fear of complication and modification of life style which create another stress to them (Gebrezgi, Trepka and Kidane, 2017).

An alarming number of 94% (n=240) of the respondents reported not to perform self-monitoring of blood pressure at home 85.9% (n=219) of respondents reported lack of materials for self-monitoring of blood pressure as barrier. This is an issue of great concern since patients with hypertension are obliged to perform self-monitoring of blood pressure at home. These findings are supported by the findings in the study conducted in Asmara in which most of respondents reported that they do not have blood pressure cuff at home and not able to afford it (Gebrezgi, Trepka and Kidane, 2017).

5.6. RELATIONSHIP BETWEEN LIFESTYLE PRACTICES AND SOCIODEMOGRAPHIC CHARACTERISTICS

As shown in table 5 regarding the relationship between sociodemographic characteristics of the respondents and lifestyle practices, the majority of lifestyle were not directly related to the sociodemographic information as shown by most of P values being greater than 0.05. Regarding age there was no relationship between history of smoking before getting hypertensive and age. Given the limited number of sample with a study conducted at one clinical setting, there is a possibility that the majority of the respondents who participated in the study were not the previous smokers. In addition, in the Rwandan culture, the number of people that smoke is not big, portending for the possibility of lacking the relationship between history of smoking and HTN, and the majority of the respondents might have got hypertension without smoking.

Regarding   sex and smoking, the findings reveal that there was no relationship between history of smoking before getting hypertensive and sex. These findings are not supported by the findings from the study conducted in Kenya which revealed that there was relationship between smoking and sex with a P value of 0.000 which was highly statistically significant (Kimani *et al.*, 2019).
.

The findings from this study revealed that there was an association between history of smoking before getting hypertension and family history of hypertension with P-value of 0.002. This can be true because the evidence shows that genetics plays a big role in development of hypertension (Kouremenos *et al.*, 2014) . Similarly, cigarette contains nicotine that raises the blood pressure and can lead to heart attack. Again, it causes narrowing of arteries and hardens those arteries, this makes the blood more likely to clot (Lenneberg, 2015).

Therefore, even the person is not an active smoker, when he lives a family that one or more members smoke, that person can be subject to the second-hand smoking and have a risk to develop HTN. It is obvious that both family history of HTN and family history of smoking can expose to the risk of getting HTN.

In addition, the findings of current study are supported by the findings from systematic review on effect of smoking in developing hypertension conducted in Pakistan which was

showed that smokers have the chance of developing blood pressure compared to non-smokers (Ain and Regmi, 2015).

The findings from the current study showed that there is no relationship between physical activities and sociodemographic characteristics which is unusual, because physiologically when the person gets older the muscles become unable to stretch and this causes the disease to develop, one of the reasons why the elderly can easily develop HTN because they do not do physical activities and this puts them to be at risk of developing hypertension (YinghuiYou *et al.*, 2018). Contrary to those who are able to perform physical activities, they are more likely to be healthy and not develop hypertension. Finally, findings of current study are not supported by the findings in the study conducted in Brazil which showed that there was high significance between physical activity and sociodemographic characteristics (Maciel *et al.*, 2018).

Regarding drinking, the statistical reveal that there was high significance between drinking regularly more than 2 drinks per day and sex. As shown in simple size the majority of participant were the male and they are the one in Africa consume alcohol than women (Bello *et al.*, 2017).

This is supported   by a systematic review and meta-analysis of cohort studies conducted on sex-specific associations between alcohol consumption and incidence of hypertension showed that there was a relationship between drinking alcohol and male gender (Roerecke *et al.*, 2018). This can be related to the Rwandan culture because males are much involved in drinking alcohol compared to the females.

Statistics reveal that there was relationship between eating smoked meats and sex with p-value of 0.024. The research did not find any articles which support or contradict these findings but it could be due to sociocultural background. Men get enough time to go for relaxing, during this they can eat the smoked meats.

Again statistics revealed that there was relationship between eating smoked meats and occupation with p-value of 0.000 which is highly significant. This finding is not common but this relation may occur because of the categories of hypertensive patients and their level of understanding as well as their knowledge.

Regarding smoked meats, the findings showed that there was a relationship between smoked meats and level of education with p-value of 0.000 which is highly significant. This is unusual because the more patients are educated the more they are able to prevent some disease conditions. Someone with high education knows the disadvantage of eating smoked meats and takes measure to not eating these meats.

The findings of the current study revealed that there was no significance between eating ≥5 servings of fruits and vegetables per week and sociodemographic characteristics which is unusual because, for occupation and education when patient is educated and have the occupation which give him/her the enough money, patient will be able to buy fruits and vegetables which will involve in prevention of disease condition like hypertension.

Concerning frozen foods, the findings from current study showed that there was association between eating frozen prepared dinners or frozen foods and level of education. This could be understood because this frozen foods are eaten by working people because they are the one who are able to buy those kind of foods (Salehuddin and Zahari, 2015). Patient who uses to eat those foods are not able to manage and control hypertension.

The findings revealed that there was relationship between being careful about what the respondent eats to manage weight and family history of hypertension with p-value of 0.04. This is supported by Parmar et al.,2015 where they showed that high prevalence of hypertension can be caused by eating habits (Parmar et al.,2015).The family history is essential in refining the cause of hypertension because if people pay attention in their eating habits without eating whatever they want, this will be very important in prevention of hypertension.

Regarding food label, the findings revealed that that there was an association between reading food labels at the grocer's shop in order to manage weight and level of education with p-value of 0. 001.These findings are supported by the findings from the study conducted in which showed that when people read and understand nutrition information on the food package, could leads to improvement of foods choice by instillation of eating habits (Chopera et al., 2014). For hypertensive patients who do not know to read they will buy without reading then take that nutrition which can increase the fats and become unable to manage the weight.

Regarding exercise for maintaining weight, the findings showed that there was no relationship between exercising in order to lose or maintain weights and sociodemographic

characteristic. However, the findings from the study conducted in Brazil on revealed that there was an association between sex, age, education and marital status and self-care practices indicate the possibility of follow-up (Suelly et al., 2018). This meaning that hypertensive patients will manage their weight depend on sociodemographic characteristics. These findings are uncommon because hypertensive patient who are able to perform physical exercise depend on their ages this will help them to manage and control hypertension. Again those who work in the office without having the time of exercise their weight will not be managed. Lastly hypertensive patients who are educated and know the advantages of physical exercise will prevent chronic disease included hypertension by managing their weight.

Concerning stopping sugar, the findings revealed that there was no relationship between stopping sugary sodas and sweet tea to manage weight and sociodemographic characteristics as shown by p-value greater than 0.05. These findings are not common because in the study conducted in Columbia which had the purpose of   assessing the relationship between consumption of sugar - other sheeted drinking and sociodemographic characteristics revealed that sex, age, education level, as well as the income are linked with an increased probability of sugar-sweetened beverages consumption (Mendy and Vargas, 2017). This meaning that reduction of those beverage drinking could help in reducing hypertension.

The findings of current study showed that there was relationship between eating smaller portions or eating fewer portions to manage weight and family history of hypertension. The more patient eats small amount of food which are healthy the weight will be decreased and this could help in prevention of hypertension.

Concerning medication, the statistics revealed that there was no relationship between taking blood pressure medications as prescribed and sociodemographic characteristics. As shown in demographic characteristics the majority of participant were in advanced age, and people who are it that range of age are prone to forget. Concerning education, the hypertensive patients who are educated are able to take medication as ordered compare to those who are not educated they could take medication whenever they remember .These findings are not commonly because the study conducted in urban which had the purpose of assessing the factors influencing compliance   showed that age, education and social class influence compliance of medication (Acharya, 2014).

Regarding quitting smoking, the findings revealed that there was association between quitting smoking or cutting down on smoking to help control blood pressure and family history of hypertension with p-value of 0.007. This might be due to the fact that with history of hypertension in the family, people from that family can easily understand that smoking is bad for hypertension with the likelihood of quitting smoking or cutting down on smoking when the person gets hypertension.

Regarding stress, the findings of current study revealed that there was relationship between getting excessively stressed in daily life and occupation with p-value of 0. 003. These findings are supported by the findings from the study on cause and prevention of occupation stress which revealed that stress is a part of people life and this may occur due to environment where people work. The same study showed that stress is unavoidable and that organizational change my lead to the stress which, when it is prolonged, leads to cardiovascular diseases where including hypertension (Quick and Henderson, 2016; Mustafa *et al.*, 2017). The same point of stress, the findings of the current study showed that there was relationship between managing stress as a measure of controlling blood pressure and occupation with p-value of 0.001. This could be due to how individual adapts to the situation and takes the measures of adapting to the stress.

Concerning self-monitoring of blood pressure at home, the findings revealed that there was no relationship between self-monitoring of blood pressure at home and sociodemographic characteristics as P values are greater than 0.05. This can be related to be context of the respondents who might be from diverse regions and backgrounds with probable limited knowledge or financial constraints preventing them from getting materials for self-monitoring of blood pressure or use them appropriately.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. INTRODUCTION

This chapter contains conclusion and recommendations. It summarizes the results base on the objectives of the study, and recommendations are mentioned base on the study findings.

The recommendations are mentioned and addressed to the different levels of administration in order to improve the way of educating patients in nursing practice, educating the students about lifestyle practices and how they should prevent NCDs and lastly continue to do the different researches in order to see how they can improve.

6.2. CONCLUSION

The study was conducted among hypertensive patients at Masaka district hospital with aim of determining the lifestyle practices among hypertensive patients. The specific objectives were:1. To identify the lifestyle practices among hypertensive patients.2. To identify the barriers to lifestyle practices among hypertensive patients.3. To establish the relationship between hypertensive patient's lifestyle practices and sociodemographic characteristics. The research questions were formulated based specific objectives. Data collection was done by using self-administered questionnaire. The following findings are followed according to the objectives.

The majority 85% (n=217) of the respondents were healthful in term of history of smoking while few 15%(n=38) of the respondent were having the history of smoking which is unhealthful.

The majority 67%(n=172) of the respondents did a 30 minutes of physical activity in last 7 days. While 33%(n=83) did not do so. Again, 74% (n=188) of the respondents did specific activities.

The respondents 58% (n=149) reported to not drink more than two drinks per day while 42% drink more than 2 drinks per day.

The majority 78% (n=200) of the respondents did not eat smoked meats while 22%(n =55) of respondents eat smoked meats. The majority of the respondents reported to eat ≥5 servings of fruits and vegetables per week with 29%(n=74) reported to not eat more than 5 serving of fruit and vegetables. The respondents refused to eat frozen food, and few of them agreed to

eat frozen food. Only 10%(n=26) of the respondents add salt in the foods at the table. Only 34%(n=86) agreed to eat fatty food. The respondents reported to not careful about what they eat in order to manage their weight. Again, around a half at 56%(n=143) of the respondents do not read food labels at the grocer's shop in order to manage weight Exercise were reported to be low in management of HTN at 55% (n=140). Some of the respondents reported to drink sugary and sweet tea.

The majority of the respondents reported to have stress in their daily like and many 59% (n=151%f them are able to manage stress while 41%(n=41) of the respondents are not managing stress.

The most 94% of the respondents do not monitor blood pressure at home.

Even if the majority of hypertensive patient adhere to lifestyle practices, the others do not adhere lifestyle due to different sounding reasons.

The participants who reported to not practice lifestyle also mentioned different reasons that prevent them from adhering to lifestyle practices.

Regarding the relationship, there was a relationship between history of smoking before getting hypertensive and family history of hypertension with P-value of 0.002

There was a high significance between drinking regularly more than 2 drinks per day and sex with P-value of 0.000

Regarding frozen foods, there was the relationship between eating frozen prepared dinners or frozen foods and education level with p-value of 0.000. There was relationship between reading food labels at the grocer's shop in order to manage weight and level of education P-value 0.001. The findings revealed that there was relationship between eating smaller portions or eating fewer portions to manage weight and family history of hypertension with P value 0.003.

The findings of the study revealed that there was relationship between quitting smoking and family history of hypertension with P- value of 0.007.

The relationship was found between stress in daily life and occupation with 0.003. Lastly, the findings revealed that there was relationship between managing stress as a measure of controlling blood pressure and occupation with P-value of 0.001.

6.3. RECOMMENDATIONS

The recommendations were elaborated according to the gaps identified and they were addressed to different levels of decision making.

6.3.1. AT MASAKA DISTRICT HOSPITAL

Since it was realized that not all the patients adhere to lifestyle practices, yet they are much valuable in maintaining blood pressure within normal or near normal range. Therefore, when the blood pressure is not well controlled, patients are at risk of complications.

The nurses should improve their health education to patients with hypertension and emphasize on lifestyle practices in order to help those who do not adhere adequately to lifestyle practices.

Additionally, it is a mandate for the nurses in collaboration with the administration to make follow-up on additional factors that contribute to the occurrence of high level of complications among hypertensive patients, because some of the respondents mentioned that they adhered to lifestyle practices despite having high blood pressure values.

The nurses should finally emphasize on education about self-care monitoring especially at home, because even if patients reported financial constraints, some can still afford the price of the BP machine but they might have low knowledge on the importance of blood pressure self-monitoring at home or the use of the machine.

6.3.2. TO THE UNIVERSITY OF RWANDA

The lecturers are required to emphasize on the importance of health education among hypertensive patients and the use of non-pharmacological methods in hypertension management in addition to the use of drugs. The lecturers are required to take measures of educating the students early on the usefulness of health education to hypertensive patients as they are future nurses.

The University of Rwanda should encourage the students and the staff for further research at the different areas related to hypertension with focus on lifestyle practice in management of hypertension.

6.3.3. AT THE MINISTRY OF HEALTH

Community awareness is needed to make all individuals aware of NCDS, not only for those who are sick, but also those who are healthy in order to help them to prevent NCDs by using lifestyle practices.

The Ministry of Health should encourage the nurses for further researches and provide the continuous refresher courses to the nurses because they constitute the largest part of healthcare personnel and they are at the best position to directly and continuously provide health education to the hypertensive patients

REFERENCES

A. Logvinenko, L. Mishchenko, E. Kupchynskaja, O. G. and T. Ovdiienko, V. Bezrodnyi, M. M. (2017) 'LEFT VENTRICULAR REMODELING IN PATIENTS SPECIFIC ALTERATIONS Copyright © 2017 Wolters Kluwer Health , Inc . All rights reserved .', 35(September), p. 2017.

A Lala, M. (2015) 'Effects of Dietary Salt on Blood Pressure', *Endocrinology & Metabolic Syndrome*, 04(02). doi: 10.4172/2161-1017.1000175.

Aaron K Ho *et al.* (2016) 'Achieving Weight Loss and Hypertension Control among Obese Adults: A US Multidisciplinary Group Practice Observational Study', *American Journal of Hypertension*, 29(8), pp. 984–991. doi: 10.1093/ajh/hpw020.

Abegaz, T. M., Tefera, Y. G. and Befekadu Abebe, T. (2017) 'Target Organ Damage and the Long Term Effect of Nonadherence to Clinical Practice Guidelines in Patients with Hypertension: A Retrospective Cohort Study', *International Journal of Hypertension*, 2017. doi: 10.1155/2017/2637051.

Abraham, C. and Sheeran, P. (2016) 'The Health Belief Model', (January).

Acharya, I. (2014) 'Sociodemographic factors in fl uencing compliance of medication in an urban OPD setting', 41(2), pp. 101–107. doi: 10.4103/0974-5009.132842.

Ain, Q. U. and Regmi, K. (2015) 'The effects of smoking in developing hypertension in Pakistan: A systematic review', *South East Asia Journal of Public Health*, 5(1), pp. 4–11. doi: 10.3329/seajph.v5i1.24845.

American addition center (2018) 'High blood pressure from ahcohol consumption'.

American Heart Association (2016) 'Managing Weight to Control High Blood Pressure'. Available at: https://www.google.com/search?q=Managing+Weight+to+Control+High+Blood+Pressure&oq=Managing+Weight+to+Control+High+Blood+Pressure&aqs=chrome..69i57j69i60.10577j0j4&sourceid=chrome&ie=UTF-8.

Aronow, W. S. (2017) 'Lifestyle measures for treating hypertension', *Archives of Medical Science*, 5(December 2016), pp. 1241–1243. doi: 10.5114/aoms.2017.68650.

Atieno, L. (2018) 'How effective are strategies for non-communicable disease prevention?' Available at: editorial@newtimes.co.rw.

Banyangiriki, J. and Phillips, J. (2013) 'Prevalence of Hypertension among Working Adults in Rwanda', 42(8), pp. 925–926.

Barretol, M. da S. *et al.* (2015) 'Prevalence of non-adherence to antihypertensive pharmacotherapy and associated factors.', *Revista brasileira de enfermagem*, 68(1), pp. 54-60,60-67. doi: 10.1590/0034-7167.2015680109p.

Bell, K., Twiggs, J. and Olin, B. R. (2015) 'Hypertension : The Silent Killer : Updated JNC-8 Guideline Recommendations', *Alabama Pharmacy Association*, pp. 1–8. doi: 0178-0000-15-104-H01-P.

Bello, B. *et al.* (2017) 'Alcohol use and sexual risk behaviour among men and women in inner-city Johannesburg , South Africa', 17(Suppl 3). doi: 10.1186/s12889-017-4350-4.

Bergeron, N., Al-Saiegh, S. and Ip, E. J. (2017) 'An analysis of California pharmacy and medical students' dietary and lifestyle practices', *American Journal of Pharmaceutical Education*, 81(8), pp. 56–64. doi: 10.5688/ajpe5956.

Bhelkar, S. *et al.* (2018) 'Association between Stress and Hypertension among Adults More Than 30 Years: A Case-Control Study', *National Journal of Community Medicine*, 9(6), pp. 430–433. Available at: www.njcmindia.org.

Bilal, M. *et al.* (2015) 'Knowledge, Awareness and Self-Care Practices of Hypertension Among Cardiac Hypertensive Patients', *Global Journal of Health Science*, 8(2). doi: 10.5539/gjhs.v8n2p9.

Buda, E. S. *et al.* (2017) 'Lifestyle modification practice and associated factors among diagnosed hypertensive patients in selected hospitals ',. Clinical Hypertension, pp. 1–9. doi: 10.1186/s40885-017-0081-1.

Buford, T. W. (2016) 'Hypertension and Aging HHS Public Access', *Ageing Res Rev*, 26, pp. 96–111. doi: 10.1016/j.arr.2016.01.007.

Chisolm, O. E. (2017) 'Pathophysiology of Hypertension and Hypertension Management'.

Chopera, P., Chagwena, D. T. and Mushonga, N. G. T. (2014) 'Food label reading and understanding in parts of rural and urban Zimbabwe', 14(3), pp. 576–584.

Daniel S. Ntwari (2016) *Non communicable diseases on rise in Rwanda*. Available at: https://societyhealth.vcu.edu/media/society-health/pdf/test-folder/CSH-EHI-Issue-Brief-2.pdf.

Devkota, S. *et al.* (2016) 'Barriers to Treatment and Control of Hypertension among Hypertensive Participants: A Community-Based Cross-sectional Mixed Method Study in Municipalities of Kathmandu, Nepal', *Frontiers in Cardiovascular Medicine*, 3(August). doi: 10.3389/fcvm.2016.00026.

Dorans, K. S. *et al.* (2018) 'Trends in Prevalence and Control of Hypertension According to the 2017 American College of Cardiology/American Heart Association (ACC/AHA) Guideline', pp. 1–11. doi: 10.1161/JAHA.118.008888.

El-hay, S. A. A. and Mezayen, S. E. El (2015) 'Knowledge and Perceptions Related to Hypertension , Lifestyle Behavior Modifications and Challenges That Facing Hypertensive Patients Abstract ':, 4(6), pp. 15–26. doi: 10.9790/1959-04611526.

Farhud, D. D. (2015) 'Impact of lifestyle on tuberculosis ingentaconnect', *Iranian Journal of Public Health*, 44(11), pp. 1442–1444.

Flynn, S. J. *et al.* (2013) 'Facilitators and barriers to hypertension self-management in urban African Americans: Perspectives of patients and family members', *Patient Preference and Adherence*, 7, pp. 741–749. doi: 10.2147/PPA.S46517.

Gebrezgi, M. T., Trepka, M. J. and Kidane, E. A. (2017) 'Barriers to and facilitators of hypertension management in Asmara, Eritrea: patients' perspectives', *Journal of health, population, and nutrition*. Journal of Health, Population and Nutrition, 36(1), p. 7. doi: 10.1186/s41043-017-0090-4.

Gebrihet, T. A. *et al.* (2017) 'Awareness , treatment , and control of hypertension is low among adults in Aksum town , northern Ethiopia : A sequential quantitative-qualitative study', pp. 1–16.

George, N. *et al.* (2016) 'Barriers to healthy lifestyle among people with known diabetes and hypertension in selected villages of Lakkur PHC, Kolar District', *National Journal of Community Medicine│Volume*, 7(7), pp. 577–581. Available at: www.njcmindia.org.

George S. Stergiou, Anastasios Kollias, Takayoshi Ohkubo, Kazuomi Kario, Richard J. McManus, G. P. & Y. I. M. (2018) 'Home blood pressure telemonitoring in the 21st century', *Journal of Clinical Hypertension*, 20(7), pp. 1128–1132. doi: 10.1111/jch.13305.

Ha, N. T. *et al.* (2014) 'Quality of life among people living with hypertension in a rural Vietnam community', *BMC Public Health*, 14(1), pp. 1–9. doi: 10.1186/1471-2458-14-833.

Han, Y. and Park, Y. (2016) 'Effects of the Hypertension self-management Program', 7, pp.

48–51.

Herazo-Beltrán, Y. *et al.* (2017) 'Predictors of perceived barriers to physical activity in the general adult population: a cross-sectional study', *Brazilian Journal of Physical Therapy*. Association internationale de psychologie du travail de langue française (AIPTLF), 21(1), pp. 44–50. doi: 10.1016/j.bjpt.2016.04.003.

Himmelfarb, C. R. D., Commodore-Mensah, Y. and Hill, M. N. (2016) 'Expanding the Role of Nurses to Improve Hypertension Care and Control Globally', *Annals of Global Health*. Elsevier Inc, 82(2), pp. 243–253. doi: 10.1016/j.aogh.2016.02.003.

Hyseni, L. *et al.* (2017) *Systematic review of dietary salt reduction policies : Evidence for an effectiveness hierarchy ?*

Jadhav, S. B. *et al.* (2014) 'Stressing "mental stress" in hypertension: A rural background study', *Journal of Clinical and Diagnostic Research*, 8(6), pp. 7–10. doi: 10.7860/JCDR/2014/8209.4506.

Jardim, T. V. *et al.* (2018) 'Multidisciplinary treatment of patients with diabetes and hypertension : experience of a Brazilian center', *Diabetology & Metabolic Syndrome*. BioMed Central, pp. 4–11. doi: 10.1186/s13098-017-0305-2.

Katende, G., Groves, S. and Becker, K. (2014) 'Hypertension Education Intervention with Ugandan Nurses Working in Hospital Outpatient Clinic: A Pilot Study', *Nursing Research and Practice*, 2014, p. 710702. doi: 10.1155/2014/710702.

Kimani, S. *et al.* (2019) 'Association of lifestyle modification and pharmacological adherence on blood pressure control among patients with hypertension at Kenyatta National Hospital, Kenya: A cross-sectional study', *BMJ Open*, 9(1). doi: 10.1136/bmjopen-2018-023995.

Kishore, J. *et al.* (2016) 'Prevalence of Hypertension and Determination of Its Risk Factors in Rural Delhi', 2016.

Kouremenos, N. *et al.* (2014) 'Genes and genetic variations involved in the development of hypertension: Focusing on a Greek patient cohort', *Hellenic Journal of Cardiology*, 55(1), pp. 9–16.

Kyu, S. (2014) 'Dietary salt intake and hypertension', *Artemia Biology*, 5997, pp. 75–92. doi: 10.1201/9781351069892.

Lajous, M. *et al.* (2014) 'Processed and unprocessed red meat consumption and hypertension

in women', *American Journal of Clinical Nutrition*, 100(3), pp. 948–952. doi: 10.3945/ajcn.113.080598.

Latiff, L. A. (2017) 'Physical Activity and Quality of Life of Hypertensive Patients', (August).

Lenneberg, A. (2015) 'Europe PMC Funders Group Effect of Smoking on Blood Pressure and Resting Heart Rate : A Mendelian Randomisation Meta-Analysis in the CARTA Consortium', 8(6), pp. 832–841. doi: 10.1161/CIRCGENETICS.115.001225.Effect.

Lu, J. *et al.* (2017) 'Prevalence, awareness, treatment, and control of hypertension in China: data from 1·7 million adults in a population-based screening study (China PEACE Million Persons Project)', *The Lancet*. Elsevier Ltd, 390(10112), pp. 2549–2558. doi: 10.1016/S0140-6736(17)32478-9.

Maciel, N. M. *et al.* (2018) 'Sociodemographic factors, level of physical activity and health-related quality of life in adults from the north-east of São Paulo, Brazil: A cross-sectional population study', *BMJ Open*, 8(1), pp. 1–11. doi: 10.1136/bmjopen-2017-017804.

Manus, M. B. *et al.* (2018) 'High prevalence of hypertension in an agricultural village in Madagascar', *PLoS ONE*, 13(8), pp. 1–12. doi: 10.1371/journal.pone.0201616.

Mcmanus, R. J. *et al.* (2018) 'Efficacy of self-monitored blood pressure , with or without telemonitoring , for titration of antihypertensive medication (TASMINH4): an unmasked randomised controlled trial', pp. 949–959. doi: 10.1016/S0140-6736(18)30309-X.

Mekonnen, H. S. *et al.* (2017) 'Drug adherence for antihypertensive medications and its determinants among adult hypertensive patients attending in chronic clinics of referral hospitals in Northwest Ethiopia', *BMC Pharmacology and Toxicology*. BMC Pharmacology and Toxicology, 18(1), pp. 1–10. doi: 10.1186/s40360-017-0134-9.

Mendy, V. L. and Vargas, R. (2017) 'Sugar-Sweetened Beverages and Mississippi Adults', (December). doi: 10.5888/pcd14.170268.

Mills, K. T. *et al.* (2017) 'HHS Public Access', 134(6), pp. 441–450. doi: 10.1161/CIRCULATIONAHA.115.018912.Global.

Ministry of Health (2015) 'REPUBLIC OF RWANDA Rwanda Non-communicable', (November).

MOH (2015a) 'REPUBLIC OF RWANDA Rwanda Non-communicable', (November), p. 20.

MOH (2015b) 'Rwanda Non-communicable Diseases Risk Factors Report'.

Mondal, R. N. *et al.* (2017) 'Prevalence and Risk Factors of Hypertensive Retinopathy in Hypertensive Patients', *Journal of Hypertension: Open Access*, 06(02), pp. 1–5. doi: 10.4172/2167-1095.1000241.

Mustafa, M. *et al.* (2017) 'Causes and Prevention of Occupational Stress', (November 2015). doi: 10.9790/0853-1411898104.

Naanyu, V. *et al.* (2016) 'Barriers Influencing Linkage to Hypertension Care in Kenya: Qualitative Analysis from the LARK Hypertension Study', *Journal of General Internal Medicine*, 31(3), pp. 304–314. doi: 10.1007/s11606-015-3566-1.

Nahimana, M. *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, pp. 1–11. doi: 10.1186/s12889-017-4536-9.

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', 4(12), pp. 1705–1714.

Nielsen, J. B. *et al.* (2017) 'Barriers to lifestyle changes for prevention of cardiovascular disease - a survey among 40-60-year old Danes', *BMC Cardiovascular Disorders*. BMC Cardiovascular Disorders, 17(1), pp. 1–8. doi: 10.1186/s12872-017-0677-0.

Njambi, O. and Tanui, A. (2014) 'Lifestyle modification in prevention of hypertension : Patient empowerment'.

Nsiah-asamoah, C., Setorglo, J. and Mie, J. B. (2017) 'Nutritional Counseling for Hypertensive Patients : Have Final-Year Nursing Students Learnt Enough to Be Able to Offer Advice to Such Patients ?', 2017.

Okwuonu, C. G., Emmanuel, C. I. and Ojimadu, N. E. (2014) 'Perception and practice of lifestyle modification in the management of hypertension among hypertensives in south-east Nigeria', *International Journal of Medicine and Biomedical Research*, 3(2), pp. 121–131. doi: 10.14194/ijmbr.3.2.8.

Parmar, J. *et al.* (2015) 'Correlation of body mass index , dietary habits , and family history with hypertension in adolescents', 4(6), pp. 849–852. doi: 10.5455/ijmsph.2015.19092014175.

Patients, H. *et al.* (2016) 'Primary Health Care : Open Access Knowledge , Attitude and

Practice Regarding Lifestyle Modification of', 6(1), pp. 1–4. doi: 10.4172/2167-1079.1000218.

Patnaik, L. *et al.* (2017) 'Lifestyle Pattern and Hypertension Related Knowledge , Attitude and Practices among Diagnosed Patients of Hypertension Attending a Tertiary Care Hospital', 8(4), pp. 108–111.

Peberdy, V. (2016) 'Hypertension: Putting the pressure on the silent killer', *International Federation of Pharmaceutical Manufacturers & Associations*, (May). Available at: https://www.ifpma.org/resource-centre/hypertension-putting-the-pressure-on-the-silent-killer/.

Polosa, R. *et al.* (2016) 'Blood Pressure Control in Smokers with Arterial Hypertension Who Switched to Electronic Cigarettes', pp. 1–14. doi: 10.3390/ijerph13111123.

Poulter, N. R. (2015) 'Hypertension', *Annals of internal medicine*, 386(9), pp. 1–12. doi: 10.7326/AITC201905070.

Quick, J. C. and Henderson, D. F. (2016) 'Occupational Stress : Preventing Suffering , Enhancing Wellbeing †', pp. 1–11. doi: 10.3390/ijerph13050459.

Ranasinghe, P. *et al.* (2015) 'The influence of family history of Hypertension on disease prevalence and associated metabolic risk factors among Sri Lankan adults Chronic Disease epidemiology', *BMC Public Health*. BMC Public Health, 15(1), pp. 1–9. doi: 10.1186/s12889-015-1927-7.

Roberto, C. A. and Khandpur, N. (2014) 'Improving the design of nutrition labels to promote healthier food choices and reasonable portion sizes', *International Journal of Obesity*. Nature Publishing Group, 38(SUPPL. 1), pp. S25–S33. doi: 10.1038/ijo.2014.86.

Roerecke, M. *et al.* (2017) 'The effect of a reduction in alcohol consumption on blood pressure: a systematic review and meta-analysis', *The Lancet Public Health*. The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY-NC-ND license, 2(2), pp. e108–e120. doi: 10.1016/S2468-2667(17)30003-8.

Roerecke, M. *et al.* (2018) 'Sex-specific associations between alcohol consumption and incidence of hypertension: A systematic review and meta-analysis of cohort studies', *Journal of the American Heart Association*, 7(13). doi: 10.1161/JAHA.117.008202.

Salaudeen, A. G. *et al.* (2014) 'Knowledge and prevalence of risk factors for arterial hypertension and blood pressure pattern among bankers and traffic wardens in Ilorin ,

Nigeria', 14(3), pp. 593–599.

Salehuddin, M. and Zahari, M. (2015) 'The Working Women : Home versus Convenience Cooking Practices The Working Women : Home versus Convenience Cooking Practices', (October).

Sarki, A. M. *et al.* (2015) 'Prevalence of hypertension in low- and middle-income countries: A systematic review and meta-analysis', *Medicine (United States)*, 94(50), pp. 1–16. doi: 10.1097/MD.0000000000001959.

Shang, S. *et al.* (2016) 'The age-dependent relationship between blood pressure and cognitive impairment: A cross-sectional study in a rural area of Xi'an, China', *PLoS ONE*, 11(7), pp. 1–18. doi: 10.1371/journal.pone.0159485.

Shaya, F. T. *et al.* (2013) 'Social Networks Help Control Hypertension', *Journal of Clinical Hypertension*, 15(1), pp. 34–40. doi: 10.1111/jch.12036.

Shrestha, S. *et al.* (2018) 'Barriers and facilitators to treatment among patients with newly diagnosed hypertension in Nepal', *Heart Asia*, 10(2), pp. 1–7. doi: 10.1136/heartasia-2018-011047.

Suelly, A. *et al.* (2018) 'Infl uence of socio-demographic characteristics in the self-care of people with heart failure', 71(suppl 6), pp. 2604–2611.

Sun, Z. (2014) 'Aging, Arterial Stiffness, and Hypertension', *Hypertension*, 65(2), pp. 252–256. doi: 10.1161/hypertensionaha.114.03617.

Tibebu, A. and Mengistu, D. (2017) 'Adherence to recommended lifestyle modifications and factors associated for hypertensive patients attending chronic follow-up units of selected public hospitals in Addis Ababa , Ethiopia', pp. 323–330.

Twyman, L. *et al.* (2014) 'Perceived barriers to smoking cessation in selected vulnerable groups: A systematic review of the qualitative and quantitative literature', *BMJ Open*, 4(12), pp. 1–15. doi: 10.1136/bmjopen-2014-006414.

WHO (2014) 'Global status report on noncommunicable diseases 2014', *World Health*, p. 176. doi: ISBN 9789241564854.

WHO (2017) 'Cardiovascular diseases: Key Facts'. Available at: https://www.who.int/en/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds).

WHO (2018a) 'Healthy diet: Fact sheet'. Available at: https://www.who.int/news-room/fact-

sheets/detail/healthy-diet.

WHO (2018b) 'Healthy diet: Key facts'. Available at: https://www.who.int/news-room/fact-sheets/detail/healthy-diet.

WHO (2019) 'Hypertension'. Available at: https://www.who.int/news-room/fact-sheets/detail/hypertension.

World Health Organization (2011) 'Definitions of Key Concepts from the WHO Patient Safety Curriculum Guide'. Available at: www.who.int/patientsafety/education/curriculum/course1a_handout.pdf.

World Health Organization (2015) 'Assessing national capacity for the prevention and control of noncommunicable diseases: report of the 2015 global survey', p. 130. doi: ISBN 978 92 4 156536 3.

World Health Organization (2018) 'Physical activity: Fact sheets'. Available at: https://www.who.int/news-room/fact-sheets/detail/physical-activity.

Wright, D. M. G., Main, M. E. and Branstetter, M. L. (2015) 'Practice Matters : Screening and Caring for Those with Hypertension', *International Journal of Faith Community Nursing*, 1(1).

Yang, M. H. *et al.* (2017) 'The Effect of Lifestyle Changes on Blood Pressure Control among Hypertensive Patients', pp. 173–180.

YinghuiYou (2018) 'Hypertension and physical activity in middle-aged and older adults in China', (China CDC), pp. 1–8. doi: 10.1038/s41598-018-34617-y.

Zinat Motlagh, S. F. *et al.* (2016) 'Self-Care Behaviors and Related Factors in Hypertensive Patients', *Iranian Red Crescent Medical Journal*, 18(6). doi: 10.5812/ircmj.35805.

Zou, P. (2019) 'Facilitators and barriers to healthy eating in aged chinese canadians with hypertension: A qualitative exploration', *Nutrients*, 11(1). doi: 10.3390/nu11010111.

APPENDICES

ANNEXE 1. PERMISSION FOR USING THE TOOL

M Gmail   Perpétue Niyitegeka <niyopetu@gmail.com>

Requesting tool
9 messages

Perpétue Niyitegeka <niyopetu@gmail.com>   10 janvier 2019 à 16:41
À : lolemo kelbiso <lolemo2001@gmail.com>

Hello! I am Rwandan student in University of Rwanda College of Medicine and Health sciences.I am doing my research project about" Lifestyle Practices among Hypertensive patients at selected District Hospital in Rwanda"I have read your article and I request you your tool that you have used in your research entitled
" Lifestyle modification practice and associated factors among diagnosed hypertensive patients in selected hospitals, South Ethiopia"
I you help me to get this tool I may adopt it and I will acknowledge you.Thank you
Best regards

lolemo kelbiso <lolemo2001@gmail.com>   22 janvier 2019 à 15:42
À : niyopetu@gmail.com

Lolemo Kelbiso Hanfore (BSc, MSc)
Lecturer, Dep't of Nursing
Wolaita Sodo University, Wolaita Sodo, Ethiopia
Email: lolemo2001@gmail.com
Cell phone: +251912119847

lolemo kelbiso <lolemo2001@gmail.com>   23 janvier 2019 à 16:27
À : niyopetu@gmail.com

Noted! I will attach the tool. Thanks for acknowledging.
[Texte des messages précédents masqué]

Perpétue Niyitegeka <niyopetu@gmail.com>   24 janvier 2019 à 09:22
À : lolemo kelbiso <lolemo2001@gmail.com>

Thank you for your response.
[Texte des messages précédents masqué]

lolemo kelbiso <lolemo2001@gmail.com>   24 janvier 2019 à 11:35
À : Perpétue Niyitegeka <niyopetu@gmail.com>

Here is the tool,. Kindly find it.
[Texte des messages précédents masqué]

📄 **Tool hpn.docx**
25K

Perpétue Niyitegeka <niyopetu@gmail.com>   25 janvier 2019 à 14:37
À : lolemo kelbiso <lolemo2001@gmail.com>

Thank you very much.
[Texte des messages précédents masqué]

lolemo kelbiso <lolemo2001@gmail.com>   27 janvier 2019 à 06:55
À : Perpétue Niyitegeka <niyopetu@gmail.com>

a

ANNEXE 2. INFORMATION SHEET

Dear Participant,

My name is **Perpetue** Niyitegeka I am a Master in Medical Surgical Nursing Track at University of Rwanda college of Medicine and health sciences, school of nursing and midwifery. I am conducting the research project. I am requesting you to participate in this project which will consist of determination of lifestyle practices among hypertensive patients.

Purpose of the study

The purpose of the project is to identify the lifestyle practices among hypertensive patients and

To identify the barriers to lifestyle practices among hypertensive patients

Description of study procedures

You are expected to answer questions around 30 minutes. There are series of questions asking you about Socio-demographic, and others about Lifestyle practices and barriers to lifestyle practices among hypertensive patients that you have to answer in your private space. Your answer will not affect you and will be kept confidential and your name will not be recorded on the questionnaire. The questionnaire will be self-administered and will be anonymous (not identifiable).

Confidentiality

The questionnaire used in this study will not be collecting or retaining any information about your identity like your name. Also the researcher will not include any information in any report he may publish that would make it possible to identify you.

The records of this study will be kept strictly confidential. Research records will be kept in a locked file and all electronic information will be coded and secured using a password protected file.

Payments

No any founds of this study because it is for academic purpose so there will be no payment to participate in this study.

Right to refuse or withdraw from the study

You are allowed to refuse or withdraw at any stage of the study without any consequences.

Benefits of participating in the study

Study Participants will help the help care providers to see if there is a gap and see how they will remove that gap,if no gap they will continue to help the patients as they do.

Risks expected in the study

There are no risks associated your   participation

Contact details

For further information or reporting of study related adverse events, contact me or my supervisor on the following address and numbers:

University of Rwanda

College of medicine and Health Sciences

School of Nursing and Midwifery

Kigali, Rwanda

NIYITEGEKA Perpetue: 0783088838

Dr. Anita Collin: 0784680534

Mrs. BAGWENEZA Vedaste: 0788692468

For any concern about this project, please contact

College of Medicine and Health sciences

Institutional Review Board chairperson on 0788490522

Or The Deputy Chairperson on 0783340040.

If you agree to participate in this project, please sign the consent form below.

ANNEXE 3: INFORMED CONSENT FORM

I………………………………………..voluntarily agree to participate in the research study

"Lifestyle practice among hypertensive patients at Masaka District Hospital"

I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind my tasks and enhance the clients'safety.

…………………………………………….   Date: ……/……   2018

Participant's signature

………………………………………………

Date and signature of the researcher

1. URUPAPURO RWO KWEMERA KUGIRA URUHARE MUBUSHAKASHATSI K'UBUSHAKE

Bwana/Madamu,

Iribuliro

Nitwa Niyitegeka Perpetue, niga mu ishuri rikuru, mu ishami ry'ubuforomo, agashami kerecyeranye no kwita ku barwayi bafite indwara zo mumubiri,inkomere n'ababazwe muri Kaminuza y'u Rwanda. Ndi gukora ubushakashatsi mu rwego rwo kurangiza amasomo y' icyiciro cya gatatu cya Kaminuza.

Nabasabaga ko mwagira uruhare m'ubushakashatsi bwanjye bugamije kureba imyitwarire y'abarwayi bafite umuvuduko w'amaraso uri hejuru mu bitaro by'akarere ka Kicukiro/Masaka mu Rwanda.

Intego y'ubushakashatsi

Intego y'ubu bushakashatsi ni ukureba imyitwarire y'abarwayi bafite umuvuduko w'amaraso uri hejuru m'uburyo bwo kuwubungabunga.

Kugira ibanga

Amakuru yose tuzakura muri ubu bushakashatsi azaguma ari ibanga kandi nta zina rizagara ku rupapuro ruriho ibibazo n'ibisubizo.Nta makuru namwe akwerekeyeho tuzakubaza muri ubu bushakashatsi,amakuru yose azabikwa ahantu zihezewe kandi ntawundi muntu usibye abari muri ubu bushakashatsi wemerewe kuyabona.

Agahimbazamusyi

Ubu bushakashatsi bufite intego kubijyanye n'amashuri nta nkunga y'amafaranga cyangwa indi ntego ifite inyungu bityo rero nta mafaranga cyangwa impano duteganya gutanga ku kwemera kugira uruhare muri ubu busahakashatsi

Uko ubushakashatsi buzagenda

Biteganijwe ko umara iminota 30 mugusubiza ibibazo. Urabazwa ibibazo bigamije kumenya imyitwarire y'umuntu nkawe ufite umuvuduko w'amaraso uri hejuru. Ibibazo urabisubiza wowe ubwawe uri ahantu hiherereye. Ibizava mubushakashatsi bizabikwa neza kandi ntamazina yawe azagaragaraho,ntaningaruka mbi ubu bushakashatsi buzakugiraho.

Uburenganzira bwo guhakana cyangwa guhagarika gufatanya mu bushakashatsi

Wemerewe guhakana gufatanya n'umushakashatsi, wemerewe kandi no guhagarika gufatanya nanjye mu bushakashatsi igihe cyose ubishatse kuko gufatanya mu bushakashatsi ni ubushake kandi nta ngaruka mbi bizakugiraho . Ugize ikibazo ku bijyanye n'ubu bushakashatsi, wahamagara kuri izi nimero:

0783088838 :ushinzwe ubushakashatsi mu ishami ry'ubuvuzi n'ubuzima rya Kaminuza y'u Rwanda

Abakurikirana umushakashatsi:

Dr. Anita Collin: 0784680534,

Mrs. BAGWENEZA Vedaste: 0788692468

Murakoze kandi mugire amahoro!

KWEMERA GUFATANYA MU BUSHAKASHATSI

Njyewe…………………nemeye ku bushake gufatanya mu bushakashatsi ku kureba imyitwarire y'abarwayi bafite umuvuduko w'amaraso uri hejuru mu bitaro by'akarere ka Kicukiro/Masaka mu Rwanda

Ndemeza neza nubwo nemeye kugira uruhare ko igihe icyo aricyo cyose nshobora guhagarika kugira uruhare muri ubu bushakashatsi cgangwa ngahakana gusubiza ikibazo kiri muri ubu bushakashatsi kandi nta ngaruka bizangiraho.

Umukono n'itariki

………………………………….

Umukono n'itariki by'umushakashatsi

ANNEXE 4: QUESTIONNAIRE

DATA COLLECTION TOOL IN ENGLISH FOR LIFESTYLE PRACTICES AMONG PATIENTS WITH HYPERTENSION AT MASAKA DISTRICT HOSPITAL, RWANDA

PART 1.   SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS.

This section is about your socio-demographic information. You are only required to circle the information that applies to you.

No	Questions	Category
1.	Sex	Male Female
2.	Age	……………..…….years
3.	Marital status	Single Married Divorced Widow/widower
4.	Educational level	Primary Secondary TVET University Schools No educational level
5.	Occupation	Crop farmer Cattle rancher Educator Bus conductor/driver Business person Other (Please specify): …………….

6.	Religion	Catholic
		Protestant
		Seventh-day Adventist
		Pentecostal church
		Muslim
		Other (Please specify)…………….
7.	Duration of diagnosis	<2years
		2-5 years
		5-10 years
		10 years and above
8.	Is there anybody in the family who was diagnosed with hypertension?	Yes
		No

PART 2. LIFESTYLES PRACTICES AND BARRIERS TO LIFESTYLES–PRACTICES AMONG HYPERTENSIVE PATIENTS.

This section intends to get from the respondent the lifestyle practices and barriers to lifestyle practices. Alternative answers have been provided and you are only required to circle the correct answer according to your understanding

No	Questions	Category
9.	Did you hear about lifestyles practices among hypertensive patients before?	Yes No
10.	From where did you get information about lifestyle practices in management of hypertension?	Physician/Doctor A nurse A pharmacist Family or relatives Media for example, television, radio, newspapers, or magazine Other patients
11.	Did you smoke before you became hypertensive?	Yes No
12.	If **yes** for question 11, how frequently please?	Daily Once/week 2-3 days/week 4-5 days/week 6-7 days/week
13.	If yes for question 11, how many days of the past 7 days you smoked?	I don't smoke Daily Twice/week 2-3 days/week Others (Please specify):……
14.	How many of the past 7 days you did at least 30 minute physical activity practice?	Daily One day/week More than 2 days/week None of the 7 days
15.	Do you do specific exercise activity like swimming, walking, other than what you do around the house or as part of your work?	Yes No
16.	For question 15, if you are not	I do not like to physical exercise

	performing physical exercise, what are the barriers?	Time constraints (too busy, family responsibilities, work schedule, etc.) Physical condition or a health problem No available area for physical exercise Other barriers (Please specify):
17	At any time since you were first diagnosed with high blood pressure, did you ever regularly drink more than 2 drinks per day?	Yes No
18.	If yes for question 17, how often?	Daily Once/week 2-3 days/week 4-5 days/week 6-7 days/week
19.	If yes for question 17, did you stop drinking or limit your alcohol consumption to help control your blood pressure?	Yes No
20.	If no for question 19, what are the reasons that you are not limiting your alcohol consumption to help control your blood pressure?	I do not want to stop / limit alcohol consumption I believe alcohol is good for health. I do not think that limiting alcohol consumption is important Other reasons for not limiting alcohol consumption (Please specify):
21.	In the past 7 days how many days you ate low-salt diet?	1 day 2-3 days 4-5 days 6-7 days I always eat diet with salt
22.	What are the reasons that you are not limiting your daily salt intake to help control your blood pressure?	I was not well explained the importance of limiting salt I do not care about salt intake Family members refuse to prepare my own food If I feel my blood pressure is well controlled, I eat food with salt Other reasons (Please specify):
23.	Do you eat smoked meats?	Yes No

	Do you eat ≥5 servings of fruits and vegetables per week?	Yes No	
	Do you eat frozen prepared dinners or frozen foods?	Yes No	
	Do you salt your food at the table?	Yes No	
	Do you avoid eating fatty foods?	Yes No	
24.	Are you careful about what you eat to manage your weight?	Yes No	
	Do you read food labels when you go to grocer's shop in order to manage weight?	Yes No	
	Do you exercise in order to lose or maintain weight?	Yes No	
	Have you stopped sugary sodas and sweet tea to manage your weight?	Yes No	
	Do you eat smaller portions or eat fewer portions to manage weight?	Yes No	
25	For question 24, what are the reasons that you are not trying to control your weight or lose weight to help control your blood pressure?	I control my weight I do not want to control / lose weight I tried to control / lose weight but it-didn't work I assume that taking medications to control blood pressure is enough I do not think that weight control / weight loss is important Other reason (Please specify):	

26.	The last time your blood pressure was measured by a health professional, were you told your blood pressure in numbers?	Yes No
27.	Has a health professional ever discussed a target value for your blood pressure, that is, the blood pressure level that is best for you?	Yes No
28	Do you take your blood pressure medications as	Yes

	prescribed?	No
29.	If no on question 28, what are the reasons that you are not taking your blood pressure medications exactly as prescribed?	I forget to take my medications If I feel my blood pressure is well controlled I reduce the dose They have many side effects I don't like tablets Any other reason (Please specify):
30.	Were you educated on types of food which will help you to control your blood pressure?	Yes No
31.	If yes for question 30 , do you continue to adhere to that?	Yes No
32.	If no for question 30 , what are the barriers?	Lack of will/ self-discipline I do not like to eat these types of foods Too costly / financial constraints I do not know that eating these types of foods is recommended Other reasons (Please specify):……
33.	As a result of being diagnosed with high blood pressure, did you ever quit smoking or cut down on smoking to help control your blood pressure? (**This question concerns people who smoked before**)	Yes No
34.	If no for question 33, what are the reasons that you are not trying to quit smoking or cut down on smoking to help control your blood pressure?	I do not want to quit / cut down on smoking Taking medications to control blood pressure is enough I do not think that quitting / cutting down on smoking is important Any other reason (Please specify):
35.	Do you get excessively stressed in your daily life?	Yes No
36.	If yes, do you manage your stress as a measure of controlling your blood pressure?	Yes No
37.	If no on question 36, what are the barriers to the management of your excessive stress?	Financial constraints Family problems As a result of being diagnosed with hypertension or other disease I was not told that stress can have

		impact on the blood pressure Other reason (Please specify):
38.	Do you perform self-monitoring of blood pressure at home?	Yes No
39.	If no for question 38, what are the barriers on self-monitoring of blood pressure at home?	Lack of materials for self-monitoring of blood pressure I was not told that self-monitoring of blood pressure is important I was not educated on the use of the machine and interpretation of the value Other reason (Please specify):

THANK YOU VERY MUCH FOR YOUR PARTICIPATION

2. URUPAPURO RW'IBAZWA

IBIBAZO BIJYANYE N' IMYITWARIRE Y'ABARWAYI BAFITE UMUVUDUKO W'AMARASO URI HEJURU MU BITARO BY'AKARERE BYA MASAKA, MU RWANDA

IGICE CYA 1: IBIBAZO BIJYANYE N'IMYIRONDORO RUSANGE.

Iki gice kijyanye n'imyirondoro yawe. Hitamo amakuru ubona akwiye kuri wowe uhashyira akamenyetso k'uruziga

Nomero	Ibibazo	Ibyiciro
1.	Igitsina	Gore Gabo
2.	Imyaka	**…………**
3.	Irangamimerere	Ingaragu Ndubatse Natandukanye n'uwo twashakanye Umupfakazi
4.	Urwego rw'amashuri	Abanza Ayisumbuye Amashuri y'imyuga Amashuri makuru cyangwa kaminuza Kuba utarize
5.	Umurimo ukora	Umuhinzi Umworozi Umurezi Umushoferi Umushabitsi Akandi kazi (Sobanura):
6.	Idini	Umugaturika Umuporoso

o

		Umudivantisiti Umurokore Umuyisiramu Irindi dini (sobanura)
7.	Igihe indwara uyimaranye	Munsi y'imyaka 2 Hagati y'imyaka 2-5 Hagati y'imyaka 5-10 Imyaka 10 kuzamura
8.	Hari uwo mu muryango wawe baba barasanganye umuvuduko w'amaraso uri hejuru?	Yego Oya

IGICE CYA 2: IBIBAZO BIJYANYE N' IMYITWARIRE IKWIYE N'IMBOGAMIZI KU BARWAYI BAFITE UMUVUDUKO W'AMARASO URI HEJURU

Iki gice kidendereye kumenya imyitwarire n'imbogamizi ku bafite umuvuduko w'amaraso uri hejuru. Ibisubizo byatanzwe, urasabwa gusa guhitamo igisubizo kimwe cy'ukuri ukurije uko ubyumva.

9.	Waba warumvise imyitwarire y'umuntu ufite umuvuduko w'amaraso uri hejuru?	Yego Oya
10.	Ni hehe waba warakuye amakuru ku bijyanye n'imyitwarire ikwiye abafite umuvuduko w'amaraso uri hejuru?	Muganga/ Dogiteri Umuforomo /kazi Umuganga utanga imiti Abo mu muryango/abo mufitanye isano Ibitangazamakuru nka televisiyo,radiyo cyangwa ibinyamakuru Abandi barwayi
11.	Wanywaga itabi mbere y'uko urwara umuvuduko w'amaraso?	Yego Oya
12.	Niba ari yego kukibazo cya 11, kangahe?	Buri munsi Rimwe mu cyumweru Iminsi 2 - 3 mu cyumweru Iminsi 4- 5 mu cyumweru Iminsi 6 – 7 mu cyumweru
13.	Niba ari yego kukibazo cya 11, ni kangahe wanyweye itabi muminsi 7 ishize?	Sinywa itabi Buri munsi Inshuro 2 mu cyumweru Iminsi 2-3 mu cyumweru Indi…. (Sobanura):………
14.	Mu minsi irindwi ishize ni kangahe wakoze imyitozo ngororangingo byibura iminota 30?	Buri munsi Umunsi umwe mu cyumweru Hejuru y'iminsi 2 mu cyumweru Nta narimwe mu minsi 7
15.	Ujya ukora imyitozo yihariye nko koga, kugenda, cyangwa indi myitozo ukora itandukanye n'imirimo yawe isanzwe ukorera hafi y'inzu ubamo?	Yego Oya
16.	Kukibazo cya 15 ,niba udakora imyitozo ngororamubiri nizihe	Sinkunda imyitozo ngororangingo Mbura umwanya (mba mpuze, inshingano zo mu

|	mbogamizi?	muryango, akazi, n'ibindi) Ibibazo by'ubuzima (uburwayi) Nta ho mbona nayikorera Izindi mbogamizi(sobanura):
17.	Igihe bagusuzumaga umuvuduko w'amaraso bwa mbere,waba waranywaga inzoga ibirahure 2 ku munsi?	Yego Oya
18.	Niba ari yego ku kibazo cya 17, wayinyweye kangahe?	Buri munsi Inshuro imwe mu cyumweru Iminsi 2-3 mucyumweru Iminsi 4-5 mucyumweru Iminsi 6-7
19.	Niba ari yego kukibazo cya 17, waba warahagaritse cyangwa ukagaanya inzoga, ngo bigufashe kugabanya umuvuduko w'amaraso wawe?	Yego Oya
20.	Niba ari oya kukibazo cya 19, ni izihe mpamvu zituma ~~udahagarika~~ utagabanya kunywa inzoga ngo bigufashe kugabanya umuvuduko w'amaraso wawe?	Sinshaka guhagarika cyangwa kugabanya kunywa inzoga Nizera ko inzoga ari nziza ku buzima Sinjya ntekereza ko kugabanya kunywa inzoga ari ingenzi Izindi mpamvu zituma utagabanya hunywa inzoga(sobanura)……...
21.	Muminsi 7 ishize ni kangahe wariye ibiryo birimo umunyu muke?	Umunsi umwe Iminsi 2-3 Iminsi 4-5 Iminsi 6-7 Igihe cyose ndya ibiryo birimo umunyu
22.	Nizihe mpamvu zituma utagabanya umunyu kugira ngo bigufashe kugabanya umuvuduko w'amaraso wawe?	Ntabwo bansobanuriye neza akamaro ko kugabanya umunyu Ntabwo nita ku bijyanye no gufata umunyu Abo tubana banga kuntegurira ifunguro ryanjye ryihariye Iyo umuvuduko wanjye umeze neza ndya ibiryo birimo umunyu
23.	Waba urya inyama zokeje?	Yego Oya

r

	Waba urya **imbuto n'imboga** nibura inshuro 5 cyangwa zirenga mucyumweru?	Yego Oya
	Waba urya ifunguro ryabitswe mu bukonje nko muri firigo?	Yego Oya
	Wongera umunyu mu biryo byageze ku meza?	Yego Oya
	Wirinda kurya ibiryo birimo ibinure/amavuta?	Yego Oya
24.	Witondera ibyo urya kugira ngo ugabanye ibiro?	Yego Oya
	Usoma ibyanditse ku bintu bibika ibiryo iyo ugiye guhaha kugira ngo ubungabunge ibiro?	Yego Oya
	Ukora imyitozo ngororamubiri kugira ngo utakaze cyangwa ubungabunge ibiro?	Yego Oya
	Wahagaritse ibintu birimo isukari nka fanta cyangwa icyayi kirimo isukari mu kubungabunga ibiro?	Yego Oya
	Urya ibiryo bike mu bihe bitandukanye mu rwego rwo kubungabunga ibiro?	Yego oya
25.	Kukibazo cya 24, ni izihe mpamvu zikubuza kubungabunga ibiro byawe ngo bigufashe no kugabanya umuvuduko w'amaraso?	Mbungabunga ibiro byanjye Sinshaka gutakaza ibiro Nagerageje kugabanya ibiro ariko byaranze Nibwira ko gufata imiti igabanya umuvuduko w'amaraso bihagije Sinatekereje ko kugabanya ibiro bifite akamaro Indi mpamvu (yivuge)…….
26.	Mugihe gishize bagusuzumye umuvuduko w'amaraso,bakubwiye ibipimo byawo mu mibare?	Yego Oya
27.	Umuganga yaba yarakuganirije ku bipimo bizima by'umuvuduko w'amaraso byakubera byiza utagombye urenza?	Yego Oya

28.	Ufata imiti ikugabanyiriza umuvuduka w'amaraso nkuko bayikwandikiye?	Yego Oya
29.	Niba aro oya kukibazo cya 28, nizihe mpamvu zituma udafata imiti y'umuvuduko w'amaraso nk'uko wayandikiwe?	Nibagirwa kuyifata Iyo umuvuduko umeze neza ngabanya ingano y'umuti Ni uko imiti igira ingaruka nyinshi Sinkunda ibinini Indi mpamvu (yivuge)………
30.	Waba warigishijwe ubwoko bw'ibiryo wateka mu kubungabunga umuvuduko wawe w'amaraso?	Yego Oya
31.	Ku kibazo cya 30 niba yego, ukomeje kubikora?	Yego Oya
32.	Kukibazo cya 30 niba ari oya ni izihe mbogamizi?	Mbura ubushake Sinkunda kurya buriya bwoko bw'ifunguro Birahenda/Amikoro ni ikibazo Ntabwo nari mbizi ko kurya biriya biryo ari itegeko Indi mpamvu (yivuge):…….
33.	Nyuma yo gusanganwa umuvuduko w'amaraso uri hejuru, waba warahagaritse kunywa itabi ngo bigufashe kubungabunga umuvuduko w'amaraso wawe? **(Iki kibazo cyirareba abanywaga itabi mbere)**	Yego Oya
34.	Niba ari oya kukibazo cya 33, ni izihe mpamvu zituma utagereza guhagarika — kunywa itabi ngo bigufashe kubungabunga umuvuduko w'amaraso wawe?	Sinshaka guhagarika kunywa itabi Gufata imiti igabanya umuvuduko w'amaraso birahagije Sinjya ntekereza ko guhagarika cyangwa kureka itabi ari ingenzi Indi mpamvu (Yivuge) :……….
35.	Ujya uhangayika cyane mumibereho yawe?	Yego Oya
36.	Niba ari yego ku kibazo cya 35, ugerageza kugabanya umuhangayiko kugira ngo umuvuduko w'amaraso ugabanuke?	Yego Oya
37.	Niba ari oya ku kibazo cya 36, ni izihe	Ibibazo by'amafaranga

	mbogamizi zigutera guhangayika?	Ibibazo by'umuryango Kuba barambwiye ko ndwaye Umuvuduko w'amaraso Ntago nabwiwe ko guhangayika byagira ingaruka k'umuvuduko Indi mpamvu (yivuge)…….
38.	Ujya wipimira Umuvuduko w'amaraso mu rugo?	Yego Oya
39	Ku kibazo cya 38 niba ari oya, nizihe mbogamizi zituma utabikora?	Kubura ibikoresho Ntago nabwiwe ko kwipimira Umuvuduko w'amaraso ari ingenzi Sinigishijwe kugukoresha imashini ndetse no kumenya ibipimo Indi mpamvu(yivuge):…….

MURAKOZE KU BW'URUHARE RWANYU MURI UBU BUSHAKASHATSI!

ANNEXE 5: ETHICAL CLEARENCE

UNIVERSITY OF UR RWANDA **COLLEGE OF MEDICINE AND HEALTH SCIENCES**
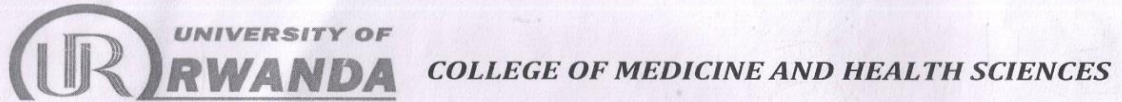
CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 14/01/2019
Ref: CMHS/IRB/**021**/2019

NIYITEGEKA Perpetue
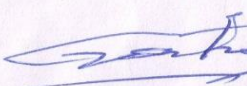**School of Nursing and Midwifery, CMHS, UR**

Dear NIYITEGEKA Perpetue

RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled *"Lifestyle Practices among Hypertensive Patients at Masaka District Hospital."*

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

ANNEXE 6. LETTER FOR REQUESTING PERMISSION

NIYITEGEKA Perpetue

UNIVERSITY OF RWANDA/CMHS

SCHOOL OF NURSING AND MIDWIFERY

E-mail:niyopetu@gmail.com

Phone: +250783088838

February 6th, 2019

To: **The Director of Masaka District Hospital**

 Dear Sir,

RE: **Request for the permission to conduct the research**

I am registered nurse with Bachelor's degree in nursing sciences and currently I am a student in Masters 'program mastering with nursing Science in Medical Surgical track at the University of Rwanda (UR) and I am required to conduct a research dissertation to fulfill this program.
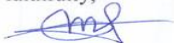
It is in this regard   dear Director I am requesting your good office to provide with me the permission to conduct the research in this hospital whose management was entrusted to you. The topic is *"Lifestyle practices among Hypertensive patients at Masaka District Hospital"*

The general aim of the study is to determine the lifestyle practices among hypertensive patients followed in NCDs service at Masaka hospital.

I am hopeful this request will meet your favorable consideration and I carry on appreciating your support.

 Thank you for your considerations to my request and I look forward to hear you .

Yours faithfully,

Perpetue NIYITEGEKA

POUR RECEPTION
Hospital Masaka
Secretariat de Direction
Date : 08/02/2019
Signature :

ANNEXE 7. ACCEPTANCE LETTER

REPUBLIC OF RWANDA

Masaka 21./03/2019
REF ...923/MSK/DH/2018

KIGALI CITY
DISTRICT KICUKIRO
HOPITAL MASAKA
B.P 3472 KIGALI
E-mail: masaka.hospital@moh.gov.rw

TO: Perpetue NIYITEGEKA

Re: <u>PERMISSION TO CONDUCT DATA COLLECTION</u>
<u>IN MASAKA DISTRICT HOSPITAL</u>

Dear Madam,

Refering to the letter written on 6thFebruary2019 requesting tocollect data on **«Lifestyle practices among hypertensive patients at Masaka District Hospital »** the management of Masaka District Hospital is pleased to inform you that, your have authorization to conduct data collection in our Hospital from 25/03/2019 to 25/04/2019.

Sincerely

Dr.Marcel UWIZEYE
Director General Masaka Hospital