KIBOGORA POLYTECHNIC

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF GENERAL NURSING

EXPLORATION OF FACTORS CONTRIBUTING TO ADHERENCE TO TREATMENT AMONG HYPERTENSIVE PATIENTS ATTENDING NCDS SERVICES AT MUGONERO DISTRICT HOSPITAL, RWANDA

This undergraduate research dissertation submitted in partial fulfillment of the requirement for the award of Bachelor in General Nursing with honors

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Kibogora March, 2022

DECLARATION

Declaration by the Candidate

I **DUKUNDANE Liliane**, hereby declare that this is my own original work and not a duplication of any similar academic work. It has therefore not been submitted to any other institution of higher learning. All materials cited in this paper which are not my own have been duly acknowledged.

Signature ………………………………

Date ……………………

Declaration by the Supervisor

I declare that this work has been submitted for examination with my approval as KP Supervisor

SUPERVISOR'S NAME………………………………………….

SIGNED……………………………………………………….

DATE………………………………………………………….

ABSTRACT

Background: Adherence to long-term medications is a global concern. Hypertension is one of the top five causes of mortality in the world. The asymptomatic nature of this disease results in decreased motivation to adhere to medications that do not provide symptomatic relief in most cases. Poor adherence to long-term medication is a public health concern which may result into poor treatment outcome.

Purpose of the study: The purpose of this study was to explore the factors contributing to adherence to treatment among hypertensive patients attending NCDS clinic at MUGONERO District Hospital. Specific objectives were (1) to identify socio-economic and demographic factors of patients contributing to poor adherence to treatment among hypertensive patients attending NCDs clinic at MUGONERO District Hospital, (2) to determine medical factors contributing to poor adherence to treatment among hypertensive patients attending NCDS clinic at MUGONERO District Hospital.

Methodology: This was descriptive and cross-sectional conducted Mugonero District hospital, NCDs clinic, the study adapted a cross-sectional design with quantitative approach. A total of 100 patients were enrolled. Data on demographics and social and physical and medical characteristics were recorded using a questionnaire, and then analyzed used SPSS version23.

Results: The results are grouped according to study objectives and social-economic and demographic factors. The age groups the majority where aged 50 years and above 49%(n=49), 40-49 years with 31(31%). Poor adherence was mostly observed in female (66%) than male gender. For religion there more Adventist participants than other domains with 47%. Residence was dominated by rural areas with 89%. Primary education was the dominant education level (78%).

On other side the physical and medical factors 20% of population exercise regularly, the factor that more than 50 % were preparing food using fats/ oil where 79% (n=79), and 80% (n=80) where not coping with medication and only 20% (n=20) where accepting to cope with medication.

Conclusion: Among patients with poor adherence, the majority are with poor economic status, low education levels and sedentary lifestyles, so these are among the factors that are significantly affecting adherence.

Recommendation: Low-income earners were found to be at risk of low adherence. The hospital management should put in place an effective waiver system to identify needy clients who should be waived to ensure a constant supply of their antihypertensive.

DEDICATION

I dedicate this work to our almighty God who enables me to achieve this success; I also dedicate it to my father and mother whose educational sacrifices, parental care and love made me who I am today.
I dedicate it to my sisters and brothers for their great support during my courses time. I dedicate it to my Lovely Brother ERIC Bressan for the great support, encouragement and unconditionally love during my studies.

I dedicate this work to my mother LUCIA Bressan whose endless love, support, care, comfort and encouragement during those hard times of study. I dedicate it to my husband RUZIRABWOBA PACIFIQUE for moral support, encouragement, and his love and care in my struggle during my studies. I dedicate it, especially to my greatest hero dad NSABIMANA Theophile whose endless love for me, who did everything so that I can fly higher; whenever I heated the ground his love lifted me.

I dedicate this book to my classmates and my Supervisor MUVANDIMWE Croix for their great support during the period of our course.

ACKNOWLEDGEMENT

I would like to acknowledge my supervisor, I appreciate his advice, guidance, and support he gave me from the beginning until the end.

I extend special thanks to the KP staff's administration, all lectures from the general nursing department and the midwife for their treasured knowledge and skills that have been a major tool for guidance to achieve this level. I thank my fellow students in the nursing department for their encouragement. Words fail me to express my appreciation to my parents, for their dedication, love, support and encouragement throughout my studies.

Finally, I want to thank all of those names that have not been mentioned but contributed directly or indirectly to the accomplishment of this work and last, not least I thank my family who brought me up.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACC/AHA: American College of Cardiovascular/American Heart Association

CPD: Continuing Professional Development

CVD: Cardio-vascular diseases

HBP: High Blood Pressure

HDL: High-Density Lipoprotein

HTN: Hypertension

KP: Kibogora Polytechnic

LMIC: Low and Middle–Income Countries

MOH: Ministry of Health

NCDS: Non-Communicable Diseases

REC: Research Ethical Committee

SPSS: Statistical Package of Social Science

SSA: Sub Saharan Africa

USA: United State of America

USAID: United States Agency for International Development

WHO: World Health Organization

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<p style="text-align:center">CHAPTER ONE: GENERAL INTRODUCTION</p>

1.0 INTRODUCTION

This chapter covers the background of the research study, problem statement, main and specific objectives, research questions, the significance of the study, limitation of the study, the scope of the study, and finally the organization of the study.

1.1 BACKGROUND OF THE STUDY

Hypertension is a medical condition where the force of the blood against artery walls is very high for a long period that can eventually lead to other health problems (CDC, 2020). Worldwide, cardiovascular diseases account for about 17 million deaths, with complications from poorly controlled hypertension resulting in over 7.5 million deaths and 57 million disability adjusted life years (Damasceno, 2016).

Hypertension is increasing rapidly in both developed and developing countries. It is estimated that hypertension accounts for more than 9.4 million deaths per year (World Health Organisation, 2013). Complications related to hypertension are irreversible and hypertension itself is one of the main causes of an increased burden on healthcare systems (Degli Esposti et al., 2019).

A study conducted in 2020 in seven sites in East and West Africa assessing the prevalence of hypertension showed that in Africa, showed that the estimated number of people with high blood pressure has increased steadily from 54.6 million to 92.3 million (70% rise) and 130.2 million from 2000 to 2010 respectively and it implies that 41% increase from the year 2000. It is projected to rise to 216.8 million by the year 2030 which is a 66% rise from the year 2010 (Samson, O, 2020).

Despite increased awareness, poor adherence to treatments for chronic diseases remains a global burden, as stated by WHO (WHO, 2018). Adherence to antihypertensive medications is crucial to controlling blood pressure levels and Poor adherence leads to the development of hypertensive complications and increases the risk of cardiovascular events then resulting in a reduced ultimate clinical outcome (Solomon W. An et. Al 2018).

Suboptimal adherence, which includes failure to initiate pharmacotherapy, to take medications as often as prescribed by the physician or trained health care providers, and persist in long-term therapy, is a well-recognized and top factor contributing to the poor control of hypertension (Michel Burnier, 2019).

The World Health Organization (WHO) identifies poor adherence as the most significant cause of uncontrolled BP and estimates that 50–70% of people do not take their antihypertensive medication as prescribed (Kimuyu & Boniface, 2014).

A study done in 2020 about Prevalence and factors associated with adherence to anti-hypertensive among adults with hypertension in urban Asian society, reviled that 395 patients were analyzed and (45.3%) had poor adherence to at least one anti-hypertensive medication. That study showed that poor adherence was highly associated with higher mean clinic diastolic blood pressure (76 mmHg vs. 73 mmHg), lower mean age (59 years old vs. 63 years old) and higher mean weight (70.4 kg vs. 67.4 kg). In addition, it showed that patients with no other medical conditions such as diabetes mellitus, ischemic heart disease and stroke and others had better medication adherence (Gómez-olivé et al., 2018).

Poor adherence to antihypertensive medication could be associated with race as shown in a study done in 2016 on Enhancing adherence to antihypertensive regimens in hypertensive African–Americans. It found racial disparities in the magnitude of medication adherence in patients with hypertension; African–Americans have poor adherence rates when compared to Whites (Lisa M Lewis et Al 2016).

As shown in a Journal of Human Hypertension, a study conducted on efficacy of newer versus older antihypertensive drugs in black patients living in sub-Saharan Africa done in 2013, Adherence was excellent as shown by tablet counts and, more precisely, by the lower heart rate on the βeta-blocker in the old-drug group and the higher score for ankle oedema in patients controlled to amlodipine in the new-drug group (Degli Esposti et al., 2018).

Understanding the categories of factors contributing to poor adherence is very useful and important in managing Poor adherence. Several categories of factors including socioeconomic, demographic, concomitant medical- conditions, therapy-related, healthcare team and system-related factors all with patient factors are associated with poor adherence to antihypertensive

medications (Michel Burnier 2019). Drug adherence is not only taking a pill it shows good health behaviour (Simpson et al., 2006).

A study was done in Korea by the year 2017 about factors affecting medication adherence in community-managed patients with hypertension based on the principal component analysis rooted out nine common factors, further analysis found that the following variables were directly related to no adherence: severity of disease, diabetes, taking traditional medications and community management (Zhou et al., 2017). Age, location of a health facility, monthly income, exercise, amount of salt intake, classes of antihypertensive medication, associated medication for diabetes or dyslipidemia, and family history of hypertension or other cardiovascular disease were significantly associated with adherence as shown by a study on factors affecting adherence to Antihypertensive medication done in Korea (Zhou et al., 2017).

Multivariate analysis of factors associated with poor adherence to medication among hypertensive patients in twelve low and middle-income Sub-Saharan countries showed that the use of traditional medicine or herbs and individual wealth status was measured and independently associated with poor adherence to medication (Adeloye & Basquill, 2014). In addition, 26.5% of the patients admitted stopped their treatment due to financial issues and this proportion was 4 times higher in the lowest than highest wealth group (Macquart de Terline et.Al 2019).

1.**2 Problem Statement**

According to a worldwide brief on hypertension report, hypertension contributes to the burden of heart disease, stroke and kidney failure and premature mortality and disability (WHO, 2015). Hypertension remains uncontrolled in many developing and developed Countries (Brunditland, 2018). In the wake of the epidemiological transition of non-communicable Diseases in sub-Saharan Africa, the mortality and morbidity from noncommunicable diseases in low and middle-class countries like Rwanda are on the Rise (Prabakaran, 2018). Nonadherence can account for 50% of treatment failures, around 125,000 deaths, and 25% of hospitalizations each year in the United States (WHO, 2018).

The results of the study conducted in Rwanda indicated that the prevalence of hypertension is highly associated with poor adherence to treatment with lifestyle factors of the participants. The overall prevalence of hypertension with obesity was 15.3% (16.4% for males and 14.4% for Females) (Sibomana et al., 2019). Twenty-two percent of hypertensive participants were previously diagnosed in Rwanda, suggesting the need for prevention and control interventions aimed at decreasing the incidence taking into consideration the risk factors documented in this and other similar studies (WHO, 2018).

The fact that uncontrolled hypertension is associated with increased morbidity and mortality results in different complications like a heart attack or stroke, heart failure and thickened narrowed or torn blood vessels in the eyes (WHO, 2017).

Thus, it is of utmost importance that this study is undertaken to identify the factors that contribute to poor adherence to treatment of hypertension among hypertensive patients. Poor adherence to treatment is associated with the bad outcome of the disease and wastage of healthcare resources, as little is known about treatment adherence and contributing factors in Rwanda. Therefore, this study will aim to assess the factors contributing to poor adherence to treatment among hypertensive patients attending the NCDs clinic at Mugonero District Hospital. Despite reports of a higher prevalence of hypertension in Africa compared to other world regions, public health experts believe the real burden is still far from being known. Many studies in the 1980s and early 1990s were based on the old definition of hypertension (160/95 mm Hg). These surveys may underestimate the prevalence of hypertension in Africa in comparison to newer surveys based on 140/90 mm Hg (Oori et al., 2018).

1.3 Purpose of the Study

The aim/purpose of this study was to explore the factors contributing to poor adherence to treatment among hypertensive patients attending NCDs at MUGONERO District Hospital.

1.4. Research objectives

1.4.1 General objectives

The general objective of this study was to explore the factors contributing to adherence to treatment among hypertensive patients attending NCDs at MUGONERO District Hospital.

1.4.2 Specific objectives

1. To identify socio-economic and demographic factors of patients contributing to poor adherence to treatment among hypertensive patients attending NCDs at Mugonero District Hospital

2. To determine medical and health care system factors contributing to poor adherence to treatment among hypertensive patients attending NCDs at Mugonero District Hospital

1.5 Research Questions

1. What are socio-economic and demographic factors of patients contributing to poor adherence to treatment among the hypertensive patients attending the NCDs clinic at Mugonero District Hospital?
2. What are the medical and health factors contributing to adherence to treatment among hypertensive patients attending NCDs services at Mugonero District Hospital?

1.6 Significance of the Study

The results of this research will contribute to the existing body of knowledge regarding the determinants of factors contributing to poor adherence to treatment among hypertensive patients. This knowledge will aid in the development of effective policies and treatment guidelines to increase knowledge about factors contributing to poor adherence to treatment among hypertensive patients, which has serious complications not only for the patients but also for Rwanda.

Accordingly, identifying these factors will guide the development of suitable interventions that may assist to change hypertensive patients' medication-taking behaviour. This study is the first research investigating these three domains of factors associated with antihypertensive medication adherence in hypertensive population in Rwanda.

The current studies provide information about the social demographic characteristics contributing to poor adherence to treatment with hypertension increasing with the age to the hospital, where the study will be beneficial to the government as it will provide accurate information, especially in the communities' health promotion while in health education of factors contributing to poor adherence to treatment of high blood pressure. This will help them to focus on those factors contributing to poor adherence to treatment of high prevalence of high blood

pressure. Also, this study will provide information about factors with hypertension that will increase knowledge of health Care to prevent hypertension by providing efficiency skills to the client attending NCDs at Mugonero DH. To the university, this study can raise advocacy for the higher education as one to implement curriculum in the school of future health providers.

Given the rise in the prevalence of non-communicable diseases in Rwanda, it is of the utmost importance to understand the rate at which patients are adhering to their antihypertensive medications; moreover, it is necessary to understand why patients do not adhere when this is the case by assessing barriers to good adherence. Determining the rate of adherence will serve to assess the gravity of the issue. Seeking the factors that result in a lack of adherence will allow for the development of initiatives to improve adherence to medications that treat chronic disease in Rwanda. This proposed study will seek to determine the degree of adherence to antihypertensive medications in Rwanda and will ascertain the causes of lack of adherence when it occurs.

1.7. Limitations of Study

In the process of data collection, the researcher faced some problems which would have affected the results of the present study. These are: however, my study was limited to the higher blood pressure of the patients reaches Mugonero District Hospital; it was so tough to gather information from them.

The researcher was so much hindered by a lack of enough time and financial constraints.

Carrying out research requires a lot of time and financial resources. Also, I was limited at the time during the data collection, the total population was 134, and the sample size was 100 but during the short time of data collection.

1.8 Delimitation (Scope) of the Study

The scope of this research is divided into the domain, geographical and time frame.

Domain scope

Regarding the domain, this study intended to exploit the factors that contribute to poor adherence to treatment among hypertensive patients attending non-communicable diseases services at MUGONERO DH.

Geographical scope

In terms of space, MUGONERO District Hospital is located in Karongi District, here chosen as a case study for this study.

Time scope

As for the time, the focus of this research is relative to 5 months (July–December) 2021

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

In this part, the review of theoretical literature will discuss the factors contributing to poor adherence to treatment among hypertensive patients. The review of literature will discuss on same definitions of hypertension, poor adherence to treatment and the same risk factors contributing to poor adherence to treatment.

2.1 Definitions of key concepts/Terms

To understand hypertension or high blood pressure, it is very important to understand what blood pressure (BP) is. It could be said that blood is carried from the heart to all other parts of the body in blood vessels. Each time the heartbeat pumps the blood into the vessels. BP is created by the force of blood pushing against the walls of blood vessels (arteries) as it is pumped by the heart (WHO, 2013). There are many definitions of hypertension in the literature, however, the definition proposed by WHO is more popular. According to (WHO., 2013). Hypertension is defined as a systolic BP equal to or above 140 mmHg and diastolic BP equal to or above 90mmHg.

Definition of adherence; by definition adherence is attachment or commitment to the person. So poor adherence to treatment by WHO is defined as the extent to which a person's behaviour taking medication, following a diet, and or executing lifestyle changes, corresponds with agreed recommendations from a health care professional (Dego & Bobasa, 2016).

Risk Factors

High blood pressure has many risk factors, including:

Age: The risk of high blood pressure increases as you age. Until about age 64, high blood pressure is more common in men. Women are more likely to develop high blood pressure after age 65 (Mekonnen et al., 2017).

Race: High blood pressure is particularly common among people of African heritage, often developing at an earlier age than it does in whites. Serious complications, such as stroke, heart attack and kidney failure, also are more common in people of African heritage (Oori et al., 2018).

Family history: High blood pressure tends to run in families (Kimuyu & Boniface, 2014).

Men and women: It has been shown that women have more prevalence of poor adherence to treatment of hypertension than men (Sibomana et al., 2019).

2.2. Conceptual framework

This study proposes a conceptual framework consisting of three domains, namely, independent variables, dependent variables and Outcomes.
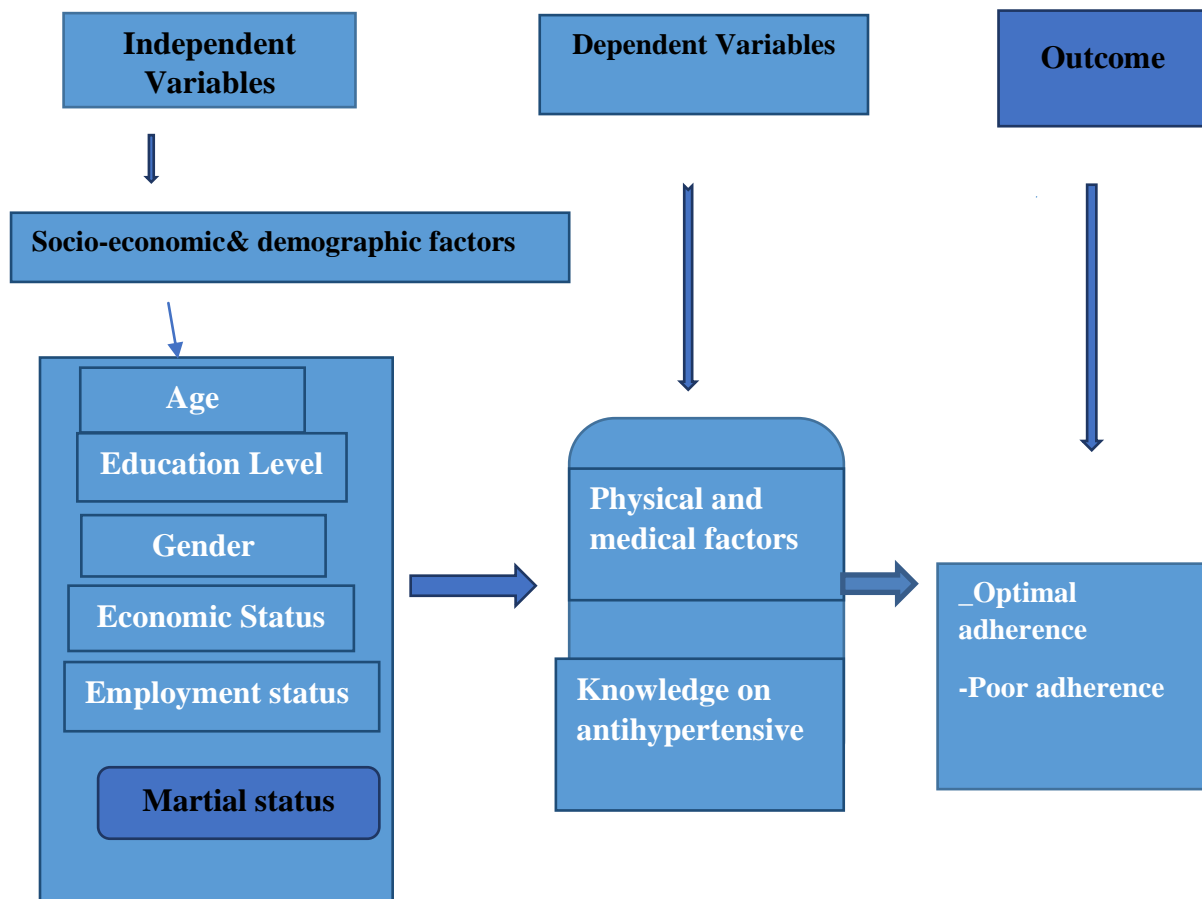
Figure 1 *A conceptual framework of the study*

2.3. Literature reviews related to socio-economic and demographic factors of patients contributing to poor adherence to treatment among hypertensive patients.

In a study done in TUNISIA by the year 2019 relating the therapeutic adherence and identifying the causative factors to poor adherence among hypertensive patients, poor compliance is 2.3 times that likely to occur in women than men and patients with poor economic status were 7 times more likely to be poor compliant than those with good economic status (Gniwa Omezzine et.al 2019).

The research is done in INDIA on treatment compliance among patients with hypertension and Type 2 Diabetes Mellitus found that education level status and socioeconomic background were not found to be associated with treatment compliance (Chythra R. Rao, 2014).

By the year 2021, research done in ASIA on antihypertensive adherence showed that the outcome was that higher socioeconomic status was negatively linked with drug compliance (Choi et al., 2018).

Though hypertension is one of the top five causes of mortality throughout the world, nonadherence to antihypertensive is a global burden. Good adherence is affected primarily by the asymptomatic nature of the disease. The patient generally feels well when untreated, and this can cause a lack of patient motivation to seek care and to adhere to medications. The intrinsic motivation to adhere to a medication that makes no discernable difference to the patient's symptoms tends to be lower than medications that treat symptomatic conditions; for example, adherence to medications for other symptomatic diseases in Rwanda such as HIV and tuberculosis tends to be high (approximately 90% for these diseases in some studies) (Sibomana et al., 2019).

2.4. Literature review related to Exploration of physical and medical factors contributing to poor adherence to treatment among hypertensive patients.

 In a study conducted in New England health care in 2016 patients whose high cardiovascular risk sometimes use 4 or more drugs to control several diseases that can cause unexpected side effects and cause low sticking (Carlos Menéndez Villalva, 2010)

A Study done by Di Mateo and collaborators published a meta-analysis of studies published. They concluded that patients with severe disease and a poor state of health should be identified as at great risk of being non-compliant with treatment (DiMatteo et al, 2016).

Another study has shown that patients with medical conditions such as diabetes, hypertension, high cholesterol, and heart failure were low adherent to antihypertensive medication (Villalva C.M.et. al, 2016)

A study done in 2020 assessing Barriers to and Level of Adherence to Hypertension Therapy among Palestinians Living in the Gaza Strip found that Smokers were more adherent to anti-hypertension therapy than nonsmokers (Nasser. I et al., 2020). A study done in Turkey investigating the effect of herbal medicine use on medication adherence of cardiology patients found that the median Morisky score was significantly higher in herbal users in contrast to nonusers. The rate of low adherence, according was also higher in herbal users 61.2% compared to 29.9% of non-users (Sadik. k et. Al 2014).

Another study was done in Nigeria assessing the frequency of complementary and alternative medicine utilization in hypertensive patients whereas 225 hypertensive participants who used herbs were preferred. Most of them used CAM including garlic (69.3%), native herbs (25%), ginger (23.9%), bitter leaf (Vernonia amygdalina) (9.1%), and aloe vera (4.5%) and 2.5% used religious therapy(Boima et al., 2015). There was no difference in the clinical outcome, treatment adherence, socio-economic status, and blood pressure control of CAM users compared to non-users (Oluwatoyin C Amira, 2007).

A study done in Rwanda evaluating barriers to blood pressure control assessed adherence using MMAS-8 and found adherence to be as high as 77% which was higher than most of the other sub-Saharan countries. A study was done in Namibia using a modified Hill-Bone Compliance scale assessing 120 patients and found a similar level of adherence to antihypertension medications, with a mean adherence level of 76.7 ± 8.1 % (Sibomana et al., 2017).

2.5. Literature review related to any other literature support my study

Adherence to antihypertensive treatments is a key factor to control blood pressure levels. Poor adherence to these treatments results in the development of hypertensive complications and increase risk of cardiovascular events which could reduce the clinical outcome. Despite

increased awareness, poor adherence to treatments for chronic diseases remains a global problem.

A study done in 2006 in Ireland on Determinants of poor adherence in hypertensive patients found that in 255 patients, factors (scales) were labelled as 1 for a positive attitude toward treatment, 2 for lack of discipline, 3 for aversion towards medication and 4 for active coping with the health problem. The results had shown that Chronbach's alpha coefficient was 0.75, 0.80, 0.63 and 0.76 for scales I, II, III and IV, respectively. (GwennWetzels et. Al 2006).

Factors affecting antihypertensive medications adherence, as drawn from the empirical literature, were underpinned by the WHO five dimensions model of adherence. As mentioned above, this model identified the following domains: patient-related factors, socio-economic factors, therapy-related factor, condition-related factors and health system factors.
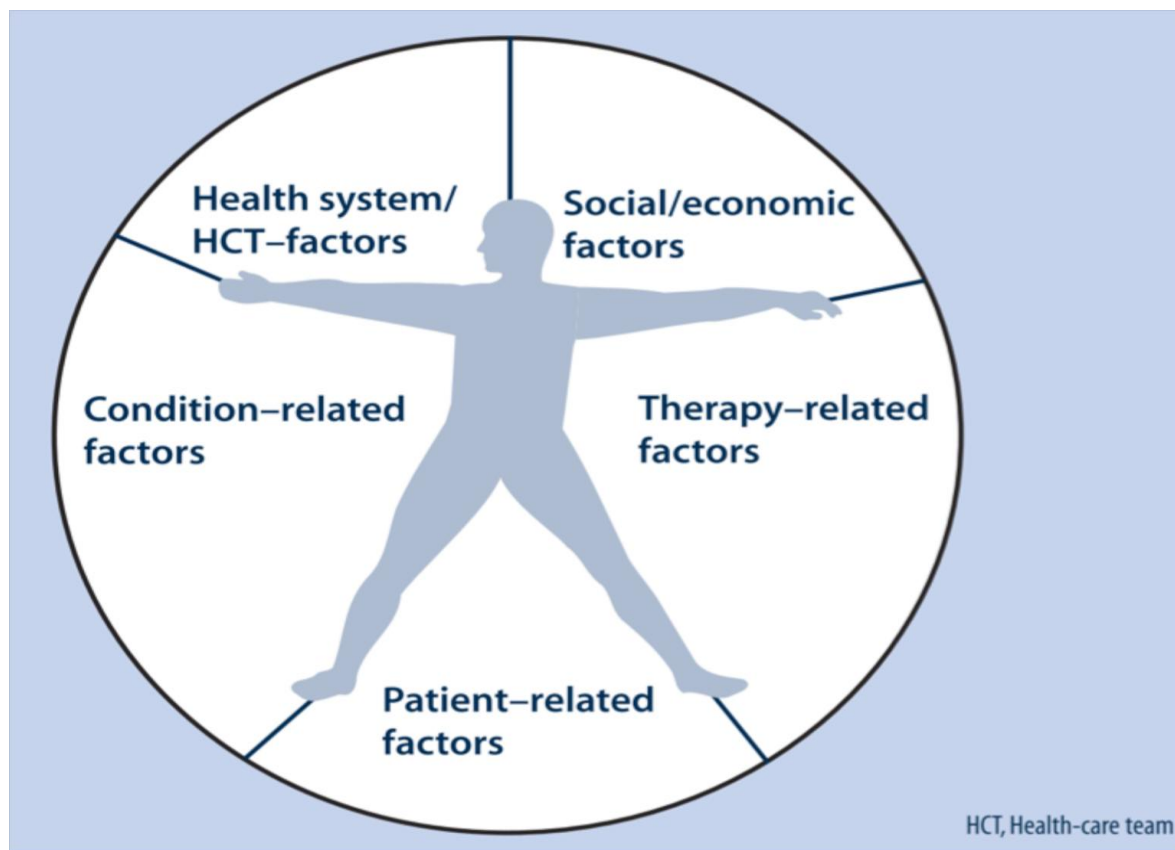
Figure 2 WHO model of medication adherence (WHO, 2003).

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.0. Introduction

This chapter covers the research methodology that was followed to achieve the objectives of the study. A research methodology is defined as the process, or plan for conducting the specific steps of the study (Gray, 2017). The following elements of the research methodology are discussed: research approach, research design, setting, population, sampling and sample, inclusion and exclusion criteria, data collection instrument, validity and reliability of the data collection instrument, data collection process, data analysis and ethical considerations.

3.1. Study approach

This study was designed to be cross-sectional. A Cross-sectional is a type of non-experimental research design that collects data at once time (Haber, 2014). Due to the shortage of time, the researcher decided to use a cross-sectional study. The descriptive study was used to describe the characteristics of a population or phenomenon being studied as they are without any manipulation.

3.2 Research design

The ultimate goal of medication adherence is to achieve improvements in an individuals' health condition and positive clinical outcomes. Assisting medication adherence is a valuable step in identifying the possibility of approaching positive medications outcomes.

This study was a descriptive quantitative cross-sectional study, aimed to explore the factors contributing to poor adherence to treatment among hypertensive patients attending NCDs at MUGONERO District Hospital. The study has involved collecting quantitative data, and it took place in two months of 2021.

This study was based on observational of different age groups at a single point. This design allows the researcher to solicit personal and self-reported information directly from respondents about the Factors contributing to poor adherence to treatment among hypertensive patients with methods they use and associated factors (Hall, 2019). The data analysis was done by using the SPPS version23, the results were presented using frequencies and percentages.

3.2. Target population

The population is the whole set of people with common characteristics that are of interest to the investigator (Brick et al, 2016). The target population is the total population that the investigator has an interest in studying and making a generalization about, after obtaining the research results (Kimuyu & Boniface, 2014).

Then the target population for this study was 150 patients with poor adherence to antihypertensives, who attended NCDS at Mugonero District Hospital in the time range of 2 months (November and December) 2021 and had willing to Participate in the study.

3.3 Sampling procedure

This study, involved purposive sampling, a form of non-probability sampling in which researchers rely on their judgment when choosing members of population to participate in their study. where every NCDs patient with poor adherence to antihypertensive who visited the NCDs service and willing to participate during data collection was be free to participate.

Patients with hypertension who attended the above-specified clinics were approached at random during outpatient clinic days during the study period.

3.4 Sample Size

The population that attended NCDS service in two months was 375, but only 150 were present and agreed to a patriciate, with poor adherence to treatment.

The actual sample size of this study was determined by using the Yamane formula.

By using Taro Yamane formula $n=N/\{1+N(e)^2\}$ it will give: $n=150/\{1+150(0.05)^2\} = 100$ respondents : Where, **n** is the sample size, **N** is the population and **e**= the level of precision

3.5. Research instrument for Data Collection.

The instrument used to collect data in this study was a structured questionnaire with two sections. Section A: social demographic data, Section B: the physical and medical factors contributing to poor adherence to treatment of hypertension among patients attending non-communicable diseases services at Mugonero District Hospital, section A had10 questions and section B with 14 questions.

3.6 Data collection procedure

After signing the consent form the researcher distributed the questionnaire to the participant, and then the researcher checked the questionnaires at the end of each for completeness. A structured questionnaire was used as data collection instrument. The questionnaire was adopted from the study done by Kamunge and her colleagues; they were exploring the factors contributing to adherence to treatment among hypertensive patients attending NCCs servive (Kamunge, Cahill, Zipp, & Parasher, 2015)

3.7. Ethical Consideration

Letter of cooperation request was obtained from Institution Review of KP REC, Department of Nursing Official letter of co-operation was written to Hospital from Department of Nursing and Midwifery of MDH. There were no potential risks that can Cause any harm in any form to the study participants.

Letter of cooperation was given to secure the permission of access to the hospitals included in the study. After obtaining permission from the hospital directors, & unit coordinators, informed (verbal) consent was obtained from the study participants, and participants had provided

information about the objectives and expected outcomes of the study. Information obtained from individual participants will be kept secure and confidential. Names and other identifying data of respondents were made anonymous or eliminated throughout the study process to maintain confidentiality.

The consent form was explained and all participants' questions and concerns were answered in terms of understanding. The researcher and the participants signed a consent form to confirm procedure explanation, confidentiality, and voluntariness' to take part in the study.

3.8 Data Analyzing Procedure

After gathering data that comply with the policies using a questionnaire, it was analyzed using SPSS version23, the data were kept in a secure manner and confidential place such as Email in a well-organized manner so that the data can be accessed at any time for further analysis and shareable at the end of the research project. Thus, the data were managed and accessible data allows others to validate and replicate findings. After 5 years of publishing the results, the data will be deleted.

3.9 Reliability and validity measures validity

According to Kumar 2011, validity is the capability of a tool to measure what it is intended to measure. To ensure the validity of the instrument research supervisor and expert checked the questionnaire for the consistency of the items, conciseness, intelligibility and clarity. Their inputs had helped to make necessary adjustments so that the instrument measures adequately what intended to measure.

Reliability is achieved when a tool is utilized repeatedly under the same conditions and delivers similar results (Kumar, 2011). Comparing the research objective and research tools (questionnaire) with research findings, the research will use phases where 5 Respondents will be not a part of the major respondents but have similar characteristics.

In the second phase, after making the necessary correction the instrument was administered to the actual respondent.

CHAPTER 4: DATA PRESENTATION, ANALYSIS, INTERPRETATION AND SUMMARY

4. 0. INTRODUCTION

A total of 100 adults with hypertension from Mugonero District Hospital were enrolled. Data are presented and analyzed by using frequency, tables, and percentages which were collected through means of questionnaires. Indeed, the chapter deals with the use of SPSS version 23 through quantitative data analysis. Further 100 participants were used to filling questionnaires for the collection of the primary data.

4.1. PRESENTATION OF FINDINGS AND INTERPRETATIONS

Table 1: Showing Social demographic data of the respondents

Variable	Value	Frequency (n=100)	Percentage
Gender	Male	34	34
	Female	66	66
Age	18-29	5	5
	30-39	15	15
	40-49	31	31
	50 and above	49	49
Religion	Catholic	28	28
	ADEPER	23	23
	Adventist	47	47
	Others	2	2
Marital status	Single	8	8
	Married	85	85
	Divorced	5	5
	Widower	2	2
Residence	Urban	11	11

	Rural area	89	89
Education level	**Not education**	16	16
	Primary	78	78
	Secondary	4	4
	University	2	2
Economic status/ Ubudehe category	**First**	7	7
	Second	39	39
	Third	50	50
	Fourth	4	4
Occupation	**Employed/paid**	60	60
	Self-employed	14	14
	Unemployed	26	26
Health insurance	**Yes**	99	99
	No	1	1
Does the distance between the hospital and your home affect your in treatment adherence?	**No**	75	75
	Sometimes	17	17
	Always	8	8

Table 4.1 1: showing social demographic data

The above table summarizes the results table 1 shows the socio-demographic characteristics of the participants.

Ten factors were asked in terms of questions and the results are presented using frequencies and percentages in table 4.11.

The economic status of the participants using UBUDEHE category, the third category was the majority with 50% (n=50), a second category with 39% (n=39), the first category with 7% (n=7), fourth category had 4 %(n=4).

The occupation of participants was dominated by employed/ paid 60% (n=60) followed by unemployed 26% (n=26), then self-employed 14% (n=14).

The participants almost all had health insurance, 99% (n=99), while only 1% (n=1) had no insurance.

The majority of participants were not being affected by the distance between their home and hospital with 75% (n=75), same others were affected but not always17% (n=17), while these have been affected completely 8% (n=8).

EDUCATION BACGROUND
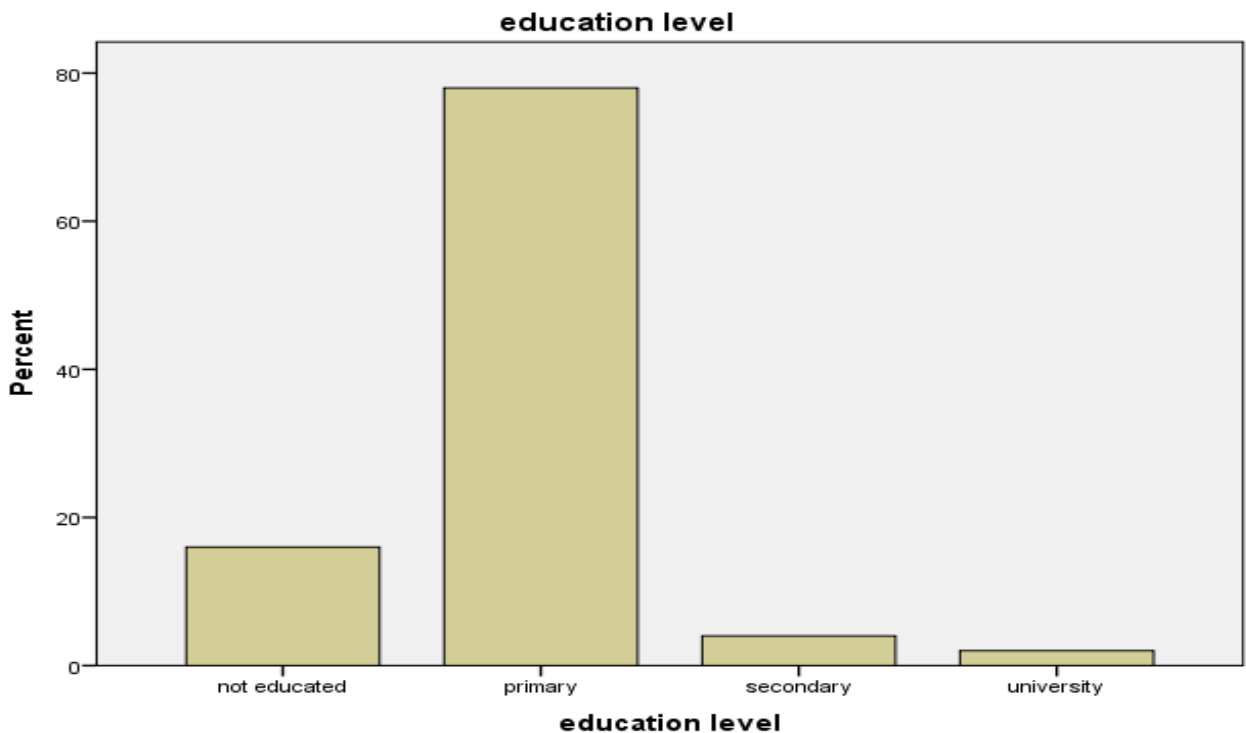
Figure 3: Showing education level

The participants have differences in educational background, where primary, not educated, secondary, the university with 78% (n=75), 16% (n=16), 4% (n=4), 2 %(n=2) respectively, those who did at least primary school were the majority.

Section B: Exploration of medical and health care system factors contributing to poor adherence to treatment among hypertensive patient attending to NCDs at Mugonero DH.

Table 2: Showing exploration of medical and health care system factors

Question	Answer	Frequency	Percentage (%)
Do you have a smoking history?	Yes	15	15
	No	85	85
Do you exercise?	Yes	18	18
	No	82	82
Do you have any other chronic diseases?	Yes	80	80
	No	20	20
If the above question is yes, then which among the following? **(n=20)**	Diabetes	6	30
	Hepatitis	6	30
	HIV/AIDS	5	20
	Asthma	1	5
	Others	3	15
Do you have a history of alcoholic drinks?	Yes	16	16
	No	84	84
Do you have a family member with hypertension?	Yes	16	16
	No	84	84
Do you prepare vegetables or fruits in your family diet?	Yes	23	23
	No	77	77
Most of the time do you prepare your meal with oil or fat?	Yes	79	79
	No	21	21

Have you ever used any herbal or traditional remedy in your life?	Yes	82	82
	No	18	18
Does your nurse provide you counselling about your medication for each visit?	Yes	79	79
	No	21	21
Do you know your condition and its complication?	Yes	23	23
	No	77	77
Does your treatment affect you?	Yes	25	25
	No	75	75
Are you coping with medication?	Yes	80	80
	No	20	20
If the answer to the above question is no, then what do you do? **(n=20)**	Stop the medication	11	55
	I return to the health care and tell the nurse.	2	10
	Search for traditional medications	3	15
	Take over the counter medication.	2	10
	Reduce the dose.	2	10

Source: primary data

To explore factors contributing to poor adherence to treatment among hypertensive patients, fourteen multiple choices questions were asked; where each question with a factor was considered to make an impact on poor adherence if more than 50% would have accepted that factor.

The factor that more than 50 % was preparing food using fats/ oil where 79% (n=79), and 80% (n=80) were not coping with medication and only 20% (n=20) were accepting to cope with medication. Those who have other chronic diseases were only 80% (n=80), among those who were asked which disease they have and diabetes 30% (n=6), hepatitis 30 (n=6), HIV/AIDS 20% (n=4), other medical conditions 15% (n=3). Having a family member who had hypertension was not an issue because only 16% (n=16), this means 84% (n=84) had no family member with hypertension.

These percentages apply also to people who had a history or are currently using alcohol; alcohol consumption was only at 16%. Another noted issue is the use of the traditional remedies, where among (n=18) making 18% of participants accepted that they use them.

4.2. Correlation between socio-demographic data towards and medical and health system factors.

Below, there is a summary of cross-tabulation between the medical and health system factors of hypertensive patients towards socio-demographic data of participants. The Pearson chi-square and Fischer exact test were computed to the correlation. The association is significant only when the p-value is below 0.05; therefore, there is no significant relationship between some socio-demographic characteristics (religion, occupation) and attitude of hypertensive patients as their p values are above 0.05. this means that religion and occupation do not impact the medical and health care system factors.

However, there is a significant relationship between some socio-demographic characteristics (age, education background, marital status) and medical and health care system factors of hypertensive patients as their p values are below 0.05. this means that the age, educational

background and marital status of the hypertensive patients will directly influence the medical and

health care system factors.

Table 3: SHOWING CORRELATION

Social-demographic characteristics	Correlation					
Age	Effect of demographic characteristics on the medical and health factors					
	Good factors		Bad factors		Test used	P-value
	n	%	n	%		
18-29	2	2	3	3		
30-39	13	13	2	2	Fischer	0.011
40-49	24	24	7	7	test	
50-above	37	37	12	12		
Education						
Primary	67	67	11	11	Fischer	
Secondary	2	2	0	0	test	0.023
University	1	1	5	5		
No education	10	10	6	6		
Region						
Catholic	14	14	14	14	Fischer	
Protestant	20	20	6	6	test	
Adventist	39	39	8	8		
Others	1	1	1	21		0.077
Occupation						
Employed /paid	8	8	52	52		
Self employed	12	412	2	2	Fischer	0.068
Unemployed	6	6	20	20	test	
Marital status						
Single	6	6	2	2		
Married	80	80	5	5	Fischer	0.01
Divorced	1	1	4	4	test	
Widowed	1	1	1	1		

According to the above correction the conclusion can be made that there is a significant relationship between some socio-demographic characteristics (age, education background, marital status) and medical and health care system factors of hypertensive patients as their p values are below 0.05. this means that the age, educational background and marital status of the hypertensive patients will directly influence the medical and health care system factors.

THE PREVALENCE OF COMORBIDITIES AMONG STUDY PARTICIPANTS
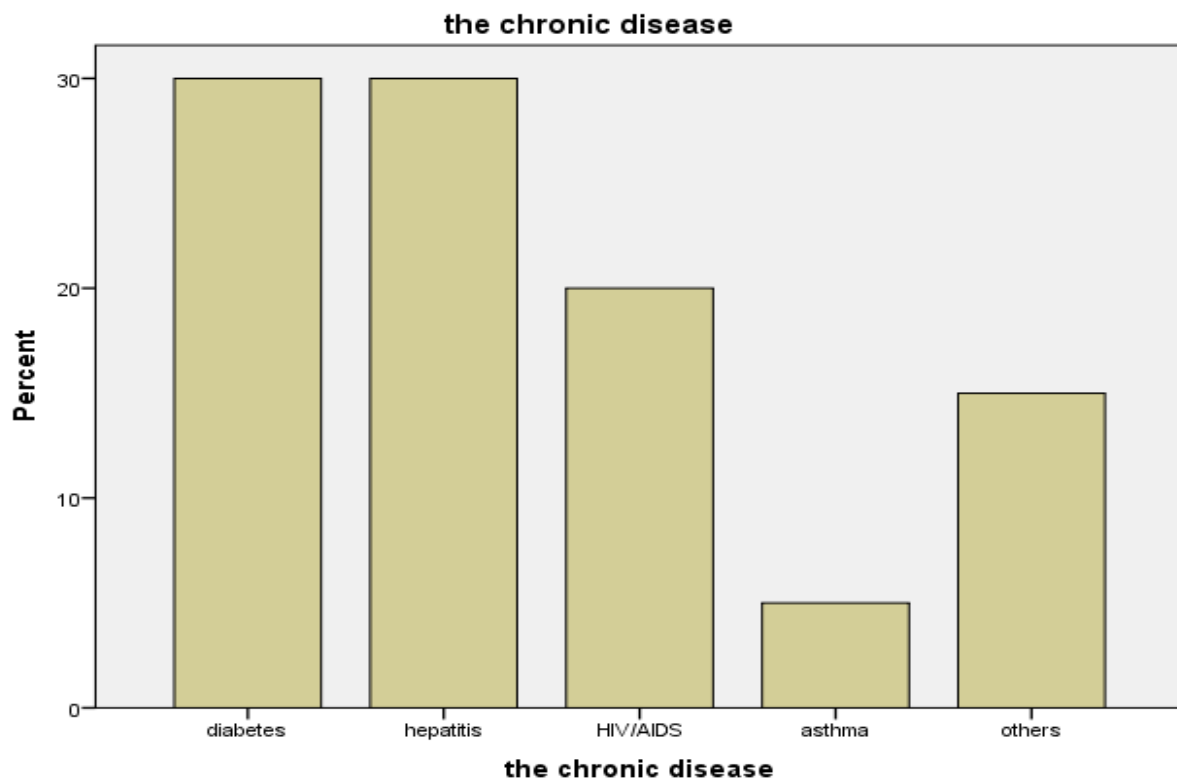
Figure 4: Showing the prevalence of comorbidities among the participants.

4.2 DISCUSSIONS OF FINDINGS

INTRODUCTION

The results of the study on the exploration of factors contributing to poor adherence to treatment, among hypertensive patients attending NCDs clinic at Mugonero Distirct Hospital are dived into two parts according to the study objectives. According to the presented tables above.

The first objective is to identify socio-economic and demographic factors of patients contributing to poor adherence to treatment among hypertensive patients attending NCDs at Mugonero District Hospital.

The majority of participants were female 66(66%) while males were 34(34%), which means the female has poor adherence than males, on another side the age of participants, the majority were aged 50 years and above 49(49%), 40-49 years with 31(31%), 30-39 years with 15(15%), 18-29 with 5(5). The religion of the patients was dominated by Adventists with 47(47%), catholic 28(28%), ADEPER 23(23), and other regions with 2(2%).

The marital status of the participants was dominated by married 85(85%), single 8(8%), divorced 5(5%), widow 2(2%), The involvement of a domestic relationship with a partner contributed positively to health management. It was, therefore, important to consider the role of marital status in antihypertensive medication adherence. This was because it was considered a measure of a social network that acted as a helpful factor for patients during illness management (Sperber, Sandelowski, & Voils, 2013). This was similar to another study conducted with 1,326 patients with coronary artery disease undergoing cardiac catheterisation in the United States of America. The study examined the adherence to cardiovascular medications for 12 months after hospital discharge. Unmarried individuals accounted for 30% of the sample and reported lower cardiovascular medication adherence for 24.7% of these participants. The multivariable predictors showed that being married contributed to better adherence among the study sample (Kulkarni, Alexander, Lytle, Heiss, & Peterson, 2016). In the absence of marital support, patients with chronic illness reported poor management of their health conditions as well as increased complications related to this poor management of their illness, such as the presence of cardiac events in heart failure patients (Wu et al., 2012).

The majority of participants live in villages 89(89%), and centers 11(11%). with the economic status second and third category having the majority 39%, 50% respectively. Therefore, it is reasoned that patients with high income contribute better to their illness management including medication adherence.

Patients with low income had poor health management because of the struggle they faced to seek healthcare services or afford treatment. Low-income status was an issue associated with poor adherence for minorities in communities that did not receive effective health support as was the case for low-income African Americans in the United States of America (Ibrahim, 2003; Shaw & Bosworth, 2012), and in patients in urbanized communities in rural Eastern Uganda (Bagonza, Rutebemberwa, & Bazeyo, 2015).

The second objective was to explore physical and medical factors contributing to poor adherence to treatment among hypertensive patients attending NCDs at Mugonero district hospital.

The factor that more than 50 % was preparing food using fats/ oil where 79% (n=79), and 80% (n=80) were not coping with medication and only 20% (n=20) were accepting to cope with medication. Those who have other chronic diseases were only 80% (n=80), among those who where asked which disease they have and diabetes 30% (n=6), hepatitis 30 (n=6), HIV/AIDS 20% (n=4), other medical conditions 15% (n=3). Having a family member who had hypertension was not an issue because only 16% (n=16), this means 84% (n=84) had no family member with hypertension.

Alcohol intake in this study was not an issue because only 16% reported having an alcohol intake history. The results are in line with results from the study of a study done in Jeddah City, Saudi Arabia, where only 27.6% had alcohol intake. This can be explained by the fact that taking alcohol might increase the risk of forgetting your medications which also was found to have a statistically significant associations with poor adherence. The other reason could be that these patients might use the money for alcoholic beverages instead of buying medications (Mekonnen et al., 2017).

The number of people who have said they know their condition was 23% and 77% said they don't have it.

These percentages apply also to people who had a history or are currently using alcohol; alcohol consumption was only at 16%. Another noted issue is the use of the traditional remedies, where among (n=18) making 18% of participants accepted that they use them.

4.3. SUMMARY OF FINDINGS

The results of the study on the exploration of factors contributing to poor adherence to treatment, among hypertensive patients attending NCDs services at Mugonero District Hospital are dived into two parts according to the study objectives.

The first objective is to identify socio-economic and demographic factors of patients contributing to poor adherence to treatment among hypertensive patients attending NCDs at Mugonero District Hospital. Based on the study objectives, the gender of the respondent was dominated by a female (66%) while males were only 34%, the age of participants the majority were above 40 years (80%), on side of religion the majority were Adventists this is because the hospital is located in an area with more Adventists believers, marital status, the majority were married counting of 85% these results are the same as the result s of the study done in Kiambu District Hospital in Kenya in 2014 where female-dominated the participants (Kimuyu & Boniface, 2014).

The second objective was to explore physical and medical factors contributing to poor adherence to treatment among hypertensive patients attending NCDs at Mugonero district hospital. The study reviled that the majority of participants has no smoking history (85%), exercising is not understood by the big number of participants because only 18% exercise regularly, having any other chronic disease was at the level of 80% and among those with chronic diseases diabetes and hepatitis were dominating with 30% each. The results are in line with the study done at the University of Uyo Teaching Hospital, Uyo in Nigeria (Ekanem et al., 2020).

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter discusses the summary of the main finding of the study by focusing on each objective. Moreover, the conclusion and recommendation are highlighted in the study to explore factors contributing to poor adherence to treatment among hypertensive patients attending NCDs at Mugonero District Hospital.

5.1. CONCLUSION

Having primary school as a high level of education, chronic diseases, alcohol intake, forgetting to take medications and negative beliefs about medications and poor knowledge of taking a preparation of food were associated with poor adherence. Only the primary education level and forgetting to take medications remained statistically significant after analysis. Other predictions including taking more than traditional remedies, smoking, and herbal remedies were not statistically significant although we still believe they are clinically significant.

5.2 RECOMMENDATIONS

Although The purpose of this study was to explore the Factors contributing to Poor Adherence to Treatment among Hypertensive patients attending NCDs at MUGONERO District Hospital.

Specific objectives were (1) To identify socio-economic and demographic factors of patients contributing to poor adherence to treatment among hypertensive patients attending NCDs at Mugonero District Hospital, the recommendations that the study come up with is that group of people could be helped by the hospital in collaboration with local governance in a way that their standard of life could be rise, ie health insurance.

(2) To explore medical and health care system factors contributing to poor adherence to treatment among hypertensive patients attending to NCDs at Mugonero District Hospital. So, the study recommends that where possible hypertensive patients with poor adherence could be give /taken care in special manner because they could develop life threatening complications than others. This could be done in terms of home visits. The nurses and physicians, especially those

working in NCD clinics, should devote their time to optimising communication between physicians and patients. Irrespective of their education status, patients need health education about hypertension (being asymptomatic may make it difficult to take medication when there is no symptomatic relief) and the side effects of medications.

Low-income earners were found to be at risk of low adherence. The hospital management should put in place an effective waiver system to identify needy clients who should be waived to ensure a constant supply of their antihypertensives.

Knowledge of hypertension medication and its treatment was found to be an independent predictor of adherence. Hospital clinicians should ensure routine health education focusing more on hypertension risk factors, prevention, treatment options both drug, dietary and lifestyle modifications, and the importance of compliance to treatment and its complications.

Finally, the Rwandan population is aging and living longer. We can expect the number of patients with hypertension to increase. More is required from health workers, hospitals, and health insurance groups to understand the problem of hypertension and its complications among the Rwandan population and to avail of antihypertensive medications.

5.3. SUGGESTIONS FOR FURTHER STUDY

The next study should try its best and include the primary health care setting as the population attending there is big and can be visited at home and observe lifestyle. further studies on the impact of interventions targeting patients with poor adherence that others noted to be at higher risk of poor adherence to hypertension medication e.g. females, low-income earners, those with low education levels and others are recommended.

REFERENCES

Adeloye, D., & Basquill, C. (2014). Estimating the prevalence and awareness rates of hypertension in Africa: A systematic analysis. *PLoS ONE*, *9*(8). https://doi.org/10.1371/journal.pone.0104300

Boima, V., Ademola, A. D., Odusola, A. O., Agyekum, F., Nwafor, C. E., Cole, H., Salako, B. L., Ogedegbe, G., & Tayo, B. O. (2015). Factors Associated with Medication Nonadherence among Hypertensives in Ghana and Nigeria. *International Journal of Hypertension*, *2015*. https://doi.org/10.1155/2015/205716

Choi, H. Y., Oh, I. J., Lee, J. A., Lim, J., Kim, Y. S., Jeon, T. H., Cheong, Y. S., Kim, D. H., Kim, M. C., & Lee, S. Y. (2018). Factors affecting adherence to antihypertensive medication. *Korean Journal of Family Medicine*, *39*(6), 325–332. https://doi.org/10.4082/kjfm.17.0041

Damasceno, A. (2016). Noncommunicable Disease. In *Heart of Africa: Clinical Profile of an Evolving Burden of Heart Disease in Africa*. https://doi.org/10.1002/9781119097136.part5

Dego, T. R., & Bobasa, E. M. (2016). Adherence to anti-hypertensive medication and contributing factors among non-comorbid hypertensive patients in two hospitals of jimma town, south west ethiopia. *Gulhane Medical Journal*, *58*(1), 60–66. https://doi.org/10.5455/gulhane.1286

Ekanem, U., Dan, E., Etukudo, G., Ndon, I., Etebom, E., & Nkobo, K. (2020). An assessment of antihypertensive medication adherence among hypertensive patients attending the outpatient clinics in the University of Uyo Teaching Hospital, Uyo. *Nigerian Medical Journal*, *61*(3), 120. https://doi.org/10.4103/nmj.nmj_95_19

Gómez-olivé, F. X., Ali, S. A., Made, F., Kyobutungi, C., Micklesfield, L., Alberts, M., Boua, R., Hazelhurst, S., Debpuur, C., Mashinya, F., Dikotope, S., Sorgho, H., Muthuri, S., Soo, C., Mukomana, F., Agongo, G., Wandabwa, C., Afolabi, S., Oduro, A., … Nigel, J. (2018). *HHS Public Access*. *12*(2), 81–90. https://doi.org/10.1016/j.gheart.2017.01.007.Regional

Jean Pierre, S. (2020). *Adherence To Antihypertensive Medications in the Primary Care Setting in Rwanda College of Medicine & Health Sciences School of Medicin &Pharmacy*. *March*.

Kimuyu, & Boniface, M. (2014). Factors Associated with Adherence to Antihypertensive Treatment in Kiambu District Hospital. *Medicare*, *24*(2), 67–74.

Mekonnen, H. S., Gebrie, M. H., Eyasu, K. H., & Gelagay, A. A. (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*, *18*(1), 1–10. https://doi.org/10.1186/s40360-017-0134-9

Oori, M. J., Mohammadi, F., Norouzi, K., Fallahi-Khoshknab, M., & Ebadi, A. (2018). Conceptual Model of Medication Adherence in Older Adults with High Blood Pressure-An Integrative Review of the Literature. *Current Hypertension Reviews*, *15*(2), 85–92. https://doi.org/10.2174/1573402114666181022152313

Sibomana, J. P., McNamara, R. L., & Walker, T. D. (2019). Patient, clinician and logistic barriers to blood pressure control among adult hypertensives in rural district hospitals in Rwanda: A cross-sectional study. *BMC Cardiovascular Disorders*, *19*(1), 1–8. https://doi.org/10.1186/s12872-019-1203-3

WHO. (2018). WHO Rwanda NCD Country Profile. *World Health Organisation*, 2018. https://www.who.int/nmh/countries/rwa_en.pdf?ua=1

Zhou, B., Bentham, J., Di Cesare, M., Bixby, H., Danaei, G., Cowan, M. J., Paciorek, C. J., Singh, G., Hajifathalian, K., Bennett, J. E., Taddei, C., Bilano, V., Carrillo-Larco, R. M., Djalalinia, S., Khatibzadeh, S., Lugero, C., Peykari, N., Zhang, W. Z., Lu, Y., … Eggertsen, R. (2017). Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19·1 million participants. *The Lancet*, *389*(10064), 37–55. https://doi.org/10.1016/S0140-6736(16)31919-5

Adeoye D, Basquill C. Estimating the prevalence and awareness rates of hypertension in Africa: a systematic analysis. PLoS One. 2014;9(8): e104300.

Teyn K, Bradshaw D, Norman R, Laubscher R. Determinants and treatment of hypertension in south Africans: the first demographic and health survey. SAfr Med J. 2008;98(5):376–80.

Nguyen, Q., Dominguez, J., Nguyen, L., &Gullapalli, N. (2010). Hypertension management: an update. *American health & drug benefits*, *3*(1), 47–56.

Mbaw, A.D., Alemie, G.A., W/Johannes, S.M. *et al.* Adherence to antihypertensive treatment and associated factors among patients on follow up at University of Gondar Hospital, Northwest Ethiopia. *BMC Public Health* **12,** 282 (2012). https://doi.org/10.1186/1471-2458-12-282

Lennon C, Hughes CM, Mcelnay JC, Johnston GD: Identification of psychosocial factors which influence patient adherence with antihypertensive medication. Int J Pharm Pract. 2001, 9 (s1): 8-10.1111/j.2042-7174. 2001.tb01068. x.

Correa Leite, M.L., Firmo, J.O., Loyola Filho, A.I. *et al.* Discontinuation of antihypertensive drugs increases 11-year cardiovascular mortality risk in community-dwelling elderly (the Bambuí Cohort Study of Ageing). *BMC Public Health* **14,** 725 (2014). https://doi.org/10.1186/1471-2458-14-725

Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J: Global burden of hypertension: analysis of worldwide data. Lancet.2005, 365: 217-223.10.1016/S0140-6736(05)17741-1.

Damasceno A, Azevedo A, Silva-Matos C, Prista A, Diogo D, Lunet N: Hypertension prevalence, awareness, treatment, and control in Mozambique: urban/rural gap during the epidemiological transition. Hypertension.2009, 54: 77-83. 10.1161/HYPERTENSIONAHA.109.132423.

Burnier M: Medication adherence and persistence as the cornerstone of effective antihypertensive therapy. Am J Hypertens.2006, 19: 1190-1196. 10.1016/j.amjhyper.2006.04.006.

Gwenn Wetzels, Patty Nelemans, Boris van Wijk, Nick Broers, Jan Schouten, Martin Prins, Determinants of poor adherence in hypertensive patients: Development and validation of the "Maastricht Utrecht Adherence in Hypertension (MUAH)-questionnaire",
Patient Education and Counseling,
Volume 64, Issues 1–3,2006,
Pages 151-158, ISSN 0738-3991,
https://doi.org/10.1016/j.pec.2005.12.010.
(https://www.sciencedirect.com/science/article/pii/S0738399105003812)

Villalva C.M., Alvarez-Muiño X.L.L., Mondelo T.G., Fachado A.A., Fernández J.C. (2016) Adherence to Treatment in Hypertension. In: Islam M.S. (eds) Hypertension: from basic

research to clinical practice. Advances in Experimental Medicine and Biology, vol 956. Springer, Cham. https://doi.org/10.1007/5584_2016_77

Therapeutic Compliance of Patients with Arterial Hypertension in Primary Care.
Iancu MA, Mateiciuc II, Stanescu AA, Matei D, Diaconu CC
Medicina (Kaunas), 56(11), 22 Nov 2020

Nasser Ibrahim Abu-El-Noor, Yousef Ibrahim Aljeesh, Bettina Bottcher, Mysoon Khalil Abu-El-Noor, "Assessing Barriers to and Level of Adherence to Hypertension Therapy among Palestinians Living in the Gaza Strip: A Chance for Policy Innovation", International Journal of Hypertension, vol. 2020, Article ID 7650915, 12 pages, 2020. https://doi.org/10.1155/2020/7650915

Mira, O.C., Okubadejo, N.U. Frequency of complementary and alternative medicine utilization in hypertensive patients attending an urban tertiary care Centre in Nigeria. BMC Complement Altern Med 7, 30 (2007). https://doi.org/10.1186/1472-6882-7-30

Sadık Kadri Açıkgöz, Eser Açıkgöz, Salih Topal, Hızır Okuyan, Belma Yaman, Okan Er, Barış Şensoy, Mustafa Mücahit Balcı, Sinan Aydoğdu,
Effect of herbal medicine use on medication adherence of cardiology patients,
Complementary Therapies in Medicine,
Volume 22, Issue 4, 2014,Pages 648-654,ISSN 0965-2299

Gómez-Olivé FX, Ali SA, Made F, et al. Regional and Sex Differences in the Prevalence and Awareness of Hypertension: An H3Africa AWI-Gen Study Across 6 Sites in Sub-Saharan Africa. Glob Heart. 2017;12(2):81-90. doi:10.1016/j.gheart.2017.01.007

Zhou B, Bentham J, Di Cesare M, Bixby H, Danaei G, Cowan MJ, Paciorek CJ, Singh G, Hajifathalian K, Bennett JE. Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19· 1 million participants. Lancet. 2017;389(10064):37–55..

Adeloye D, Basquill C. Estimating the prevalence and awareness rates of hypertension in Africa: a systematic analysis. PLoS One. 2014;9(8):e104300.

teyn K, Bradshaw D, Norman R, Laubscher R. Determinants and treatment of hypertension in south Africans: the first demographic and health survey. S Afr Med J. 2008;98(5):376–80.

Nguyen, Q., Dominguez, J., Nguyen, L., &Gullapalli, N. (2010). Hypertension management: an update. *American health & drug benefits*, *3*(1), 47–56.

mbaw, A.D., Alemie, G.A., W/Yohannes, S.M. *et al.* Adherence to antihypertensive treatment and associated factors among patients on follow up at University of Gondar Hospital, Northwest Ethiopia. *BMC Public Health* **12,** 282 (2012). https://doi.org/10.1186/1471-2458-12-282

Lennon C, Hughes CM, Mcelnay JC, Johnston GD: Identification of psychosocial factors which influence patient adherence with antihypertensive medication. Int J Pharm Pract. 2001, 9 (s1): 8-10.1111/j.2042-7174.2001.tb01068.x.

Correa Leite, M.L., Firmo, J.O., Loyola Filho, A.I. *et al.* Discontinuation of antihypertensive drugs increases 11-year cardiovascular mortality risk in community-dwelling elderly (the Bambuí Cohort Study of Ageing). *BMC Public Health* **14,** 725 (2014). https://doi.org/10.1186/1471-2458-14-725

Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J: Global burden of hypertension: analysis of worldwide data. Lancet.2005, 365: 217-223.10.1016/S0140-6736(05)17741-1.

Damasceno A, Azevedo A, Silva-Matos C, Prista A, Diogo D, Lunet N: Hypertension prevalence, awareness, treatment, and control in Mozambique: urban/rural gap during the epidemiological transition. Hypertension.2009, 54: 77-83. 10.1161/HYPERTENSIONAHA.109.132423.

Burnier M: Medication adherence and persistence as the cornerstone of effective antihypertensive therapy. Am J Hypertens.2006, 19: 1190-1196. 10.1016/j.amjhyper.2006.04.006.

Gwenn Wetzels, Patty Nelemans, Boris van Wijk, Nick Broers, Jan Schouten, Martin Prins, Determinants of poor adherence in hypertensive patients: Development and validation of the "Maastricht Utrecht Adherence in Hypertension (MUAH)-questionnaire",

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https://doi.org/10.1016/j.pec.2005.12.010.

(https://www.sciencedirect.com/science/article/pii/S0738399105003812)

Villalva C.M., Alvarez-Muiño X.L.L., Mondelo T.G., Fachado A.A., Fernández J.C. (2016) Adherence to Treatment in Hypertension. In: Islam M.S. (eds) Hypertension: from basic research to clinical practice. Advances in Experimental Medicine and Biology, vol 956. Springer, Cham. https://doi.org/10.1007/5584_2016_77

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Nasser Ibrahim Abu-El-Noor, Yousef Ibrahim Aljeesh, Bettina Bottcher, Mysoon Khalil Abu-El-Noor, "Assessing Barriers to and Level of Adherence to Hypertension Therapy among Palestinians Living in the Gaza Strip: A Chance for Policy Innovation", International Journal of Hypertension, vol. 2020, Article ID 7650915, 12 pages, 2020. https://doi.org/10.1155/2020/7650915

mira, O.C., Okubadejo, N.U. Frequency of complementary and alternative medicine utilization in hypertensive patients attending an urban tertiary care centre in Nigeria. BMC Complement Altern Med 7, 30 (2007). https://doi.org/10.1186/1472-6882-7-30

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APPENDICES

Questionnaire

SECTION A: Socio- economic and demographic factors

1-Gender

    1. male
    2. female

2. Age of respondent

    1. 20-29
    2. 30- 39
    3. 40-49
    4. 50 and above

3. Religion

    1-catholic

    2-adeper

    3-Adventist

    4-others

4-Marital status

    1-single

    2-married

    3-Divorced

    4-widow/widower

5-Residence

    1-centers

    2-village

6-Education level

    1-not educated

    2-primary

    3-secondary

    4-university

7- Economic status/*ubudehe category*

    1-category one

    2-category two

    3-category three

    4-category four

8-Occupation

    1-employed/paid

    2-Self employed

    3-Unemployed

9- Do you have health insurance?

    1-yes

    2-no

10- Does the distance between hospital and your home affect you in treatment adherence?

    1-No

    2-Sametimes

    3-Always

SECTION B: Exploration of medical and health care system factors contributing to poor adherence to treatment among hypertensive patients attending NCDs clinic at Mugonero District Hospital.

11-do you have a smoking history?

    1-Yes

    2-no

12-Do you exercise?

    1-Yes

    2-no

13- Do you have any other chronic disease?

    1-yes

    2-no

14-if the above question (13) is yes, then which among the following?

1-diabetes

2-hepatitis

3- HIV/AIDS

4-Asthma

5-others

15-Do you have history of alcoholic drink?

1-yes

2-no

16- Do you have a family member with hypertension?

1-yes

2-no

17- Do you prepare vegetables or fruits in your family diet?

1-yes

2-no

18. Most of the time do you prepare your meal with oil or fat?

1-yes

2-no

19. Have you ever used any herbal or traditional remedy in your life?

1-yes

2-no

20- Does your nurse provide you counselling about your medication for each visit?

1-yes

2-no

21- Do you know your condition and its complication?

1-yes

2-no

22- Does your treatment affects you?

1-yes

2-no

23- Are you coping with medication?

1-yes

2-no

24-if the answer to the above question (23) is no, then what do you do?

1- I stop the medication

2- I return to the health care and tell the nurse

3- I search for traditional medications

4- I take over the counter medication

5- I reduce the dose

The survey is now complete. Thank you for your participation in this survey. We appreciate your time.

Acceptance letter

KIBOGORA POLYTECHNIC

Granted Accreditation and Legal Personality by the Ministerial Order N⁰ 7/2015Official Gazette N⁰ 03 of 19/01/2015 P.O.Box: 31 Rusizi-Rwanda Tel:(+250)280100759 E-mail:info@kp.ac.rw Website: www.kp.ac.rw

Student Dissertation Project's Letter

January,28ᵗʰ·2022

To whom it may concern

We write this letter to humbly request you to allow Mrs DUKUNDANE Liliane (2000804) to conduct research in your organization/institution/territorial entity. The above mentioned are bonafide students of kibogora polytechnic pursuing bachelor's degree in general nursing department. These candidates are currently conducting a research entitled **"EXPLATION OF FACTORS CONTRIBUTING TO POOR ADHERENCE TO TREATMENT AMOMG HYPERTENSIVE PATIENTS ATTENDING TO NCDS SERVICES AT MUGONERO DISTRICT HOSPITAL"**we are convinced that your organization/institution/territorial entity will constitute a valuable source of information pertaining to their research. The purpose of this letter is to humbly request you to avail them with the pertinent information they may need. We pledge to ensure that all provided information will be used in the strict academic purpose.

Any assistance rendered to the candidates will be highly appreciated.

Approved by:

Yours,

Dr Eleazar NDABARORA,Phd
Dean of Health Sciences
Kibogora Polytechnic