

# Health workers perspectives on the diagnosis and management of hypertension in Kasungu, Malawi.

Marion Chiwena Mzikamanda



Department of Health and Society

Faculty of Medicine

UNIVERSITY OF OSLO

2017



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Marion Chiwena Mzikamanda

Supervisor: Viva Combs Thorsen

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Title: Health worker perspectives of the diagnosis and management of hypertension

<http://www.duo.uio.no/>

Print: Reprosentralen, University of Oslo

# Abstract

**Background:** Like many developing countries Malawi is facing the double burden of disease. With limited resources, the health systems is struggling with the increasing burden of non-communicable diseases(NCD) whilst combating the burden of communicable/infectious diseases(1). Cardiovascular disease (CVD) is the leading cause of the growing burden of NCD with hypertension being the common risk factor(2). The levels of awareness, treatment and control of hypertension in Malawi are reported to be low(2). This study sought to explore health worker perspectives on the diagnosis and management of hypertension in primary and secondary level of care in Malawi. The study also explored their experiences in their role in the diagnostic process and patients' follow-up in hypertension clinics to ensure that patients receive the quality care they need.

**Method:** Qualitative research interview was the method used for data collection. The study was conducted in four health facilities in Kasungu district in Malawi. Eleven individual interviews of health care workers were conducted. The health workers were interviewed on their roles and experiences in diagnosis and management of hypertension, the challenges encountered but also suggestions to improvement. Thematic analysis was used to analyse the findings(3). The structure and process components of the Donabedian model of quality of care was used to discuss the findings.

**Findings:** The health workers described hypertension as an unfamiliar condition both in communities but also for the health workers. In following up patients, the health workers expressed the benefits of health education and community sensitisation but also organised patient follow up at NCD clinic. The lack of resources and also the need for more training some of the challenges encountered. One important suggestion to improving hypertension care was the inclusion of community health workers known as health surveillance assistants in hypertension care

**Conclusion:** Health workers in both the primary and secondary levels of care expressed the need to improve the already existing measures that are in place to improve hypertension care. A multi-faceted intervention to improve hypertension services is necessary. The findings also suggest that several barriers stand in the way of hypertension diagnosis and management in primary and secondary health facilities.



**Dedicated to:**

~My mum and dad~

# Acknowledgements

Firstly, I thank the Almighty God for everything during this journey of conducting my research and writing the thesis.

Secondly, I would like to express my sincere gratitude to my supervisor, Viva Combs Thorsen of the University of Oslo for all the useful and helpful guidance, support and dedicated supervision throughout the work on this thesis.

Special appreciation goes to Kasungu district health office and all the health workers who participated for allowing me to conduct this research in Kasungu district. I would also like to register my thanks to all the lecturers in the department of health sciences for their valuable time that they always allocated to us during the course of this study, their advice notwithstanding.

Special gratitude goes to my family: the Mzikamandas and the Kumwendas for their love, encouragement, support and understanding throughout the period of study. To Dorothy, you have pushed me to this stage and I thank you for all your support and advice. To my many friends in Norway and Malawi, too many to mention, I thank you for the encouragement. Lastly but not least, my heartfelt gratitude goes to my loving husband Mwiza for the love, support, encouragement, patience and understanding throughout the study period.

Marion Chiwena Mzikamanda

Drammen, November 2017.



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# Abbreviations and acronyms

BLM: Banja La Msogolo

BP: Blood pressure

CHAM: Christian health association of Malawi

COMREC: College of Medicine Research Ethics Committee

CVD: Cardiovascular diseases

DFID: Department for international development

DHIS: District Health Information Systems

EHRP: Emergency Human Resource Program

HIC: High income countries

HSA: Health Surveillance Assistants

IOM: Institute of Medicine

ISH: International Society of Hypertension

KDH: Kasungu District Hospital

LMIC: Low-middle income countries

MoLG: Ministry of Local Government

MOH: Ministry of Health

MSTG: Malawi Standard Treatment Guidelines

NCD: Non-communicable diseases

NGO: Non-governmental Organisation

NSD: Norwegian Centre for Research Data

OPD: out-patient department

UIO: University of Oslo

WHO: World health organisation

WMA: World Medical association

# 1 Introduction

Many low and middle income (LMIC) countries are experiencing a rise in non-communicable diseases (NCDs) which in addition to the battle of infectious diseases are posing a major challenge to the health care delivery systems. NCDs, also known as chronic diseases, are not passed from person to person, have long duration and generally have slow progression. The four main types of NCDs are cardiovascular diseases (CVDs) (like heart attacks and stroke), cancers, respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes. NCDs account for 38 million deaths per year of which almost three quarters (28 million) occur in low and middle income countries (4).

Of all deaths caused by NCDs, cardiovascular diseases (CVDs) account for most of the deaths (almost 17,7million people annually)(4). Hypertension is the main risk factor for CVDs with complications such as stroke, myocardial infarction and renal failure (5). According to the World Health Organization(WHO) *“Hypertension, also known as high or raised blood pressure, is a condition in which the blood vessels have persistently raised pressure. Blood is carried from the heart to all parts of the body in the vessels. Each time the heart beats, it pumps blood into the vessels. Blood pressure is created by the force of blood pushing against the walls of blood vessels (arteries) as it is pumped by the heart. The higher the pressure the harder the heart has to pump (6).”* Hypertension is also defined as elevated blood pressure (BP)which is equal to or above 140/90mmHg (7).

The levels of awareness, detection, treatment and control of hypertension in Africa are low (5, 8). The increase in the burden of hypertension in this region may likely have grave consequences as very few people will be treated and controlled (5). Insufficient diagnosis and low levels of control leads to increased morbidity and mortality which poses a challenge to the health system due to restrained resources. Management of complications due to hypertension is also difficult to sustain due to lack of feasibility of the resource-intensive care (8).

In diagnosing hypertension, the WHO recommends that bp be recorded twice daily (morning and evening) for several days (7). Two consecutive measurements should be taken with at least a minute apart with the person seated. The measurements of the first day are to be disregarded and the average of the rest of the readings is calculated to confirm the diagnosis (7). Due to the high shortage of trained workers and long queues in public hospitals in Malawi, diagnosis is

often based on one bp reading or on diastolic pressure reading (2). This can lead to misdiagnosis and cases being missed.

The current study will focus on health worker perspectives on the diagnosis and management of hypertension in the primary and secondary levels of care in Malawi.

## 1.1 Background for the study

According to WHO, NCDs are the second leading cause of morbidity and mortality in Malawi (9). Although the burden of NCDs is significant to the population of Malawi, WHO indicates that there has been limited high-level commitment for NCDs at national level, and programs have been underfunded (9).

NCDs were first a major problem in industrialized and developed countries and were associated with economic development (10). However NCDs have now become a global problem and are on the increase in developing countries (10). Ten percent of global disease burden is due to CVDs and NCDs are projected to increase by 15% between 2010 and 2020 with the greatest increases in Africa, the eastern Mediterranean and South East Asia with over a 20% increase (11). In Africa, they are still more deaths to infectious diseases. However, with NCDs on the rise, it is projected that they will exceed communicable diseases as the leading cause of death in the next two decades (12). Factors that influence NCDs include ageing, rapid unplanned urbanization and globalization of lifestyles such as diets.

Major risk factors of NCDs are divided into modified behavioral risk factors which include tobacco use, physical inactivity and harmful alcohol consumptions. These behavioral factors can lead to metabolic/physiological risk factors which include elevated bp (hypertension), overweight/obesity, hyperglycemia (high blood glucose levels) and hyperlipidaemia (high fat levels in the blood) (4). Risk factors to hypertension include continuous elevated bp associated with the increased risk of CVD mortality, myocardial infarction, heart failure, stroke and renal failure among others (13).

Hypertension management requires both community based interventions and individual level interventions. Community based intervention addresses hypertension through general measures by promoting healthy lifestyles to the public at large while at individual level, pharmacological treatment of the disease requires increased awareness and patient's motivation to continue with therapy (14). Health care workers have the responsibility of counselling patients on healthy



lifestyle as well as tailoring therapy to individual needs. Some of the challenges within the health systems for addressing NCDs in developing countries include lack of robust primary health care, physician knowledge about goals of therapy and choice of therapy and limited government participation in combating NCDs due to the existing burden of communicable diseases, lack of motivation to impart patient education, continuing medical education programs national programs (14).

In Malawi, a survey of chronic disease and their risk factors using the WHO STEPwise approach was conducted in 2009 (2). A total of 3727 people aged between 25-64 years were had their bp measured and were included in the survey. Significant risk factors to hypertension in this study included alcohol, overweight and obesity. Three-quarters of the participants said they never had their BP measured before and 94.9% of those with hypertension said they were not aware of their condition. The study concluded that hypertension is major public health problem in Malawi and that there is need for interventions in the prevention diagnosis and management. The levels of awareness, treatment and control in Malawi were reported to be low (2). Similar findings were reported in a survey conducted in Mozambique which included 3323 participants. Among the population diagnosed with hypertension, 85, 2% were not aware that they were hypertensive. For those aware, only half were on medication, with drug treatment higher in women than men (15).

A study conducted in Dedza district in Malawi revealed that the quality of care of NCDs in primary care settings was suboptimal in comparison with international guidelines. The study was done by assessing a total of 82 581 consultations were recorded for the Dedza District primary care platform over the previous 14 months, which included 2489 patient records associated with NCDs. In addition, qualitative data was collected by interviewing senior staff in all clinics. A questionnaire was also used to obtain information on the structure (e.g. availability of equipment, medication, educational material and human resources) and process of care (e.g. screening, examining, patient counselling and education, management and follow-up). The study concluded that lack of resources and insufficient knowledge of NCDs were some of the barriers in NCD management. However, only five senior health workers participated in the questionnaire survey and the study focused on the structure and process of the health system based on audit of previous patient records. The structural criteria was based on South African guidelines which authors acknowledge that this might have not been entirely appropriate for Malawian context (16).

In a different study conducted in rural South Africa, nurses and patients were interviewed on their experiences and perceptions of the current management of hypertension. The health care workers reported that lack of knowledge on chronic disease, lack of resources and lack of supervision of health care providers as some of the barriers to proper management (17).

WHO/ISH recommends both lifestyle modifications and drug therapy in treating hypertension. Lifestyle modifications include weight loss in obesity, physical activity, dietary modifications including eating fruits and vegetables and reduced intake of saturated fats. Pharmacological interventions like the use of diuretics to lower bp were also noted as essential (18). Primary prevention strategies such as public education on hypertension is essential in the prevention of hypertension. However, for those that have already been diagnosed, it is essential to intensify treatment efforts to control hypertension and prevent complications due to hypertension (5). In developed countries, early detection and treatment of hypertension and other risk factors, as well as effective public health policies that reduce exposure to risk have contributed to decline in mortality due to heart disease and stroke over the last three decades. Hypertension can only be effectively addressed by strengthening all components of the health systems including governance, financing, information, human resources, service delivery and access to inexpensive good quality generic medicines and basic technology (7).

Most research has been done on assessing the levels of hypertension prevalence, awareness and control in Sub Saharan countries. Furthermore, most studies have focused on patient's perspectives on the care of hypertension. It is important to assess the perception of both the care giver and the recipients of care to be able to determine the relationship between the knowledge and practice of the subject being studied (5). Very little research has focused on the health workers perspective to grasp their practices and perceptions. One study that focused on health worker perspectives has indicated that findings from qualitative research exploring the health worker perceptions, practices and barriers can contribute to development of targeted interventions (19). Hence this study will focus on health care professionals.

## **1.2 Significance of study**

This study will help inform the levels of diagnosis and management of hypertension and the follow up in hypertension clinics. This will in turn help authorities in devising

strategies to improve the quality of hypertension care in Malawi. The study will help health workers to critically reflect on their practices, their strengths and weaknesses and ways of improving the quality of care.

### **1.3 Research Question**

This research sought to answer the following research question.

*How do health workers perceive the diagnostic process and management of hypertension in primary and secondary level care in Malawi?*

### **1.4 Main Objective**

The main objective of this study was to explore the health workers perspectives on the diagnostic process and management of hypertension. The study also explored their experiences in their role in the diagnostic process and patients' follow-up in hypertension clinics to ensure that patients receive the quality care they need.

### **1.5 Specific Objectives**

The specific objectives were to assess:

- Existing capacity to detect and manage adult hypertension.
- Quality of care provided based on health worker experiences.
- Barriers as reported by health workers and obtain suggestions of improvement in the diagnosis and follow up in hypertension clinics.

### **1.6 Malawi Country profile**

Malawi is a landlocked country situated in south-east Africa. It contains a lake, lake Malawi covering one fifth of the countries area and is one of the world's largest and deepest fresh water lakes (20). The country shares its borders with Tanzania, Zambia and Mozambique. There is a total of 28 districts in Malawi which are divided into three regions, the northern,

central and southern region(20). Malawi has total of four cities, Lilongwe, Blantyre, Mzuzu and Zomba. Lilongwe city which is in the central region is the administrative capital of Malawi while Blantyre city in the southern region serves as the commercial city. Mzuzu is the main city in the northern region while Zomba situated in the south is the former capital political capital of Malawi(20). This study was conducted in Kasungu district located in the central region in Malawi. Below is an administrative map of Malawi, | showing the regions and the districts in the country.



Figure 1:Administrative map of Malawi (21)

For health administration, the districts are divided into five zones, one in the north, two in the central and two in the south(1). Malawi is densely populated with an estimated population of approximately 18 million people in the year 2015. The population growth rate is at 2.75 percent and it is estimated that the population might increase to 29million by the year 2030(20, 22).

Malawi has nine major ethnic groups and is rich with many indigenous languages. Although there is no dominant ethnic group, the indigenous language Chichewa is dominant and shares the status of official language alongside English(20). However, records in public administration are in English only. Malawians have different tribal and cultural groups varying in customs, beliefs, values and traditions. These customs and beliefs can influence how Malawians acceptance of and attitudes towards the modern ways of life in areas of agriculture, health, education and family planning among others.

### **1.6.1 Political administration**

Malawi gained independence after 73 years of British rule in 1964 and was under a one-party system ruled by Dr Hastings Kamuzu Banda for 30 years. In 1993, a voters' referendum was conducted rejection Dr Banda's one-party rule leading to the first multiparty elections in 1994 and Bakili Muluzi won the elections. Three other presidents have followed since the multiparty system was established(20).

The Malawi government is comprised of three arms, the executive, legislature and the judiciary(23). In relation to the health sector, the executive has two cabinet ministers who link the government with all the relevant stakeholders in the health sector. These include the senior minister of health and the deputy minister of health. For the legislature, there is a parliamentary committee health that advocates and lobbies for parliament to pass laws that improve the quality of health care services provided by the government. Although the judiciary is not directly linked to the health sector, all health services provided should be in accordance with the law. For issues in contention with the health policy, the judiciary addresses those contentious issues in accordance to the law (23).

## **1.6.2 Socio-economical profile**

Despite efforts in poverty reduction, Malawi still remains one of the poorest countries in the world with a GDP of US\$3.5 billion and a per capita income of US\$290(20). It is estimated that almost 75% of the population earns under 1,25\$ per day. Agriculture is the largest economic activity in Malawi contributing to approximately 28,7 percent of GDP and over 80 % of export earnings(20)s. The major exports in Malawi are tobacco, cotton, tea, coffee and sugar(20)

In 2006, the Malawi government implemented the Malawi growth and development strategy (MGDS 1) which was later revised in 2011(MGDS 2). The aim of the MGDS is to create wealth through sustainable economic growth and infrastructure development as a means of achieving poverty reduction. The goal is to achieve strong and sustainable economic growth, building a healthy and educated human resource base, and protecting and empowering the vulnerable(24).

An analysis report on the policy in 2016 indicates that upon implementation of the MGDS 1, progress was made which included high economic growth, decreased poverty levels, increased donor funding, increased foreign investment and improved infrastructure. However, after revision to MGDS 2, Malawi continues to face challenges affecting the economic growth including inadequate energy generation and supply, narrow export base, climate change, environmental degradation, and high unemployment. The report further states that the increase in population affects the social and economic development. This increase can affect the provision of social services including health and education(24).

Malawi faces challenges in its efforts to fight poverty and inequality. Poverty has been increasing in rural areas where almost 85% of the population of the country lives (22).

## **1.6.3 Health Status in Malawi**

The current average life expectancy in Malawi is estimated to be 57 years for males and 60 for females as of 2015(25). The life expectancy dropped in the 1990's due to the HIV pandemic. Other communicable diseases such as tuberculosis and Malaria contribute also to the mortality in Malawi. Malaria is the leading cause of morbidity and mortality among under 5 children and pregnant women(26)

Malawi has made progress over the years in reducing the prevalence of HIV with a reduction of new infections from 55,000 in 2011 to 34,000 in 2013(27). According to UNICEF, recent statistics show that the number of new infections is approximately 28,000. At least half of the infections occur in young people between the age of 15 and 24. With early initiation of anti-retroviral therapy(ART), the morbidity and mortality is reduced(27). Between 2004 to 2014 since the national program on ART was initiated one of every twenty people living with HIV is on ART, approximately 275,000 deaths have been averted and 1.4 million lives have been gained(26). The efforts by the country but also the assistance of donors and other development partners has contributed to the fight against HIV/AIDS in Malawi. This is due to increased awareness and knowledge of the prevention (26). Malawi is the first country to include the ambitious 90-90-90 treatment target in the National Strategic Plan for HIV and AIDS released by UNAIDS in 2014(27). This target aims at having 90 % of people living with HIV will know their status, 90 % of people living with HIV are on ART and that 90% of people have viral load suppression (28).

In Malawi, the major infant deaths are due to pneumonia, malnutrition, diarrheal diseases and Malaria. Malaria is another major public health challenge which is the leading cause of morbidity and mortality among children under the age of five and pregnant women. There are estimated six million cases occurring each year(26). It is estimated that malaria accounts for 14% of infant deaths in Malawi(9).

Among adults, NCDs are the second leading cause of deaths after HIV/AIDS. It is estimated that NCDs accounts for at least 12% of total Disability Adjusted Life Years (DALYs)(1).

### **Malawi Health care delivery system**

Health care services are provided by both the private and the public sector in Malawi. Services at the public health facilities are free of charge(29). The public sector includes all facilities under the Ministry of Health, the Ministry of Local Government and Rural Development, the Ministry of Forestry, the Police, the Prisons and the Army. The private sector which includes nongovernmental organization, faith-based organization and other community based organization play a major role in the provision of health services in Malawi (29). The Christian

health association of Malawi commonly known as CHAM is the largest non-governmental organization that provides health services delivering 37% of Malawi's health care. With about 85% of Malawi's population living in rural areas, CHAM provides about 75% of health services in the rural areas (30).

The health care delivery system in Malawi has a referral system that is established. The system is organized in three levels namely the primary, secondary and tertiary health care. Primary health care is provided through community based outreach programs, dispensaries/health posts, health centers and community hospitals(1). Health centers built in the communities and patients are treated for minor illnesses and uncomplicated obstetric cases (deliveries) are also done at this level. All complicated cases are referred from this level to the District hospital. The health workers at a health center are medical assistants and nurses/midwives. District hospitals and CHAM hospitals provide secondary level care. These are mostly manned by doctors, clinical officers and nurses/midwives. Complicated illnesses are referred from here to central hospitals that provide tertiary level care. However, the Ministry of Health states that this categorization is just a guide, for example district and CHAM hospitals provide primary care due to lack of alternative facilities in catchment areas(1, 31)

In terms of number and size of health facilities, the ministry of health has the highest number of facilities accounting for 63% of the total, seconded by CHAM with 26%. The ministry of local government (MoLG) accounts for 5 percent while Banja la Mtsogolo (BLM) and other non-governmental organization(NGO) accounts for 6% of the total number of health facilities. The table below illustrates the distribution of health facilities according to ownership(23).



Table 1: Health facilities in Malawi

Type of facility	BLM	CHAM	MoLG	MOH	NGO	Total
Central Hospital	0	0	0	4	0	4
District Hospital	0	0	0	12	0	12
Mental Hospital	0	1	0	1	0	2
Rural Hospital	0	27	0	19	0	46
Health centre	1	115	12	288	0	416
Clinic	27	8	4	2	1	42
Maternity Centre	3	1	12	2	0	18
Rehabilitation Centre	0	1	0	0	0	1
VCT Centre	0	0	0	0	3	3
Dispensary	0	8	4	54	0	66
<b>TOTAL</b>	31	161	32	392	4	620

One of the major challenges in the health center is the shortage of human resources. Effective health care delivery includes the availability and equitably distributed health workers in the health facilities. Malawi as other developing countries continue to battle the shortage of trained health workers in health facilities. In an effort to address this challenge, an Emergency Human Resource Program (EHRP) from the year 2004-2009 was implemented(32). The program was supported by the ministry of finance, DFID and global fund. The main focus was retention, deployment, recruitment, training and tutor incentives for eleven professional cadres. In addition, funding was also allocated to help scale up the training of health surveillance assistants (HSAs)(32). There were five elements of the EHRP which include:

- *Element 1 Improving incentives for recruitment and retention of Malawian staff in government and mission hospitals through a 52% taxed salary top-up for 11 professional cadres, coupled with a major initiative for recruitment and re-engagement of qualified Malawian staff*
- *Element 2 Expanding domestic training capacity by over 50% overall, including doubling the number of nurses and tripling the number of doctors and clinical officers in training*

- *Element 3 Using international volunteer doctors and nurse tutors as a stop-gap measure to fill critical posts while more Malawians are being trained*
- *Element 4 Providing international technical assistance to bolster capacity and build skills within the Ministry of Health human resources planning, management and development functions*
- *Element 5 Establishing more robust monitoring and evaluation capacity for human resources in the health sector, nested within existing health management information systems, which are being strengthened to support implementation of the Essential Health Package(32)*

An evaluation on the EHRP concluded that the government of Malawi has made progress in addressing the issue of low staffing and that there has been an increase in access to health services. There is however potential to improve the health services provided (32).

Another way in which the MOH is addressing the human resource shortage is through the locum scheme introduced by government in 2005. This involves current staff working extra hours and is a way of motivating staff through increased earnings. It is regarded as an innovative human resource approach aimed at reducing interruptions in health service delivery due to labour shortages(33). Despite this program being vital for the MOH in addressing labour shortages, it has encountered some challenges. Tambulasi (33) highlights the following challenges in his paper, delayed payments, sustainability problems, governance challenges, work ethics challenges, and negative effects of the quality of services delivered. Although facing the challenges, the locum program continues to be used by the MOH.

# 2 Literature Review

## 2.1 Introduction

The researcher has reviewed several studies and documents on hypertension diagnosis and management of hypertension both in Africa but also globally. These studies include both empirical studies and systematic review studies. A lot of studies on the topic have been done on the prevalence, awareness, treatment and control of hypertension across the African continent. Regarding health worker perspectives, which is the area of interest for this study, not much has been done. However, several studies have looked at community health workers' role in management of hypertension. This chapter will literature of what is known about hypertension in developing countries.

## 2.2 Hypertension

The first observation of hypertension date back to 4000 years ago. However, advances in clinical studies of hypertension date back in the 1800s by physicians Richard Bright and Fredrick Mahomed(34). In 1836, Bright published article of the account of 100 patients with overt renal disease or proteinuria whereby half of the them had an enlarged heart post mortem. He then concluded that this is associated this to increased cardiac pressure or altered blood quality (34). Some 40 years later, Mahomed another physician concluded that there was no evidence of kidney disease among patients with large volume pulses. He further noted the associations between raised arterial pressure and heart attack, stroke, epistaxis, gout, and excessive alcohol consumption. These things remain relevant in assessing hypertension to date(34).

Hypertension has become an important public health challenge worldwide(35). With the increased risk of CVDS such as heart attack, stroke and chronic kidney disease, hypertension is placed as a risk factor for mortality and a major cause of life-years adjusted disability(35). Both Genetic factors and environmental factors influence the development of hypertension. Individuals with genetic disorders have an increased susceptibility to the influence of environmental factors. The environmental factors trigger the pathogenesis of hypertension. As earlier stated, the environmental factors may include, diet and nutrition, physical inactivity, alcohol consumption, obesity and stress(35).

## **2.3 Awareness and prevalence of hypertension in developing countries**

Hypertension is one of the leading causes of morbidity and mortality globally(7). With the ageing population, the prevalence of hypertension increases due to age. Hypertension accounts for approximately 40% of deaths due to heart disease(7). In 2008, about 46% of adults above the age of 25 were diagnosed with hypertension worldwide with a rise from 600million in the year 1980 to 1 billion in 2008 (7). According to the WHO, the prevalence rate is highest in Africa at 46 percent while the lowest region is the Americas with 35%. The high populations in low and middle income countries influences the number of people affected, At the same time due to the weak health systems, many people remain undiagnosed, untreated and uncontrolled (7).

Although the level of awareness of hypertension have improved over the past two decades around the world, it remains low in LMIC, African countries inclusive. The need for patient education on hypertension remains high(36). There is lack of knowledge on the risk factors to hypertension such as poor diet, high salt and fat intake and lack of physical activity among other. There is also a lack of knowledge on the consequences of hypertension(36). One review article estimated that the levels of awareness and treatment in high income countries were twice in proportion of those in LMIC. In between the years 2000 and 2010, there has been improvement on the awareness , treatment and control in HIC but no substantial improvement was reported in LMIC(37).

Several studies conducted in Africa found that the levels of awareness of hypertension remain low despite the efforts to increase focus on NCDs, hypertension inclusive(38). A systematic review study indicated that although the level of awareness of people living with hypertension has increased since the 1990, the overall awareness rate in Africa remain low. From the articles included in this systematic review the increase rate has been indicated as follows 16,9% estimated in 1990, 29,2% in 2002 and 33,7 in 2010(38).

A review study on global disparities on hypertension, it was reported that the prevalence rate of hypertension in high income countries has reduced over the years while it has increased in LMIC. It was also estimated that three quarters of the population with hypertension live in low and middle income countries(37). According to the study the greatest burden in hypertension prevalence was observed in East Asia and Pacific, South-Asia and sub-Saharan Africa. This was also attributed to the increase in population. The study concluded that although research shows that there is effectiveness in the prevention, treatment and control of hypertension, the knowledge has not been fully applied in LMIC. The study estimated that the levels of awareness in high income countries were half the proportion and four times in control rates (37).

Many countries in Africa experience what is known as the double burden of disease. This is because countries are still battling communicable diseases such as HIV and Malaria while there is also a rise in NCDs such as hypertension. The increase in the prevalence in, hypertension is mostly linked to the increase in population, ageing, rising urbanization, unhealthy lifestyle such as unhealthy diet and lack of physical activity and an increase imitation of western lifestyles including harmful use of tobacco and alcohol. It is estimated that nearly 80% of deaths due to cardiovascular conditions occur in low and middle income countries (7, 38).

The prevalence of hypertension varies also within the African continent. A study reported that the prevalence rate in North Africa was higher (33.3%) than that of sub Saharan Africa (27.8%). Some studies showed the increase in prevalence with increasing age both in males and females. High prevalence was reported with increase in age with the highest rate among adults over 60 years of age (38).

In an earlier review article from 2007, studies. The studies including both urban and rural areas showed that the prevalence in urban areas was higher than among the rural population. The higher prevalence in urban areas is attributed to unhealthy lifestyles such as increased salt and fat intake and indulging in jobs with minimal physical activity. In contrast, the prevalence in the western world is higher in rural areas is higher than in the urban areas .However, the prevalence rate of hypertension in sub Saharan Africa was as equally high as of those in developed countries (5). In a more recent systematic review however, it is reported that the gap between the rural and urban areas is narrowing in the recent years. This is likely due to people living in urban areas facing challenges relocating to rural areas or because people in rural areas are becoming semi urbanized (38).

The WHO STEPwise survey conducted in Malawi in the year 2009 indicated that the prevalence of hypertension was approximately 33,2% of the participants(n=3227). Regarding hypertension in Malawi, 95 % of the people in this survey with high bp were either not aware of the problem or not on medication. This study concluded that only about 5 % of those who participated in the study were being treated in health facilities. Due to the large percent of people unaware of their condition in this study, the study expressed the need for public health promotion for healthy lifestyles and hypertension screening programs to target the entire population. The authors recommend task shifting by training non-trained health workers to check and record the clients BP before consultation with the clinicians. This may assist to solve the challenge of busy facilities and the shortage of trained staff. They also recommended incorporating hypertension programs including screening, treatment and follow up to the already existing community outreach clinics in order to be able to reach people where they are (2).

## **2.4 Diagnosing Hypertension**

### **Clinical History**

Diagnosis of hypertension starts with a thorough clinical history taking and physical examination. The physical examination does not only include careful BP measurements but also measuring weight and height to calculate the BMI. Thorough history taking assists the health workers to gain an understanding of the patient's problem, symptoms suggesting secondary factors that may cause hypertension, family history and history of cardiovascular heart disease and careful assessment of lifestyle factors. The health worker can also get an insight of personal, psychosocial and environmental factors that can influence the course and outcome of antihypertensive care (39)

### **Blood pressure Measurement**

In screening and diagnosing hypertension, WHO recommends that BP should be recorded for several days before a diagnosing of hypertension. BP is recorded twice daily, ideally in the morning and evening with two consecutive readings taken at least a minute apart with the person seated. Measurements taken on the first day are discarded and the average value of all the remaining measurements is taken to confirm a diagnosis of hypertension(7). According to

the Malawi Standard Treatment Guidelines(MSTGs), hypertension can be classified as mild, moderate and severe as illustrated in table below(40)

*Table 2: Classification of hypertension*

<b>Type of hypertension</b>	<b>Systolic blood Pressure (mmHg)</b>	<b>Diastolic blood pressure (mmHg)</b>
<b>MILD</b>	140-159	90-99
<b>MODERATE</b>	160-179	100-109
<b>SEVERE</b>	>180	>110

(40)

Most people have no symptoms to hypertension. As a result, routine checkup of bp is essential to detect hypertension at an early stage. Ignoring hypertension can lead to increased chances of developing complications. Early detection and treatment of hypertension, its risk factors and also the implementation of public health policies that reduce exposure to behavioral risk factors has contributed to the reduced mortality due to hypertension (7).

In response to challenges faced by LMIC, WHO developed the package of essential non-communicable disease intervention (WHO PEN) for primary care in low resource settings.

It includes a set of cost effective interventions to address challenges in addressing NCDs in order to provide acceptable quality of care even in low resource settings(41). Kasungu district in Malawi is one of the pilot districts for implementation of the WHO PEN. The WHO PEN recommends a list of essential technologies and tools for NCD interventions. These medical devices include weighing scales, sphygmomanometers, peak flow meters and equipment for urine albumin and blood glucose analysis. In addition, if resources permit, it is recommended to also have pulse oximeters, nebulizers, electrocardiographs, defibrillators and blood cholesterol and creatinine assays(41). Having these basic technologies coupled with trained health workers and referral systems will improve the services at primary health settings thus enabling patients to receive care at their closet facilities. In facilities with non-physician health workers, a digital sphygmomanometer that is validated is recommended for accurate bp measurement(41).

## Physical Examination

Hypertension is often associated with overweight/obesity. Overweight and obesity can lead to adverse metabolic changes that can have an effect on the bp, cholesterol levels, triglycerides and insulin resistance. This leads to an increased risk of developing high bp, diabetes and other cardiovascular diseases(35, 42). Body Mass Index(BMI) is commonly used to classify overweight and obesity in adults. It is the measure of the total weight divided by square of height in meter(kg/m<sup>2</sup>). The normal BMI according to WHO ranges from 18,5-24,9. Individuals with a BMI of 25-30 are considered overweight and those >30 are considered as obese(43).

*Table 3: BMI ranges and interpretation*

<b>BMI Value</b>	<b>Meaning</b>
<18,5	Underweight
18.5-24.9	Normal
25-30	Overweight
>30	Obese

(43)

Due to the increased risk of developing hypertension when overweight or obese, it is important to measure the weight and calculate the BMI in the screening process.

This helps determine people at risk for developing hypertension and other cardiovascular diseases.



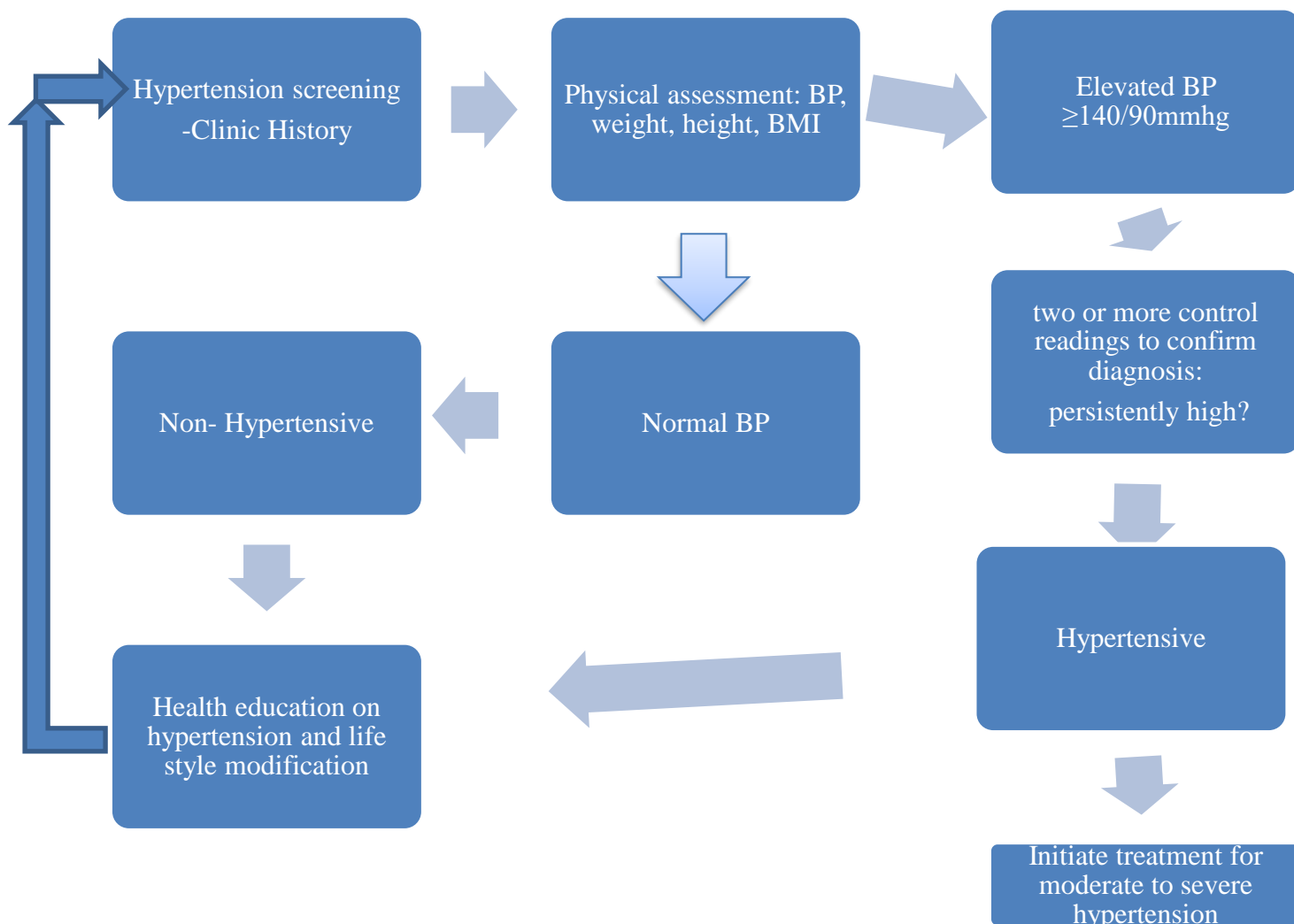


Figure 2 Illustration of hypertension diagnosis process.

In sub-Saharan Africa, with the increasing burden of hypertension and other NCDs, the health system faces challenges in addressing these conditions. Mostly due to limited resources. Diagnosing hypertension can be difficult in such instances. In Tanzania, a study on the preparedness of the health facilities for out-patient primary care of hypertension reported that in many facilities, guidelines, diagnostic equipment, and first-line drug therapy for the primary care of NCDs were inadequate, and management, training, and reporting systems were weak(44). The study was a cross-sectional survey of a representative sample of 24 public and not-for-profit health facilities in urban and rural Tanzania including four hospitals, eight health centers, and twelve dispensaries. Structured interviews of facility managers, inspected resources, and administered self-completed questionnaires to 335 health-

care workers were the methods used in this study. The conditions the researchers focused on hypertension, diabetes, and HIV (for comparison). It was concluded that the services for HIV accounted for most of chronic disease care and were stronger than NCD services and general health systems were weaker in the lower level facilities. The health workers had fairly better basic essential knowledge related to HIV compared to hypertension(44).

Several studies have reported how adopting the current management policies of other chronic conditions like HIV in hypertension management and integrating these services can assist countries in limited resource settings facing the double burden of disease (44-46)

## **2.5 Treatment and control of hypertension**

Hypertension can be management both with pharmacological and non-pharmacological treatment depending on the severity of the condition. Kasungu district Hospital(KDH) was the only facility with clearly stated guidelines of both pharmacological and non – pharmacological interventions. The facility has integrated management of diabetes and hypertension (see appendix A)

### **2.5.1 Non-pharmacological treatment**

Not everyone diagnosed with hypertension requires medication immediately after diagnosis. Focusing on reducing risk factors and adopting healthy lifestyles helps control hypertension. In mild hypertension, general measures recommended for hypertension management are reduce salt intake, smoking caseation, regular exercise, weight loss and reduced alcohol consumption(40)

Some of the healthy life styles recommended in hypertension management is the reduction of sodium intake(7). The WHO recommends that daily intake of sodium should not exceed 2g/day which is equivalent to 5g of salt per day. High sodium intake is associated with the increase in BP whereas reduced sodium consumption contributes to decreased bp (WHO,2012). Many review articles have also concluded that reduced sodium contributes to decrease in BP and thereby lowering cardiovascular risks. One review article looked at the effects of longer term modest salt reduction on BP for both hypertensives and normotensives. A total of thirty-four trials (3230 participants) that were 18years old or older were included. There results showed a reduction in BP for both hypertensives and the normotensives with a

salt reduction duration ranging from 4 weeks to 1 year for hypertensives and 4 weeks to 3 years for normotensives(47).

Physical activity is another crucial factor in the prevention of hypertension and reduction of BP. At least thirty minutes of moderate intensity aerobic exercise daily is recommended. These exercises include, running, walking, swimming and cycling. Physical activity has been associated with the reduction of BP. It is estimated that hypertension is 30 to 50 percent higher in individuals that are physically inactive (48)

Below is one of the health education tools used in health education and counselling on cardiovascular diseases in Kasungu district (figure 1). This is used during both group sessions and individual consultations. According to this guide, cardiovascular diseases are addressed together. The tool addresses the risk factors to hypertension, prevention measures and ways to control these conditions. This includes, reduction of alcohol consumption, smoking cessation, indulging in physical activity, taking medications as prescribed, eating a healthy diet and avoiding stress.

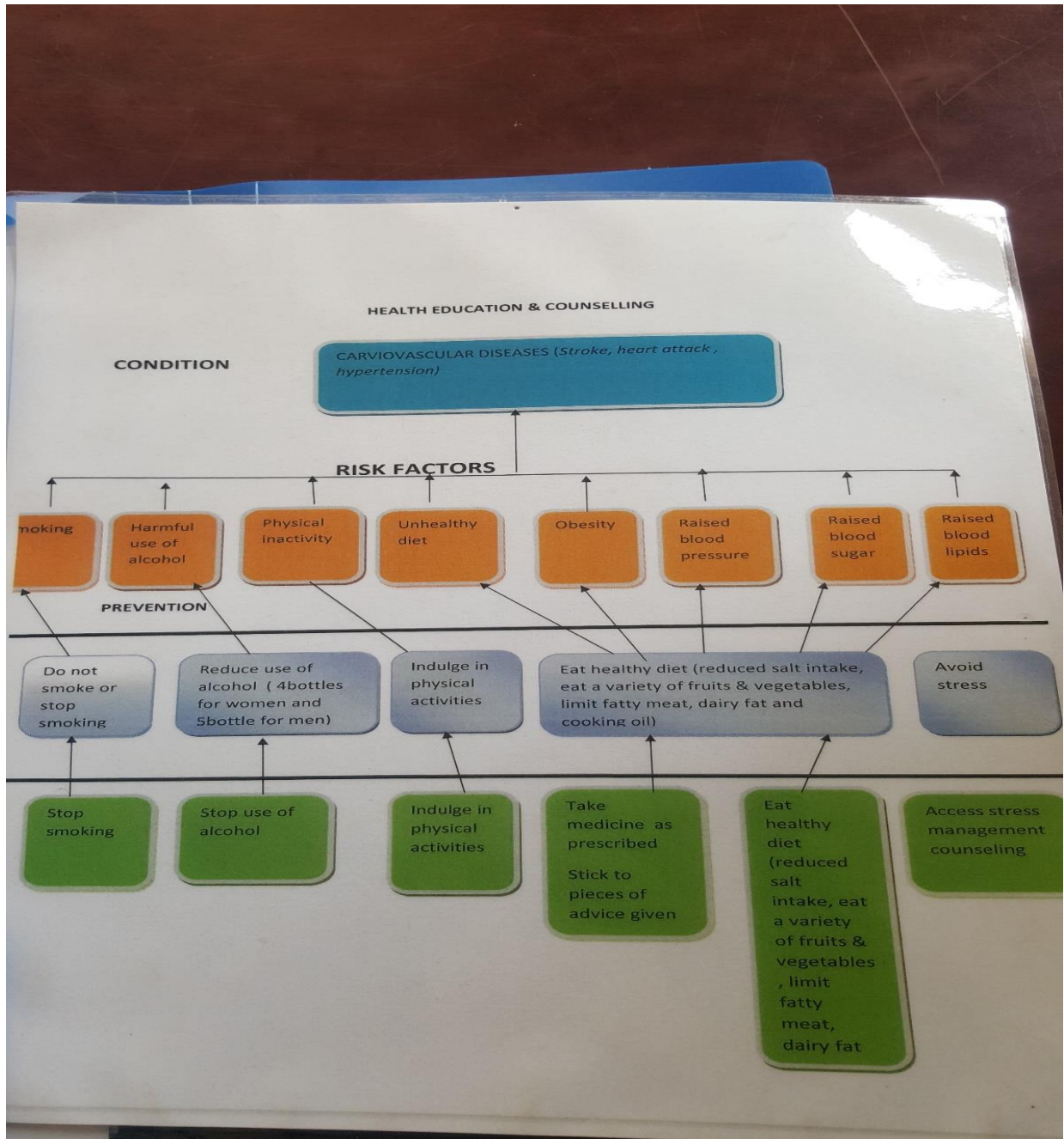


Figure 3 Health education and counselling guideline for Kasungu district hospital

## 2.5.2 Pharmacological treatment

For those diagnosed with hypertension moderate to severe hypertension or those with mild hypertension that are not responding to non-pharmacological interventions that need to be treated with medication.

The MSTGs recommends 4 steps to treating hypertension with medication before referral to a specialist(40)

Step 1: Hydrochlorothiazide (HCT) alternatively bendrofluazide is used

Step 2: Hydrochlorothiazide and amlodipine. Where amlodipine is not available, Nifedipine slow release can be used

Step 3: Hydrochlorothiazide, Amlodipine, Enalapril. Where Enalapril is not available, captopril.

Step 4: Hydrochlorothiazide, amlodipine, enalapril and atenolol. Where atenolol is not available, propranolol is used

Step 5: refer patient to a medical specialist.

## **2.6 Hypertension prevention and policy making**

In order to address the increasing burden of hypertension, WHO recommends governments and other policy makers to have interventions that tackle the cardiovascular risk to be an integral part of the national strategy for the prevention and control of NCDs (7).

In Malawi, the NCD unit under the ministry of health was established in 2012 to address the increasing burden of NCDs, hypertension inclusive. A national action plan for prevention and management of NCDs in Malawi was later released(49). The main objective of this plan was to reduce the burden of preventable morbidity and disability as well as avoidable mortality due to NCDs and mental health disorders. Some of the interventions in this action plan to prevent, manage and control cardiovascular diseases are as follows:

- I. improving public awareness by developing integrated NCD communication strategy,
- II. promoting healthy lifestyles by advocating for infrastructure development
- III. provide quality, comprehensive and integrated care in screening, diagnosis and management of high risk groups. This involves capacity building by conducting training need assessments and training health care workers in optimal NCD management, reviewing and developing manuals clinical management of chronic NCDs, availability of support staff in NCD care an availability of drugs, supplies and equipment and conducting regular supportive supervisions to NCD chronic care clinics

- IV. advocate for policy and legislation to minimize the risk factors to development of NCDs. (49)

According to the WHO, Hypertension can only be effectively addressed if the health systems strengthen all components including governance, finance, human resource, information, service delivery and access to inexpensive good quality medicines and basic technologies. Governments need to ensure individuals equal access to preventive, curative and rehabilitative health services to prevent hypertension and the complications associated with it (7).

Another important aspect in addressing hypertension is training skilled health workers in the management of hypertension. Health workers can raise awareness of hypertension by conducting activities like hypertension screening campaigns, health education but also influencing policy makers in dialogues on how living conditions and unhealthy lifestyles can influence BP among other things. Training physicians and non-physician health workers at the primary level of care can assist in improving the quality of hypertension care provided. This can contribute to a more cost effective way of detecting and managing hypertension(7)

### **2.6.1 The role of community health workers in hypertension management**

One of the most important support staff in hypertension management are community health workers (CHWs) known as HSAs. The HSAs are key persons when it comes to health education and patient counselling. This includes conducting health education at the health facilities but also during community outreach. During community outreach, HSAs go the remote areas to provide services such as immunization and These HSAs play a significant role in the prevention, detection, management and control of diseases. There is however an expressed need to train HSAs to assist in hypertension management.

In Malawi, the history of HSAs dates back in the 1960s when Malawi was hit by the small pox outbreak where the MOH employed temporary staff know as small pox vaccinators due to human resource constraints. In the year 1973 just after the small pox outbreak was fading, a cholera outbreak broke out. Village health Committees were established to address this outbreak in community comprising untrained volunteers from within the villages(50). These individuals were trained as cholera assistants and were also assisting in the prevention and

control of the outbreaks. In the 1980s although the outbreaks had ceased, the cholera assistants were retained to assist in the surveying factors and behaviours that affect people's health and providing primary assistants before referral to health centers and other health facilities. Hence the name Health Surveillance assistants(50).

HSA's remained temporary and not officially recognized in the structure of MOH until the year 1995. HSA's became permanent and individuals were required to have a minimum of junior school certificate and a maximum of Malawi school certificate of education. An intensive 8-week inductive course is provided before being considered for the position to ensure quality of the services provided by HSA's. About 300 HSA's are trained every two years and one HSA is responsible for a population of between 2000 -2500 people. HSA's are now employed within the environmental department in the MOH (50).

HSA's in Malawi are trained in preventive health and family health. This includes topics on health education, patient and client follow up, community assessment and mobilization, antenatal and postnatal care, primary health care and infection prevention among others(50).

HSA's have played a huge role in the prevention and management of common infectious diseases such as HIV, Malaria, pneumonia, tuberculosis and in child health. The role of HSA's has evolved according to the health need and priorities of the MOH. A study conducted in Zomba district in Malawi found that HSA's feel overwhelmed by the workload. The HSA's informed although their training and job descriptions involves preventive health, they are now involved in treatment and medicine administration. Although training was provided by the MOH on new tasks, most HSA's, supervisors and policy makers expressed that this training was inadequate. There is an increased time spent at health centers due to their expanded role in curative care resulting in concerns about the neglect of community based preventive services (51).

A study conducted in south Africa showed that training CHW's in patient education on hypertension risks, lifestyle changes and adherence to medication would lead to cost effective prevention of cardiovascular diseases(52)

An observational study conducted in four countries including Bangladesh, Guatemala, Mexico and South Africa looked at CHW's ability to assess cardiovascular risk using a simple non-invasive risk assessment instrument. Each community that was studied had at least ten to fifteen CHW's residing in the communities where the assessments were done. The CHW's were trained to calculate an absolute cardiovascular disease risk score with a previously validated simple non -invasive screening indicator. Those who successfully completed the

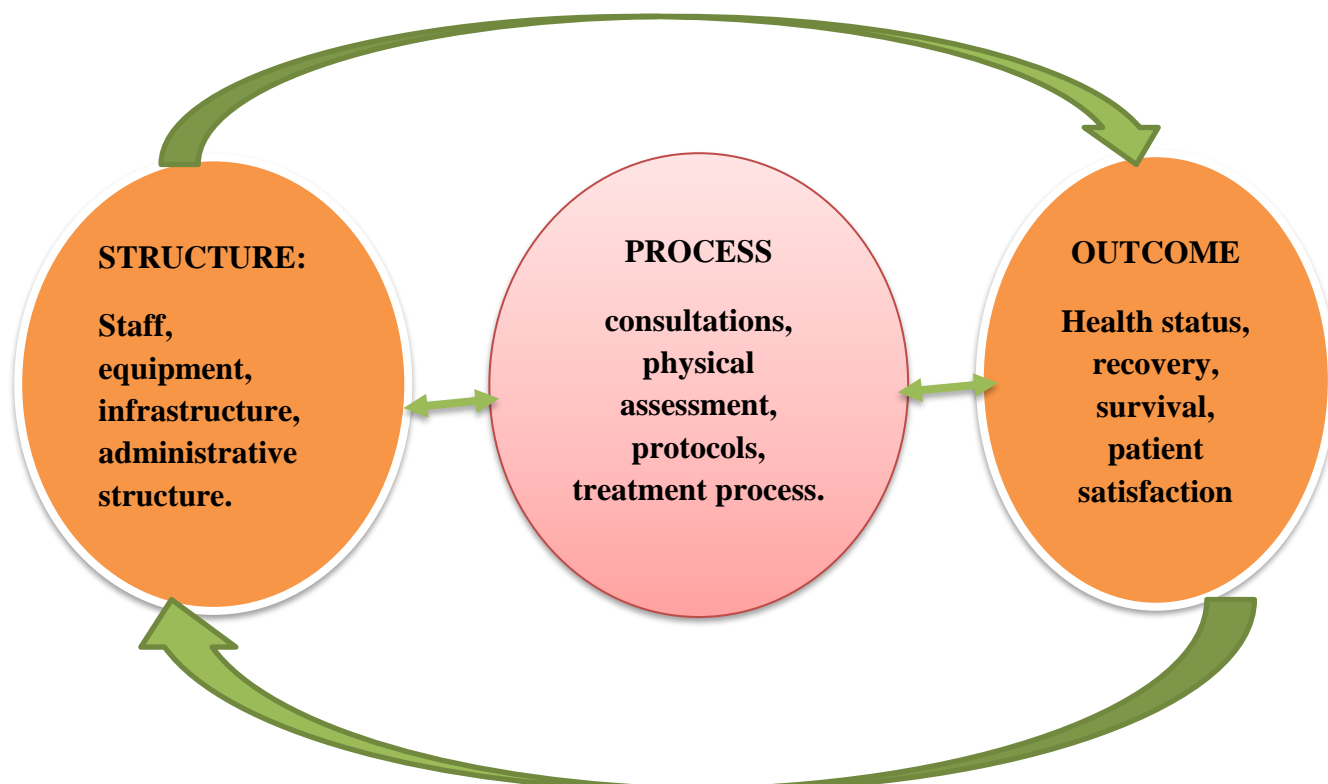
training conducted screening on adults between the ages of 35 and 74 with no previous history of hypertension, diabetes or heart disease. The health professionals the conducted control screening and score and the two results were compared. Upon completion of the study, of the 68 people included in the study, 42 were qualified to conduct field work. The study concluded that training community health workers in screening and identifying individuals at high risk for cardiovascular diseases will help relieve trained professional health workers to tasks that require professional training (53).

Several studies have concluded that CHWs can play a significant role in hypertension management just as they have played a successful role in addressing other conditions in the health system. (52, 54, 55) Using CHWs(HSAs) in hypertension will help improve the screening process and management of hypertension by providing health education services, BP measurement and follow up of known cases. This will impact the populations self - management of hypertension

## **2.7 Theoretical Framework- Quality of care model**

The term quality has been defined in different ways but there are some aspects that are common in these definitions. Institute of medicine (IOM) define quality as “*the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge*” (56). Avensis Donabedian, a physician, is known as the founder of the study of quality of healthcare and father of quality assurance. He developed what is known as the Donabedian model of care in the year 1966 (57). Donabedian suggests that quality can be conceived as a product of two factors which are the science and technology of care and secondly the application of that science and technology into actual practice (58). According to Donabedian, quality can be assessed based on three aspects which are structure, process and outcome (59) . Structural quality evaluates the health system capacities; process quality evaluates the interaction between patients and health care workers and also the type and amount of services provided while outcome quality looks at the end result of improvement or changes in patient’s health status (56). These processes have an impact on each other. In the sense that good structure contributes to a good process and good process contributes to a good outcome(60). Below is an illustration of the Donabedian quality of care model.





*Figure 4 Donabedian quality of care model*

The first mode of assessment is the structure of quality. It is concerned with things like adequacy of facilities of providing health and equipment required, qualification of medical staff and their organization, administrative structure and operation of programs and institutions providing. The assumption made is the better the settings and equipment, the better the medical care(59). Donabedian suggests that all three elements have to be looked into in assessing quality to get more complete assessment of quality and explore fully the several aspects of quality (58).

In assessing quality, it is important to look at the process as well rather than just the outcome. This looks at the patient and health care interaction in comprehensive history taking, physical assessments and diagnostic tests to justify diagnosis and therapy. It also involves the inclusion of preventive management of health and illness. The process is justified by the assumption whether what is known is said to be “good” medical care rather than focusing the power of medical technology to achieve results. Technology is to be used as tools in achieving effective assessment, diagnosis , therapy and preventive measures in the patient-practitioner interaction (59).

Donabedian argues that assessment of quality using outcome has limitations and must be used with discrimination that in many areas outcome of healthcare has been used to measure quality which include recovery, restoration of function and survival taking into consideration patient

satisfaction, attitudes and social restoration. According to Donabedian, not all outcomes are a result of medical care alone; other factors might also influence the outcome. He further argues that although outcome can indicate good or bad care on aggregate, it does not indicate nature or location of deficiencies or strengths to which outcome might be attributed (59)

WHO states that in health care delivery, especially developing countries, where there is need to optimize and expand population coverage of health care services, there is need for the use of local strategies to improve the quality so that best possible results are achieved. WHO further describes quality of health care into six dimensions, that health care is effective, efficient, accessible, acceptable and patient centered, equitable and safe (61). These qualities were first described by the committee of quality of care in the United States of America. The committee suggested that a health care system that achieves the major of these dimensions will be in a better position to meet patients' needs (56).

Previous research indicates that there is a challenge in hypertension care in developing countries. Levels of awareness, treatment and control are low mostly due to lack of resources and protocols in the health systems, knowledge and skills of health workers on hypertension and also knowledge and compliance by patients (5, 8). This comprises the various aspects of quality of care where the health system including medications prescribed, diagnostic tools and other supplies used to manage and monitor patients can be described as the structure, health care workers knowledge and interaction with patients in the process and patient knowledge, compliance and control of hypertension as the outcome. These concepts will be used to understand how health workers experience and perceive the quality of hypertension care in their practice.

This research applies the quality dimensions of structure and process. These dimensions will be analyzed as reported by the health care workers and their experiences using a deductive approach. Since patients or recipients of care have not been included in this study and no retrospective review of patient charts was conducted, applying the outcome dimension of quality is a challenge. Applying the quality outcome will not be considered since patients or recipients of care will not be included in this study. There might however also be limitations in analyzing the process dimension since no patient consultation sessions were attended.

# 3 Methodology of study

This chapter describes and explores the study design, study setting, data collection, data analysis, trustworthiness, dissemination and ethical considerations. This methodology chapter highlights why qualitative research was chosen to answer the research question.

## 3.1 Study design

To glean an understanding of the health workers perspectives and experience on hypertension in Malawi, a qualitative approach was chosen for this study.

Qualitative research dates to the end of the 1700 where it was believed that the voiceless had not always been heard.(62) The poor and the powerless were interviewed to understand their everyday life. It was believed that people that could not read and write possessed wisdom that should be shared through texts based on conversations with these people. This interest later expanded to working class groups and other groups (62). Qualitative research is described as intensive because the researcher goes in depth with few number of units or people but explores many variables (63).

Qualitative research is a method whereby literature including theory is used mainly to understand what is going on and to discover theoretical perspectives which include proper concepts to describe a social phenomenon. The social phenomenon is explored to find empirical patterns that can function at the beginning as a theory (64).

In qualitative research, some researchers are interested in studying how people construct their social reality using language and communicative processes such as arguments, conversation and discourse. On the other hand, some researchers seek to study how people construct reality by interpreting their thoughts, experiences, actions and expressions. Qualitative research aims at understanding the world from the subject's point of view (64).

In this study, qualitative research interviews were used in data collection. Health workers were interviewed on their perspectives and experiences of their practice and work with hypertension. This assisted the health workers to reflect on how they work and their experiences.

Other methods of qualitative research are textual analysis also known as document analysis and observational studies. Text is about the language and how the language is used in a document. In this method, existing documents are used as empirical data. Documents are analyzed to derive an understanding of the text. The use of documents in empirical studies assists to derive a problem question. It helps to identify development in norms and practices within and between organizations. It also helps to identify establishment and changes in power relations. Document analysis focus on identifying stability or changes in a given research area over a period of time(65)

Another method used in qualitative research is observation. *Observation entails the systematic noting and recording of events, behaviors and artefacts (objects) in a social setting chosen for study(66)*. In order not to have a big influence on the subjects being studied, participant observation is recommended(66). In participant observation, the researcher follows up the individuals being studied by being involved in the activities of their environments and adapts to the different situations being studied. This has a positive outcome as one gets a wider knowledge and understanding of the people being studied without disturbing the subjects(67).

### **3.1.1 Qualitative Research Interview**

Individual interviews were conducted in this study. The method used in an interview is described as a conversation with a structure and a specific purpose. Systematic knowledge is constructed based on the interaction between the interviewer and the interviewee(68). The aim of the qualitative research interview is to understand the subjects' own perspective of the lived world (68). Much as data in quantity is derived from interviews, in some cases, the interviewee may be uncomfortable or unwilling to answer certain topics which can affect the information the interviewer is expecting to obtain. Interviewing requires good listening skills, question framing and also gentle probing to get a wider understanding (66).

Similarly, qualitative research interviews have the intention to address the research objectives of the researcher. This interview form has the aim of achieving rich and comprehensive information on the participants understanding, attitudes, experiences, feelings and reflections related to the topic being studied. The researcher aims at understanding and interpreting the meaning of the lived world of the people being interviewed (63). Since primarily the qualitative

interview involves social interaction in conversation, it is important for the researcher to have good communications skills like active listening and showing interest in the conversation. One has to balance between the need to uncover and probe participants experiences and meaning in regard to the studied topic with the desire to accomplish the research objectives(63). In going deep in the conversation, one might go off track but also in not probing further one might miss on vital information from the participants.

There are several varieties to conducting qualitative interviews. The most commonly used is the semi-structured interview form which was the style chosen for this study(69). This form involves the researcher having a pre-set list of questions in an interview guide that directs the interview depending on the objectives of the study. Although the researcher has these pre-set topics to be explored in depth, there is room to probe further on topics that arise from the participant that initially were not part of the topics to be studied but are relevant or need to be explored further (69). This involves the researcher having a balance between interpersonal communication skills such as active listening, attention, reflection and tact with more professional skills such as focusing, guidance, tracking and progression. This helps the researcher to have an interaction with the participant while at the same time managing the quality of data collected (69) .

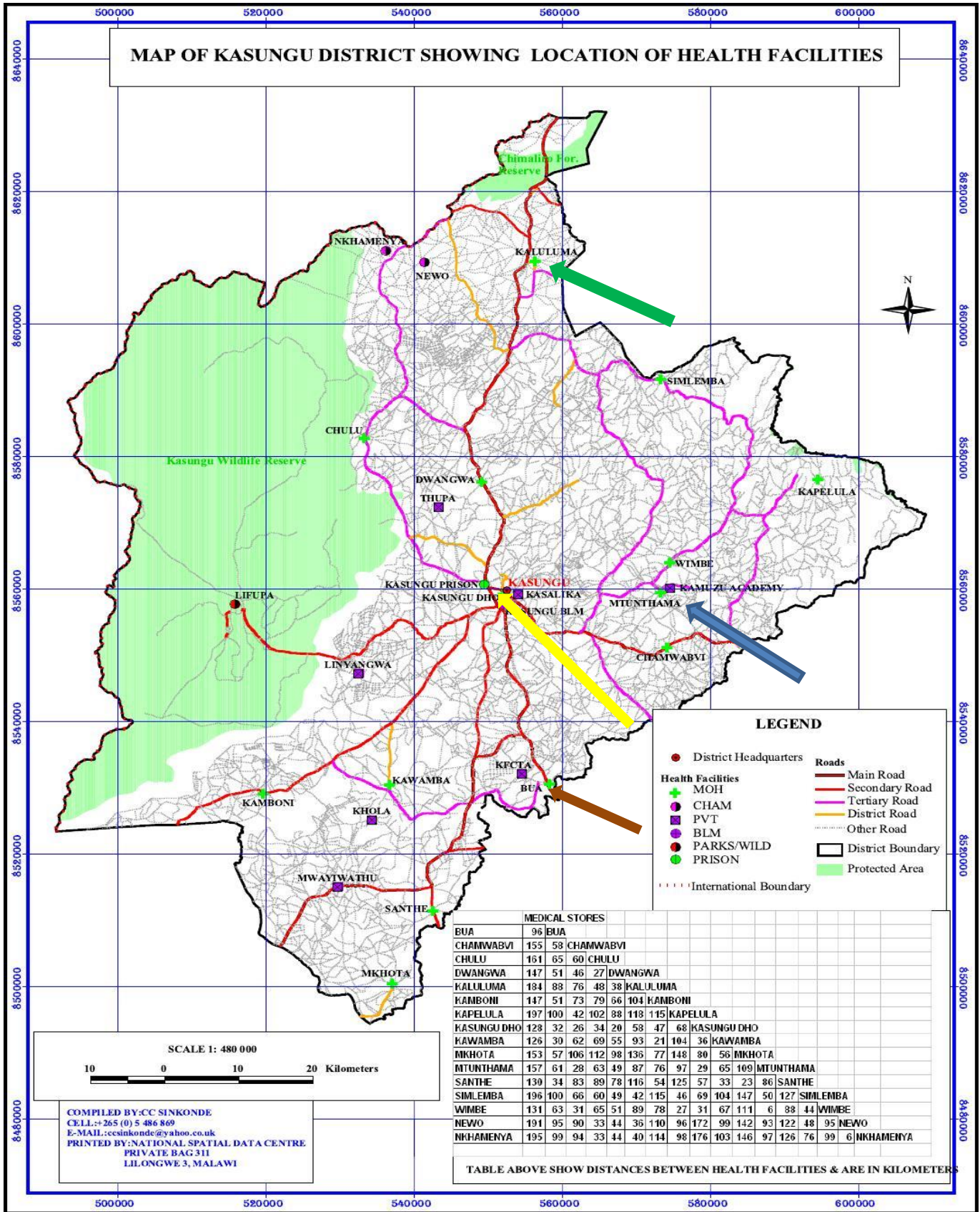
Approval was sought for interviewing health workers without any contact with patients. Although no participant observations were done during patient and provider consultations and interaction. The researcher had the opportunity to be present at the OPD but also at the NCD. The departments had long ques with many people in the waiting areas both at the district hospitals and health centers. The health workers were overwhelmed by the number of people they had to consult and review. Access to patients' medical was not granted, however a sample of an empty chart, patient master card, (appendix B) was given to the researcher to have an overview of information registered during the control visits at the NCD clinic at district hospital. In addition, the guidelines used in the diagnostic process and health education and counselling at the district hospital were presented and reviewed by the researcher.

### 3.2 Study Setting





The study was conducted in Kasungu District in Malawi. Before the data collection process began, the researcher was in contact with NCD Director for the Ministry of health in Malawi since September 2015. The director of NCDs informed the researcher that Kasungu district was one of the pilot districts of the WHO PEN implementation. Kasungu District is in the central region of Malawi. The central region has 1 central hospital, 8 district hospitals and 125 health centers. The Kasungu District Health Office includes one district hospital, one rural hospital, two CHAM community hospitals. The total population in Kasungu District is estimated to be 826 265 as of 2016 (70). The three health centers included in the study are affiliated to the district hospital. The interviews were conducted in four different sites: at KDH which is the secondary level of care, Kaluluma rural hospital, Bua health centre and Mtunthama health centre which are the primary level of care. KDH like most district hospitals in Malawi has female and male surgical wards, female and male medical wards, pediatric ward, neonatal unit, dental department, eye department family health, labor and delivery ward, postnatal department, out-patient department(OPD), antenatal and under five clinics and the skin department. In addition, there is a minor and major theatre at this facility. In 2015 the estimated population affiliated to this facility was 121, 551 and now at 97, 830 in 2017(70) .

All health centers include an OPD, maternity department, antenatal and under five services Only the district hospital had an established NCD clinic where he patients were reviewed. The health centers reviewed hypertension patients at the general OPD. The catchment area for the health centers varies. In 2015, the population in the respective health centers in this study were as follows, Bua served 41,402 people, Mtunthama served 42,260 and Kaluluma had a population of 55,076 As of 2017, population in Bua is 46,956, Mtunthama is 20,496 and Kaluluma serves 19,621( Appendix C) (70). Kaluluma was initially a health center and is being changed into a functional rural hospital. Most people have long distances to travel to the health centers. For some, the closest hospital is the district hospital, even though it is the secondary level of care, most people get primary care services at this facility. Below is a map showing health facilities in Kasungu (71).

Figure 5: Map of Kasungu district showing location of health facilities



### Location of health facilities on map above

-  : Bua health centre
-  : Kasungu district hospital
-  : Mtunthama health centre
-  : Kaluluma rural hospital

### 3.3 Study sample and sampling technique

The study population included a medical doctor, three clinical officers, two medical assistants, a registered nurse and three nurse midwife technicians. Having different profession cadres created a diversity to explore how the different cadres experience the topic being studied. Health workers that have worked less than three months at these facilities and work at the NCD clinic and outpatient departments were eligible for enrolment in this study. Nursing students and medicine students will also be excluded from this study.

In this study, medical doctors, clinical officers, medical assistants and nurses that work in the district hospitals selected were included. Health workers that have worked less than six months at these hospitals were excluded from study. Nursing students and medicine students will also be excluded from this study.

Prior to the study, the researcher visited the different facilities for the sake of being oriented on the facilities how they functioned. Participants in the study were recruited during these visits- During the recruitment process, the hospital administrators assisted by providing a list of names of the different health workers in the different facilities. The researcher then contacted the potentially eligible health workers who were invited to participate in the study and were given a consent form to sign. The researcher then sought informed consent from the individuals and scheduled dates for the interviews. The hospital administrators were not involved in this process. Purposive sampling of clinicians and nurses was conducted. Initially, it was desired to have the equal number of nurses and clinicians from each facility. But due to shortage of staff and staff members being engaged in other duties, the district hospital had more clinicians compared to nurses at the OPD. During the recruitment process, assisted in providing names of the health care workers working at the OPD and NCD clinics. All



participation in the study was voluntary. The setup of the primary and secondary levels of care in Malawian districts is similar especially for the government run institutions.

There were four clinicians and two nurses at the time of the study. Bua health center and Mtunthama health center both had one clinician and two nurses that were potential participants. The clinician and one nurse from each of the above-mentioned health centers participated in the study. Kaluluma rural hospital had two clinicians and two nurses that were identified. Only one nurse consented to participate in the study. The sampling ensured that there is an equal representation of nurses and physicians to be able to see similarities and differences in the experiences between different cadres. Participants with different years of experience were included to ensure heterogeneity.

One of the discoveries made in this study was that health workers at the district hospital are not always affiliated to one department. They rotate in the different section at the hospital. For nurses, rotation is done every 3 months or every 6 months. Clinicians however worked with both out patients and in patients on a daily basis depending on their duty roster.

### **3.4 Data Collection Process**

Before conducting the interview, an interview guide was developed to assist in data collection. The researcher piloted the guide by conducting two pilot interviews with a clinician and nurse in Malawi. This led to correction and adjustments of the interview questions for the data collection process. Firstly, before starting with the interview questions, background information on the positions at work, the qualifications and years of service in the health service. There was a total of twelve questions in the interview guide. The questions covered the following categories, clinical experience, diagnostic process of hypertension, management of hypertension, challenges(barriers) and suggestions. Eleven semi-structured interviews were later conducted in the clinical setting. Conducting the interviews at the institutions assisted the health workers to reflect on their practices in their natural work setting.

The data collection process was conducted in one month between 25<sup>th</sup> July and 17<sup>th</sup> of August 2016. The first two weeks were used for orientation visits to the health centers and recruitment of participants. Interviews were conducted in the week following. All the interviews were semi structured and conducted in a private room at the different facilities. The duration of the interviews was between thirty to forty five minutes. Interviews were

conducted in English, but some informants expressed certain points in Chichewa which is local language in Malawi. All the interviews were recorded using a digital audio recorder.

Although the researcher did not do participant observation in this study, during the orientation visits but the time spent in the facility at KDH during interviews, the OPD was constantly crowded. There were long ques from morning at about 07:30am to around 4:00pm in the evening at the district hospitals. On the NCD clinic day at KDH, there were many people attending this clinic in addition to the other OPD patients. Long ques waiting for consultations were also observed at health centers especially in the morning hours.

### **3.5 Data Analysis**

The initial data analysis for this study was conducted simultaneously as data collection. The digital recordings were listened to and notes were written down on what to explore or probe further in the interviews. This assisted in the constant evaluation of the interviews. After all the interviews were completed the interviews were transcribed verbatim and translated to English where needed. A thematic analysis approach was adopted. Thematic analysis involves identifying, analyzing and reporting patterns (themes) within data (3). Braun & Clarke describe six phases of thematic data analysis and these steps were adopted in this analysis process. These steps include: familiarization with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

Firstly, all the transcripts were read collectively to get a first impression of the data taking note of what is being said and trying to identify patterns in the data. The transcripts were then re-read each on its own noting down the first impressions made of the transcripts. This is a way to familiarize oneself with the data but also creates a foundation for the coding process.

After this initial phase, the coding process started. Coding involves categorizing data segments with a word or string of words that helps depict the core topic of a segment(64). Codes are keywords or phrases that are used in the segments of the transcripts that can be identified later, translated and compared other transcripts but to identify patterns across the data set (65). Each transcript was coded one at a time identifying what was interesting for the research topic and common in the entire data set. According to Braun and Clarke (3), the coding process can be

data driven also known as inductive and theory driven also known as deductive. The initial analysis process of this paper was inductive where by a close examination of each transcript was done. The researcher focused on the data material in the identification of codes without using any pre-existing themes or categories. This initial coding process was open coding where the entire material was coded without selecting the segments in terms of relevance for the study. This way of coding assisted the researcher to get an overview of all the ideas and issues raised in the transcripts Open coding contributes to conceptualization and organization of data to be able to compare them and group the similar themes together(64).

During the coding process, similar patterns segments across the data set were marked for them to be easily retrieved in the identification of themes and categories which the researcher will further investigate. The codes were firstly noted on the transcripts and later were transferred on to an excel document to easily create a thematic map in the identification of theme

After the coding was completed, the first stage of identifying themes was done. This process involved sorting different codes and putting them into potential themes. The different codes were analyzed and combined and grouped into potential themes. Since the codes were put on an excel document, it was easier to visualize them. Codes that can be combined were highlighted and color coded for them to be easily grouped.

After grouping similar codes, the potential themes were identified. These themes were reviewed to see if they were themes than can be merged or those that need to be broken down. This phase was quite challenging in terms of identifying what the data is telling in relation to the research question. Braun and Clarke (3) warn on endless re-coding in this process. When refinements are not producing anything substantial, they advise to stop this process. In this process some themes were further explored whilst others were set aside depending on what was to be investigated further in the data set. This was an ongoing process throughout the data analysis process. The codes were reviewed over and over during this process. At the end of this process it was clear what the different themes were and how they were all relating.

After the potential themes were identified, the next task was to define these themes and eventually subthemes. The task of defining the themes as close as possible to what the informants informed proved challenging. These themes were refined and worked on several times to come up with the themes and subthemes presented in the findings.

The final phase of this process is to write-up the analysis as presented in this thesis. Examples and extracts from the narratives were embedded to the relating themes to bring meaning and further. These made the themes easily identifiable in relation to the research question. A detailed account of this process is presented in the findings section.

The researcher went back and forth in the phases during this process of analysis and the steps were not followed in a rigid order. In the initial stages of analysis, an inductive approach to the data was adopted to generate codes and themes from data as is to gain insight and knowledge from data gathered. The data was thereafter interpreted with the help of the Donabedian model and previous research which is a more deductive approach to analysis. Using thematic analysis gave the researcher the flexibility to analyze the transcript and to look at many aspects of the data. However, this flexibility made it challenging to decide what aspects of the data to focus on. It also proved challenging to maintain continuity of individual accounts during this analysis process.

### **3.6 Ethical considerations**

Before conducting the study, the research protocol for this study was submitted to the research Ethics Committee at the University of Oslo; and to the College of Medicine Research Ethics Committee (COMREC) of Malawi for approval (see appendix). In addition, a request was sent to the This study was conducted in line with the ethical guidelines as defined by The Norwegian law enforced by Norwegian Center for Research Data (NSD). To conduct the interviews, the researcher obtained ethical clearance from NSD. This was on handling personal information of informant (Appendix C).

After Kasungu was identified as the study, permission was sought from the District Health Officer for Kasungu, who sent a letter of approval (appendix J) which was used to apply for ethical clearance at COMREC. Permission to collect data was sought from the district health offices as well as the hospital administrations where the study was conducted. Approval was given by the district health officer of Kasungu district to conduct the research in the districts health facilities. With reference to the Helsinki declaration by the World Medical Association (WMA) informed consent from the participants was collected prior to the interviews where they received information about the research for them to provide informed consent (WMA, 2013). The participants were informed that participation is voluntary in this study and that

they can withdraw from the study at any point before publication. They were also informed of the purpose and benefits of the study. All interviews were conducted in a private room at the hospital to ensure participants confidentiality. Participants were reassured of anonymity and confidentiality of data as well as proper data storage. All recordings and transcripts were uploaded on a student account at the University of Oslo which is a secure network. Only the researcher and the supervisor had access to the transcripts from the interviews. The results will be published at the University of Oslo duo in the form of a master thesis. Upon publication of this study, the digital recordings and transcripts will be destroyed.

### **3.7 Trustworthiness**

Trustworthiness in qualitative research involves determining whether the findings are accurate from the researcher stand point(72) It's whether the findings are credible, dependable, transferable, and confirmable. It's about whether the study itself was conducted in a scientifically sound matter where someone else can assess the quality of the work through the four aforementioned criteria(73).

#### **Credibility**

Credibility deals with how congruent the findings are to reality. This helps entail the accuracy and trustworthiness in the findings and the true representation of the participants(73)

The interviews were conducted by the researcher who is conversant with the local language and culture of the study setting. All the interviews were transcribed verbatim and the results have been presented in the same state. The interviews were conducted in English but there were some instances where the local language was used during some interviews. To avoid bias and misinterpretation of meaning, another person assisted in translating these fragments of which were compared to the researchers' translation. For further clarification of the interview responses, follow up interviews were conducted to ensure that no information is missed or misunderstood.

Additionally, to increase openness in this study, participants were recruited on voluntary basis and it was emphasized that they can withdraw at any time during the study participants were not obliged to give information they felt uncomfortable with, and this ensured free expression of views by the participants.

Although triangulation is mostly associated with the use of different methods to provide evidence from the sources in order to build a coherent justification, triangulation may also involve the use of wide range informants (72, 73). In this study, they were a wide range of informants based on profession, years of experience and place of work. The researcher took note of information to be explored further and adjusted the interview guide to explore further the experiences of other participants on that topic of interest.

Having debriefing sessions with the supervisor in this study helped to widen the understanding of the issues from the data and to interpretations of the participants' perspectives reflecting on the issues raised.

### **Transferability**

Transferability is the extent to which the findings in a study can be applied to other contexts including similar individuals, sites and similar phenomena. In qualitative research, transferability is used in a limited way as the findings are often unique for a specific population(72, 73). The district health system set up for the districts in Malawi. The context in which the study was conducted, and the topic being studied have been described in detail. In the appendix is the interview guide used in this study. These details will assist researchers who may want to follow the same procedures as closely as possible

### **Dependability**

Dependability in qualitative research focuses on a detailed account of the processes in the study. This enables the reader to develop a thorough understanding of the methods used and their effectiveness(73). In this study, the study setting, sampling technique, data collection and data analysis processes have been described in detail. This is to enable future researchers wishing to conduct similar research in a context and with a similar population to be able to follow these steps. The methods described above used to enhance credibility also helped in enhancing dependability

### **Confirmability**

Confirmability involves the qualitative investigator's taking steps to help ensure as far as possible that the work's findings are the result of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher. This is to ensure

objectivity(73). The transcripts were made available to the supervisor and the patterns and themes were discussed. The interview guide used in this study are made available in the appendices for future researchers that may want to use similar method.

## **Reflexivity**

Reflexivity acknowledges that the researcher's experiences, attitudes and emotions will affect engagement with the participants and subsequent analysis of data. Introspective reflexivity is an attempt to maintain research focus by bracketing biases and attitudes of the researcher in order to minimize, if not prevent, their influence on the research process(74).

A researcher ought to have a critical reflection of the processes and the findings of the study. In order to avoid bias, it is important to be open minded to the finding and the draw conclusions based on the processes and not from what was previously expected to be the result(75). Being a nurse by profession and having worked in similar environments in Malawi, I had to put the knowledge and perception I had from before aside to have an open mind during the field work and write up of this paper. To avoid bias during my data collection process, I focused on what was important for the participants that they presented in the interviews. Based on my training and background as a nurse, my experience and training is primarily from Norway. I have worked had practice at the central hospitals and the district hospital as a nursing student in Malawi for one and a half year but have not worked at the health centres. Having this background assisted in the interaction with the health workers as I was familiar with the Malawian context even though I practiced there for a short time. My previous knowledge and experience assisted. Being from Malawi, I had the opportunity to allow informants to use the local language or English. All the informants opted for English but there were still fragments of the local language in some interviews. I was also able to relate to the participants according to the cultural standards in Malawi to create a comfortable environment for the participants.

Before conducting the study, I used time with the participants to explain the student role that the researcher had. The participants were reassured of confidentiality during the study. This assisted in creating a good rapport for the interviews. Although most of the participants were open in their descriptions, they sometimes seemed reluctant to open up more especially on topics concerning how they do things in practice. Some were more reserved during the start of the interview but opened up more and were more reflected on their experiences and their

perceptions. All in all, the participants were self-critical on their current practices and were open to change. One informant however said during an interview that the way the facility he worked at managed hypertension was the best way in accordance with the recommended guidelines and that the only challenge being faced is lack of knowledge in the communities.

During the interviews, the freedom to answer or reserve themselves from answering was emphasized to the participants. The participants were free to ask clarification questions on anything they were uncertain about or did not understand. One example is when one of the participants before starting the interviews enquired about the master program I was pursuing but also why I chose this particular topic. After hearing the explanation, the individual later informed me the facility was well established in terms of NCD care and that the areas of interest in my study have already been covered by the Ministry of health during the implementation of the WHO PEN. He however agreed to proceed with the interview. During the interview, this participant came with explanations of the challenges encountered in hypertension management even though they are working on improving the services. What was said before the interview and what the participant expressed during the course of the interview was different when he started to reflect on his experiences. He later acknowledged that there is still a huge gap in the health system for the management and control of NCDs that need to be addressed.

After every interview, a journal was used to write reflections about the interviews, areas of improvement but also areas that require clarification. The interviewed guide was constantly reviewed and adjusted according to the data emerging. Follow up interviews were also conducted on areas requiring clarification and further probing.



# 4 Findings

## 4.1 Introduction

The first objective of this study was to understand health workers perspectives on the diagnosis and management of hypertension and\

7\the experiences they have in their roles. The study also aimed at exploring their experiences in their role in the diagnostic process and patients' follow-up in hypertension clinics to ensure that patients receive the quality care they need.

In this section, a summary of the main findings of this study will be presented. A total of six themes were derived from the transcripts. These include hypertension being an unfamiliar condition, perceived benefits of health education, organized patient follow-up, not following guidelines, more refresher courses, lacking resources with sub theme no batteries. For hypertension being an unfamiliar condition, the subthemes to this theme include dependency on history taking and dismissive silent killer. Firstly, the demographics of the participants will be presented before themes are presented.

### 4.1.1 Demographics of participants

Different professions were included in this study. The different profession cadres undergo different trainings and have different qualification. The medical doctor has a five-year degree program plus one extra year for internship at the College of Medicine, clinical officers have four yeas formal training obtaining a diploma in clinical medicine, medical assistants have two-year formal training earning a certificate in clinical medicine, registered nurses have a four-year degree program in nursing and nurse midwife technicians have three-year formal training and obtain a certificate in nursing. Currently, Kamuzu College of Nursing is providing a four-year degree program in Nursing and Midwifery.

*Table 4: Illustration of participants' demographics (n=11)*

profession	Number of participants	Health Facility
Medical Doctor	1	Kasungu District Hospital
Clinical officers	3	

Registered Nurse	1	
Nurse midwife technician	1	
Medical Assistant	1	Mtunthama Health Centre
Nurse midwife technician	1	
Medical Assistant	1	Bua health Centre
Nurse midwife technician	1	
Nurse midwife technician	1	Kaluluma rural hospital

Due to confidentiality, the participants are only referred to either as Nurse and clinician. This is due to the small number of professional health workers in the different facilities. Nurse includes both the registered nurse and nurse-midwife technician. The clinicians include the doctor, clinical officers and medical assistants. Below is table with a description and characteristics of the participants as used in the results section in this study. The study aimed at recruiting health workers working at the NCD clinic and the OPD. However, at the district hospital, the researcher was informed that all health workers go on rotation in different departments both in patient and out -patient departments. There was a total of six clinicians and five nurses. Their years of experience ranged from three years to eighteen years with an average of ten and a half years.

*Table 5: Participants Characteristics*

<b>Description</b>	<b>Characteristics</b>
Clinician 1 (CN1)	<ul style="list-style-type: none"> <li>• Male</li> <li>• 10 years work experience</li> <li>• Works on rotation at district hospital</li> </ul>
Clinician 2(CN2)	<ul style="list-style-type: none"> <li>• Male</li> <li>• 18 years work experience</li> <li>• Works on rotation at district hospital</li> </ul>
Clinician 3 (CN3)	<ul style="list-style-type: none"> <li>• Male</li> <li>• 18 years work experience</li> <li>• Works on rotation at district hospital</li> </ul>
Clinician 4 (CN4)	<ul style="list-style-type: none"> <li>• Male</li> <li>• 4 years work experience</li> </ul>

	<ul style="list-style-type: none"> <li>• Works at health center/OPD</li> </ul>
Clinician 5 (CN5)	<ul style="list-style-type: none"> <li>• Male</li> <li>• 5 years work experience</li> <li>• Works at health center/ OPD</li> </ul>
Clinician 6 (CN6)	<ul style="list-style-type: none"> <li>• Female</li> <li>• 3 years work experience</li> <li>• Works on rotation at district hospital</li> </ul>
Nurse 1 (N1)	<ul style="list-style-type: none"> <li>• Male</li> <li>• 6 ½ years work experience</li> <li>• Works on rotation at district hospital</li> </ul>
Nurse 2 (N2)	<ul style="list-style-type: none"> <li>• Female</li> <li>• 18 years work experience</li> <li>• Works at health center</li> </ul>
Nurse 3 (N3)	<ul style="list-style-type: none"> <li>• Female</li> <li>• 15 years work experience</li> <li>• Works at health center/OPD</li> </ul>
Nurse 4 (N4)	<ul style="list-style-type: none"> <li>• Male</li> <li>• 8 years work experience</li> <li>• Works at health center/ OPD</li> </ul>
Nurse 5 (N5)	<ul style="list-style-type: none"> <li>• Female</li> <li>• 11 years work experience</li> <li>• Works on rotation at district hospital</li> </ul>

#### 4.1.2 Disease Burden in Kasungu District

Kasungu NCD reports for 2016 were obtained from the hospital administration. The number of new cases and all cases recorded varies every month. In this table, cases in hypertension and stroke are highlighted. Stroke is included as it is one of the major complications associated with persistent hypertension. There were 24 deaths due to hypertension registered in the year 2016 as compared to 19 deaths in 2015. In 2015, they were more registered new cases compared to 2016 with the highest registration in a total of 404 new cases (148 males

and 256 females) in July. From September 2015, the number of new cases dropped with the highest number registered being 49 new cases (10 males and 39 females) in March 2016.

Universally there were more female cases registered as compared to male cases.

*Table 6: Kasungu district NCD report 2015*

Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
January	Hypertension	95	173	19	65	2	2
	Stroke	4	7				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
February	Hypertension	72	182				3
	Stroke	8	4				1
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
March	Hypertension	103	206	24	64	1	2
	Stroke	2	1				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
April	Hypertension	112	236	29	44		2
	Stroke	3	2				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
May	Hypertension	98	189	12	56	2	
	Stroke	2	2				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
June	Hypertension	112	193	129	284		
	Stroke	1	1				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
July	Hypertension	148	256	171	349		
	Stroke						
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
August	Hypertension	105	189	245	388		
	Stroke	3	6				
Month	NCD type	New cases		All cases		Death	

		M	F	M	F	M	F
September	Hypertension	10	28	56	130	1	1
	Stroke	3	3				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
October	Hypertension	20	28	67	133		2
	Stroke		2				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
November	Hypertension	7	11	39	101	1	2
	Stroke	4	3				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
December	Hypertension	3	13	60	115	1	
	Stroke	2	1				

**M=Male F= Female**

*Table 7: Kasungu district NCD report 2016*

Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
January	Hypertension	7	36	66	109		2
	Stroke	4	2				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
February	Hypertension	12	25	42	117	1	3
	Stroke		3				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
March	Hypertension	10	39	57	149		2
	Stroke	6	1				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
April	Hypertension	14	20	71	129	1	1
	Stroke	2					
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F

May	Hypertension	9	18	48	120		3
	Stroke	1	2				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
June	Hypertension	11	14	66	160	2	
	Stroke	2	6				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
July	Hypertension	7	25	46	91		2
	Stroke	3	5				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
August	Hypertension	5	5	65	95	1	
	Stroke		1				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
September	Hypertension	9	9	50	99		1
	Stroke	2	3				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
October	Hypertension	5	12	80	106	1	1
	Stroke	3	1				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
November	Hypertension	5	12	80	106	1	1
	Stroke	3	1				
Month	NCD type	New cases		All cases		Death	
		M	F	M	F	M	F
December	Hypertension	6	6	31	76	1	
	Stroke	3					

**M=Male F= Female**

#### 4.1 Unfamiliar condition

From the interviews conducted, hypertension was described as a new thing, a new idea and something people were not used to in their daily work at the hospital and health centers. As such, hypertension is under detected or detected at a later stage according to the health workers. Several participant's (9 of 11 participants) descriptions pointed to several issues which suggested that hypertension and other NCDs as diseases that are not often thought of when conducting assessments on patients visiting the clinics and thus are diagnosed at a later stage. This included focus is mostly on the well-known diseases such as Malaria and HIV, difficulties to recognize and detect hypertension

In addition to this, several health workers expressed the lack of knowledge and awareness of hypertension in the communities. This according to the participants leads to individuals seeking medical help when their condition has worsened, or they have developed complications like stroke hence leading to late diagnosis

In this there was no difference in the experiences between health workers working in primary and secondary level of care. Although the interview questions were focused on hypertension, informants usually used NCDs and included diabetes in some of their discussions.

*it's like I think they feel like it is normal for them, for them they do not know anything. It is like lack of awareness on the signs and symptoms of high blood pressure. But when they realize that, this problem is continuing I should go to the hospital to seek medical attention it's already too late. But it is like lack of awareness of this condition at the community (N 3).*

*A lot of people suffer. I will give an example of my mother, she presented with eye problem. So, it was like she has eye problem. But when she came here for BP check it was just too high. Then I had to tell her that this is BP(hypertension). So, imagine how many people will come and follow that channel that they are having problems like I have headache I want to be checked BP. People do not have information. So, you have a huge gap. It is different from like other countries where people have the information (N1)*

*But there is also one thing that is lacking so it is knowledge to the masses out there. Because patients are coming from the community and it is well known that there in the community people do not know much about hypertension, so they do not come to the clinic to be checked blood pressure readings. Though we have been saying or preaching at the outpatient that people should be coming to be checked but not everybody comes. They come here when they are sick. When now they have seen that they are not feeling well in their bodies (CN 2)*

One clinician mentioned on how culture influences the people to seek medical attention at a later stage of their condition

*the challenge is most of the times we do identify these people, you know in Malawi, we do not have that culture that somebody can just go to the hospital maybe for assessment. We wait until we become sick. The same as with hypertension, maybe we do come to the hospital when they now feel the signs and symptoms of hypertension to say I am feeling headache, I am feeling dizzy, palpitations all over. Yes, so when they start feeling those signs it is when they come and sometimes after maybe assisting them, giving them medications when they go home, when they start feeling better, we give them the follow up date they do not even come(CN5).*

Some informants talked about that patients reminding them to check their BP when they come for consultation

*yes, I think it is towards the people now, they do not have much information about hypertension and I think we need to be reminding them that it is their right to ask, to remind us when we forget to take their blood pressure. It is their right to remind us to check their BP, because sometimes, we are always busy, sometimes it is not that we don't want to measure the BP, but we just forget. So, it is their right, if they could have much information on BP, I think it could have been ok. They will be coming for screening and other things*

**(CN 4).**



#### 4.1.1 Dependency on history taking

In all the interviews, health workers talked about how history taking based on patients' complaints is vital in hypertension diagnosis. The history taking is described by health workers highly dependent on the presentation of complaints from the patients.

*“Basically, it all starts with clinical presentation of the patient. You know, when we suspect, if the patient presents with some of the signs of hypertension like dizziness, headache, blurred vision and so on and so forth. Then if we suspect hypertension, then it's when we measure the P of the patient.” (CN4)*

*“Patients identification firstly is from the history. It's like from the complaints that the patient might give, sometimes it gives you a picture that this might be hypertension. Some it is like previously they were experiencing those problems then were diagnosed with hypertension. But to most like those which is like their first time to be diagnosed with hypertension mostly it's from the history the complaints and the back ground”. (CN 5)*

*“Normally we identify them according the problems they have come with. The complaints they present. What I have observed is that because when the clinicians are away we cover the OPD, usually we are there. The patients' complaints usually they say, they present with heart palpitations, dizziness, it is when we suspect that maybe this is hypertension.” (N3).*

To come up with the correct diagnosis of hypertension, one health worker described how the clinical presentation from the patient's side can determine how well the patient is screened for hypertension. Since screening is usually based on the complaints patients presents with, patients are checked for the conditions the doctors suspect without investigating other possible conditions like hypertension. How well or detailed the patient presents their symptoms influences what the health workers assess the patients

*I think most of the times because of the pressure we have at the OPD, it only depends on the patient presentation. If a patient presents with more problems or complications related to hypertension it also determines how the clinician will handle the patient. Sometimes the patient may come to say may they have headache or whatever. It may be slight headache; we do not know maybe it is related to hypertension. But if the description or the complaints are*

*not as serious as the patient presents, it will also determine how we tell that patient to come when. But if the patient come to say please I am feeling very severe headache. The if we check BP, BP is high, then it also affects the decision of the clinician to say BP is high and you are feeling headache. I think maybe you should come in two days or four days (NI).*

#### **4.1.2 Dismissive Silent killer**

Although aware of the importance of checking the BP in the diagnostic process, BP checks are not always routinely done at the OPD. When asked about their experiences in diagnosing hypertension, the following participants responded that

*“To me, most of the time we identify patients at a later stage of the condition. And what I am trying to mean is most of the patients may have high blood pressure but when they come they may present as other sicknesses, other conditions. So, it is really hard to say, this patient has hypertension. Sometimes we may treat that patient and we think of other conditions (NI)*

*Yes, sometimes, the patients get missed because I have already mentioned that we do not have enough BP machines. You find that, they will come with a complaint of headache and clinicians will think of other medical conditions. They say common things first, they will be thinking of Malaria and other things forgetting that it is the hypertension that is causing the headache. So, because they do not have a BP machine at hand, they will think of Malaria and then send the patient to the lab. When that patient comes back with negative Malaria parasites, they think you are ok, you do not have Malaria, then you will go home without thinking of hypertension.” (CNI)*

*Of course, in this diagnostic process, my experience is that either we diagnose them very late when they have already gone, either they have stroke. When they have already complications. That means that, because it is not only me who sees patients here. So, they may come to me already maybe they have complications (CN3).*

Some informants described how hypertension is often overlooked due to its asymptomatic nature. It is described as silent and that one needs to pay attention to the screening process of hypertension as compared to diseases like HIV, diarrhea and Malaria that can be easily identified.

*What I have noted is we are still lagging because what I have seen is that hypertension is like cervical cancer. It is asymptomatic, it is just silent. Its silent and one just moves around with it. When they reach appoint of pain, it is already too late (N 3).*

*And I think people are not interested but they forget that hypertension is more dangerous than even HIV because it is a silent killer. One can be diagnosed now that this one is HIV positive and has got AIDS looking at the signs seen. But they can survive for maybe 10 or more years. But then someone with hypertension can even die within seconds. You just hear that and this place someone has died. When you enquire more on what happened, you find out what happened the signs and the like you will find that that was hypertension (N4)*

*What I believe is that there are many people out there who are hypertensive, but they do not know it because they do not come to the clinical and it is because initially hypertensions do not show symptoms. There are not specific symptoms of hypertension when it is just developing. A person is just feeling normal, so when it becomes critical some patients just develop stroke, some come while unconscious, so these are the experiences (CN2).*

Another informant describes how signs and symptoms of hypertension are ignored in assessing patients saying that BP is not checked as routine as such many are not diagnosed.

*It's like we have lost many of them because as I have already said that it is only when some as said I am feeling heart palpitations, it's like it has come at a worse, at an advanced stage. But sometimes let's say the elderly present with other signs like headache. But maybe it should be a routine that every patient who comes at the OPD should be checked BP, we could have many cases identified. But now we stick to those who have complained. It's like somehow a delay. So, it's like when one comes and does not mention headaches, heart palpitations and even edema of the legs or generalized edema we ignore those signs and symptoms. We just stick what is your problem? Malaria, ok go here. Sometimes one can come with Malaria; we find the MRTT are positive. But we just treat Malaria not know that the very same patient has got hypertension. It is not displaying, and we have not diagnosed him, because he did not present with the signs (N 3)*

## 4.2 Lacking resources

In all the interviews conducted, the participants mentioned the shortage of resources as a challenge for hypertension management. The resources lacking included human resource, infrastructure, drugs, equipment and batteries for BP machines. Health workers expressed how lack of these resources affects their daily work with hypertension.

The shortage of health workers is a known challenge in Malawi and the government has set up measures to improve this shortage over the past two decades. This was also experienced in the recruitment process of participants to this study. The shortage of health workers leads to an increase in workload for those that are available. There is still a need to improve the staffing levels.

*I think we miss a lot of patients, hypertensive patients due to workload and unavailability of resources. So, my experience is we are taking part in killing patients. As health workers because we are missing them. You might find that the OPD is crowded and you are the only clinician and you have to work with at least 300, more than 300 patients a day. So, one comes presenting with hypertension, so you would think I should now start measuring BP, where is the BP machine it will take me time, so I will just prescribe the drugs and tell them to come. Without really knowing their BP (CN 4)*

*I think with the shortage of staff at the OPD, a nurse should be available at the clinic. Like I have said, the one who runs the clinic is one person from orth. Like I said since I have been at the OPD I have only been there once to assist to check the BP. But because now I am alone at the OPD I cannot manage to go there (N 5).*

*Sometimes it's like we are overwhelmed with the number of patients that we have so currently are using manual sphygmomanometers. You end up spending a lot of time with one patient. But sometimes we do mind that. We need to see these patients routinely, but it is not always (CN 5).*

*And because of the number of patients we have, the staff is overwhelmed. So, we have a challenge of shortage of staff (CN 2).*

*At our clinic for starters we need to have space to improve our services. We have to improve on staffing levels and we have to improve on how we approach patients in terms of health education. If we improve these three things I think we will improve the services (N 1).*

Two health workers talked about how making use of existing gatherings and available resources assists to address the problem of lack of resources especially infrastructure and human resource.

*But also, even the space. Like this is a small hospital, we have got a few rooms. To do that, you can do things specifically, that this should be specifically for that. That means you have to incorporate in something else. You have women at the antenatal, you tell them, so which means the same space to do something else, you can also include things like those. So, things can be made possible in that way (N 4).*

*Usually it's not one to one education but when they are there (HSA's) to give vaccines and other things they do at the outreach, they take opportunity of that gathering at least to tell them what hypertension is all about. Like if you see these signs do not hesitate to go the hospital to be checked BP. That is usually what they do, they take opportunity with the gathering they had in the community to tell them about hypertension (CN 4)*

Due to the shortage of trained health professionals in the health facilities, community health workers, the HSAs, play an important in assisting in health education and community outreach, Support staff are also very important as they help with blood pressure and weight measurement when patients are being registered for consultation at the health facilities.

One nurse describes the importance of having community health workers assisting especially when it comes to community outreach.

*I feel like if we have community health workers in the villages, like the HSAs. They are the ones that can take part, as they are doing their work, they can carry a message like at least even though you are not sick, at least maybe after every 6 months' check BP at the hospital it's for free. But also, I think if we have briefings with HSAs to inform them about the early symptoms of raised blood pressure. The HSAs are our hands and legs at the community. They are the ones that can assist to disseminate this information (N 3)*

One clinician talks about how the support staff assist in taking measurements as they are trained to.

*So, before a patient has seen the clinician, they meet those staff, support staff, they are checked those parameters (BP and Weight) then they are recorded in the health passport and after that they call and see the clinician (CN 2).*

#### **4.2.1 No Batteries**

Another reason as to why hypertension is not screened properly is the lack of equipment like BP machines. The health workers at both the district hospital and health centers say they mostly use digital BP instead of the analog sphygmomanometer. Most OPDs operate with one BP machine. Although the machines are available, several of the informants said the machines are usually out of batteries. As a result, it is either they do not check the BP, or the patients are asked to buy batteries to have their BP checked. In some instances, informants described patients being diagnosed with hypertension without doing a BP check and based solely on the complaints the patient is presenting with.

*“Sometimes with this same money problem, we even have problems to source batteries. So, we use the manual one, the same one you pump. But sometimes we also use the digital one that you just press. But for the digital the main issue is the batteries. To find batteries, you say, so should you buy the batteries for the machine. You can volunteer you self, but we have volunteered for many things. I even sometimes buy bulbs, you do this you do that. You do that. You just have the mentality that, I am the one working here, for the place to be conducive to work at and look good what choice do you have? You even reach a point of wanting to buy mops like you will use in your own home. But it is to assist the hospital. So sometimes, maybe on the batteries, the patients volunteer themselves.” (N 4)*

*“We have other problems, because like the BP machines the batteries do not come. If we have them in the machines they are from Patients. Patients that know they are hypertensive when they come we tell them that we do not have batteries. So, they go and buy and come with it. But if we do not have, I just write their medications then they go, or else they should be sent to KDH to be assisted. Sometimes it’s a problem. If we have problems with BP machines we have other challenges that the patient is not assisted accordingly. Sometimes the patient comes, you see all the signs that this person should be developing hypertension but to check, he will not be checked. So, you give medication saying I think let me just give a little medication and see*

*maybe after three or four days, will it reduce or so: Which is not right. Because we need to treat someone because we have found a problem. So, the challenges I there because we lack the things that are important and needed (N 2)."*

*"And also because most the resources we do not have available, when they (the patients) are registered sometimes they contribute small fee for, for example that we buy batteries depending on the battery that we have. It is possible that next time we want to use BP machines we do not have batteries you see. So, they contribute maybe monthly depending on what we have in stock (N1)."*

*"like the blood pressure cuffs, sometimes they run out of batteries so or they break down and it's a bit hard to be checking the blood pressures (CN 6)."*

*"Not much because sometimes the BP machines that we use we use batteries, sometimes we may run short. We do not have the batteries and the BP machines are not working. It can be difficult (CN 3)."*

### **4.3 Perceived Benefits of health education**

To bridge the gap of unawareness, participants believe that health education assists in raising awareness but also to assist patients to be able to manage their condition on their own. In several of the interviews, expressed the need for community sensitization to motivate people to have their BP checked at the health facility.

*"I think we should intensify on disseminating the information concerning hypertension. If they have the good information, then they will have more interest to come for the screening. That will also help us. And we should also make sure that all screening tools should always be available including the drugs. That's what I think (CN4)."*

*"for quite a long-time people have not been sensitized about hypertension. I think the best thing is first it is to sensitize people, people should know about this condition. The second thing is routinely assessing the patients so that you can maybe identify the condition in its early stages before it becomes severe. Because it is easier to manage hypertension when it is*

*mild than when it is severe so if we can manage to routinely assess this patient for hypertension I think this can also be the best way to manage it before maybe the use of medication (CN 5)."*

*"There are several things, you can target communities, community sensitization and when they come to the hospital you can have adequate counseling of all patients, I think that would work. If they know and understood the disease, you can have better ways for it and more people would be in coming for to get their blood pressure checked before they even get complication (CN 6)."*

For those that are already diagnosed, health education is presented as the first step in management of hypertension before patients are put on medication. Health talks are conducted during visits at the health facility to motivate the patients to lifestyle modification but also self-management to regulate hypertension. The participants reported that health education is provided both in groups at the OPD or NCD clinic and individually during consultations with patients. In the secondary level, there is a specific clinic day for NCDs including hypertension. As such, health talks conducted are specific on non-communicable diseases. According to participants from the primary level, there is no specific clinic day as such random health talks are conducted. In some areas, hypertension health talk is on the calendar once a month whilst talks on Malaria and other conditions are conducted more frequently. The group health talks are primarily conducted by health surveillance assistants while the individual health education is conducted by clinicians and nurses.

In management of patients several health workers expressed the importance of advice on lifestyle changes when one is newly diagnosed with hypertension but also on the patients visits to the health facilities. Lifestyle changes advice includes change in diet and exercise levels

*"First of all, we do not just put a person on drugs but we advise on several issues on diet, on exercise, on losing weight. So, then we keep on monitoring. When the client is compliant with those measures and we see that the readings of the blood pressure are not responding to what he is doing then we put that on medication (CN 2)."*



*“But mostly we emphasize on diet. Like low salt diet, no fatty foods because we explain to them that fatty foods are disposed in the vessels. We explain to them in vernacular for them to understand. Things with too much cholesterol like eggs you need to reduce. That your blood is moving in a path that is narrowed so the fats deposit there. So fatty foods you need to reduce, you need to reduce on salt. Mostly we are stick to those things on diet (N3).”*

*“What we do is some sort of advice, health education in general. Like maybe reduce salt intake, and also lifestyle of a person. Maybe to take care of oneself in terms not to be quick to anger. Advising the patient to try to control their emotions, such kind of things. And to tell them of other symptoms like blurred vision, to tell them at when you experience that, just sit quiet, do not work or walk around a lot. Just sit quiet so that those things can be relieved and then you report to the hospital (N 4).”*

In conducting health talks, the health workers have had positive experience on the outcome especially with patients that have already been diagnosed

*“The improvements we have seen especially compliance on medication. With the health talk we give them and especially that they know that on Wednesday is their day, they are more responsible. So being more responsible and compliance Is higher than before (N 1).”*

*“The experience is just good because most of the time we tell the patient what to do and the instruction maybe on prescription. Most of the patients they do adhere because nowadays are able now to understand the consequences of hypertension. You tell them about stroke and you tell them that is problem is like a lifetime condition, so we tell them to understand so that they should adhere to the prescriptions (CN 5).”*

*“I think I should say, I think the quality of life has improved. Previously we could just have death anyhow related to hypertension. You will find that somebody has just come, is unconscious, you check the BP is too high, shortly he dies, another one just collapses, maybe shopping something in the market and then he just collapses. He comes here you find the BP is high and then he dies. So, with some sort of sensitization, people started coming and with this peer education that, I go to the clinic and I receive medication, people started coming to the clinic and I should (silence) I think it has improved, we have had, of course previously we could*

*have more people dying on the same issue, on the same hypertension, after having a stroke. But within this period the situation has improved (CN 1)."*

#### **4.4 Organized patient follow – up**

Most of the health workers pointed out that they use mostly the MSTGs for the treatment of hypertension. Most of the health workers were not aware of the WHO PEN and what it involved. Two clinicians at the district hospital were aware about this program. But nurses and other clinicians asked about WHO PEN both at the district hospitals and health centers were not aware. Three of the informants were not directly asked about WHO PEN but on the guidelines, they use for management of hypertension.

For those aware of the WHO PEN implementation they replied as follows

*"we had trainings, orientation of our clinical officers, nurses and also all support staff like the clerks, the hospital attendants. So, we had almost 65 nurses and clinicians who went through that orientation and also, we had 60 support staff who had their own session. How they can assist in the NCD clinic. After that then we re-organized the clinic according to how the NCD unit in the ministry of health wished us how we should be running. So, then we started in 2012 in July. SO up to now we are doing how the WHO is wishing to do (CN 2)."*

*"It's like NCD it is a lot. It is non-communicable diseases, there are a lot of conditions that are non-communicable. WHO PEN has just stated a few and people are oriented based on the few. So, we are running this clinic based on those that were selected by the WHO PEN. Cancer, asthma, hypertension conditions (CN 1)."*

One clinician talking about the WHO PEN implementation not being available when they started working at the facility.

*"it started before I got there, so it wasn't there when I was starting, but it was like they were trying to implement in the whole central and north is having the clinics, like NCD clinics so just like the districts but then going to health centers, so that there should be managed and proper follow ups be made, like the way we are currently doing. so, it's been evolving*

*throughout so we are picking up more cases. so, we started with a few cases, few patients and then people are now more aware of it and the treatment and we are able to refer more people too (CN 6)."*

*"ya because as I said that, I just know that WHO is the one initiating. Maybe we were chosen as a district to pilot on having NCD clinic. But I am not very sure on the inside. Because as for me I was not actually oriented but I just see the guidelines that we use that they are following WHO PEN and that is what we are following, ya sure (CN 3)."*

*"no I do not know, maybe the district hospital can know something about it (N 2)."*

*"ah no. I do not know much about that and it's not happening here then I do not have much information on that (CN 4)."*

When asked on the guidelines used in management, one nurse responded as follows

*"they are the clinicians that use that. So far in our office, if we had it we would have pasted it somewhere, but I have never seen it (N 5)."*

When it comes to treatment and follow up most of the health workers informed that the treatment protocol they use follows the recommendation by the Malawi Standard Treatment Guidelines (MSGTs).

*"most we use what we call the Malawi standard treatment guidelines. So, when you get a condition, it is outline there to say you can manage this, this is the first stage to manage hypertension this is the second stage. When you go severe this is the way you can manage it. So, we use the MSTGS (CN 5)."*

*"we have a book on MSTGS. We have a book, you know in the hospital you have to refer, it's not an issue..... All those posters we refer to, like we have those on preeclampsia at the labor ward, we refer to. So, when you have a patient you just refer because sometimes you can forget. So, we have these books, you will find everything you need to do for that patient. So we use these guidelines (N 2)."*

The shortage of drugs in the health facilities affects the treatment and control of hypertension. In most cases the health workers had to defer from the protocol and guidelines recommended for hypertension management. According to the health workers, drugs are administered according to their availability. In some cases, patients do not receive the drugs they need due to the shortage in the government facilities and have to source the drugs on their own from other private hospitals and pharmacies. The researcher also talked to the pharmacists on the availability of hypertension drugs at the district hospital.

*“That’s a challenge because you find that some other time; we will be fully stocked in terms of drugs. But some other times you find that we run out of some of the drugs and it’s a challenge because we are forced to go to another level deferring on the protocol because we do not have that drug on the protocol at that particular time. So, we may shift to the other level because that’s what we have. So, it’s also a challenge when we run out of some of the drugs (CN 1).”*

*“Because most of the patients are on HCTZ and also maybe the nifedipine. HCTZ we have but nifedipine is now going out of stock. But sometimes we do not have these drugs. But most of times if central medical stores is not stocking, we just advise our patients to go and buy. Which might be a problem because sometimes they may not (CN 3).”*

*“The other problem is you know, sometimes we do experience stock outs of drugs. You identify, you prescribe but you do not have the medication. you just refer them or even just send them back home without any treatment. That is also another challenge (CN 5).”*

*“Sometimes we have some types of medication, we do not have others. So, we do not assist our patients as we wanted to do. Because the patient can come, we have put him on a particular medication and then they come, they find that that type of medication is out of stock. It does happen. We would love if we have all the resources available in all times but that is not possible (CN 2).”*

Then maybe we have a shortage of a certain drugs. you find that the patients themselves, they decide to buy and put in the pharmacy.

Another challenge experienced especially district hospital that conducts the NCD clinic is the congestion at the clinic and lack of necessary infrastructure. However, in health centers *“Sometimes, congestion. I have already said that we have more patients here and the clinic is congested. Too much congested. Like for today we were only 2 clinicians seeing a good number of them. And I think the total number is close to..., I have forgotten the figure but we have more patients. And then at the clinic day, the clinic is congested (CN1).”*

*“ok like, I think what we are doing with most of the patients, I think the scheduling now is like very tight. We see lots of patients, and few clinicians because the OPD is small, so you end up through the afternoon so that’s the problem. And where people get the blood pressures and sugar checked is quite a bit far from the OPD. So patients who have complication such as stroke have trouble to like walk all the way. It is such an issue (CN 6).”*

In Kasungu district, the established NCD clinic is at the district hospital. The clinic runs once week and patients with conditions including diabetes, hypertension and other NCDs. Although health centers, treat and follow up patients with NCDs, they do not have a specific clinic day. Patients with NCDs are randomly seen during their OPD visits.

For health workers working in the district hospitals, the establishment of the clinic has had a positive impact according to them. The clinic is more organized than it was before making it easy for them to be able to follow up patients. Patients come for review once a month and also get their medication refilled once a month.

*“Yeah so far, because initially we didn’t have NCD and patient were just seen. That kind of thing when they come you do not even actually know when they will come again or when are you going to give information. But with the NCD we actually see that there is an organized approach to treatment of NCD conditions. Especially that people are aware, that every Wednesday we go for check-up. Of course, not only Wednesday but we also tell them if you experience other problems in between before the Wednesday you should be able to come. We actually see that on Wednesdays we are more focused on treatment related to people with non-communicable diseases. So, the progress of NCDs is that it is more organized now than before and we are actually able to trace the patients well (N 1).”*

*“Ya but since we started running the NCD clinic it’s when I can see that now we are able to pick them up we are enrolling them to be attending the NCD clinic. But I think before that I think we were missing a lot of them (CN 3).”*

*“And when we compare before we established the clinic and after when now we have a well-established clinic which is organized, we have seen that the ranges of people coming with complications has reduced drastically (CN 2).”*

During the NCD clinic visits, patients are reviewed, and their treatments are modified if necessary. Patients get a refill of their monthly drug.

*“After that the patient is being given the refill of their treatment. If there is a need to modify their treatment will be modified. If there is need for addition of another medication, then the medication is added. Then the patient is advised on how he is going to take the drugs. Thereafter he is also advised when he or she will come back for a review (CN 2).”*

In contrast, health workers at health centers expressed the need to establish a clinic to make it easier to follow up patients. Although patients are reviewed as they visit the OPD, health workers believe that having an organized clinic can assist in systematically following up patients. They is also need to upscale the services on NCDs including hypertension at the health centers.

*“if we would start by making a hypertension clinic, have at least a special day where they should just be coming and be screened. I think that’s the best way we can assist them because if they are mixed up with other patients, it becomes hard to take good care of them (CN 5).”*

*“I was suggesting that like in Malumo (another facility) we had hypertensive, like NCD clinic. For those with diabetes and so on. So, they came. So, they could have experiences, the importance of medication and so on but we are yet to start (N 3).”*

One nurse talked about how people are dependent on the facilities closest to them and the importance to upscale these facilities in order to be able to manage the conditions

*“But I feel like the management is not effective because we manage people on a low level, yet people here travel long distances and their hospital is this one. To go to another far away*

*hospital like Kasungu is very expensive. People are dependent on us, they rely upon us that we can manage. But we feel that is really management yes, but there are some shortfalls that are within the management. For me generally I think it is very easy for people not to be assisted accordingly with how the set up of our hospital is. We do not have specialists on this and people that have mastered these things and those with more experience in this area, we do not have them here. Mostly when we are stuck somewhere, we just refer (N 4).”*

#### **4.4.1 No specific guidelines**

The informants in this study did not have the same standard routine of when to recheck or review patients. According to most of the informants, rechecking was conducted based on the initial reading. The duration to conduct the control readings varied.

*“For hypertension, we need at least three measurements of blood pressure, it has to be 140 over 90 when testing and to measure that blood pressure. The patient comes in and then they have at least relaxed maybe seated for about 30 minutes then we measure the blood pressure at the level of the heart and we do check a few times and then you few times maybe interval of 5 minutes, it can be checked over a period of within a week you may check it again three times, if it persistently high then you can diagnose it as hypertension” (CN6).*

*“usually for me I will exactly what I do. I do not know if it is recommended. If I measure the patient today at a normal circumstance that is, I should give him some time he should rest if he has walked for a distance and the blood pressure is high, I also tell them to come tomorrow. But before then I give them a difference of about 30 minutes then I recheck. If it is still high I tell them to come tomorrow at good time. Then if it is also high that is when I conclude that it is hypertension”. (CN4)*

*Three readings, and we have to take an average. We check the BP once, and then second time and then third time, still it looks like it is high, it is on the higher side. Then we diagnose him or her as having hypertension. But not at the same time. We can say today your BP is on the higher side. You have to come again or to check it again and then for the third time. There should be a space maybe for more than 30 minutes or more than 10 minutes. Not now that I*

*have checked for three times and say you have BP, no. I check it and one has to come another time and then I check it again” (CN1).*

Most of the participants were however aware of rechecking BP because several factors can contribute to high blood pressure without necessarily being hypertension.

*“No, it’s like a routine, we check vital signs. And through vital signs it’s when now we know that this one has high BP. But sometimes we cannot diagnose BP from the same spot. You will tell the patient to come back and recheck to verify them. Is the high BP related to other conditions or is it hypertension as a condition? (N1).”*

*“Let’s say, we it is 135 above(systolic) then maybe 100(diastolic), then we start following them, because sometimes you may say it is BP, but it has come maybe due to another thing. But if you see them with follow-ups it’s still increasing then you can put that patient to be a hypertension patient. (N2).”*

#### **4.5 More refresher courses**

During the interview, the health workers expressed the challenges associated with the working with NCDS and management of hypertension specifically. One of the challenges faced was the need for improving the skills of health workers. Mostly health workers in health centers and nurses expressed the need to have more training and refresher courses to improve their skills in management.

The health workers compared the training for management of NCDs to the training of other known conditions like Malaria. They talked about using basic knowledge in managing hypertension and not having been updated to the latest way of how to manage the condition

*“but there is one challenge, so it is like how we learnt in school, we do not have any other extra information: The only information you have its like maybe when you come, and you read a book, when you see but it’s like we do not have refreshers. So, we manage them and maybe if you go to different facilities you see maybe we manage them differently. From the dosage, and so on, we can do them differently. Unlike if we had refresher we could have the same*



*information and also current information than the old things we learnt in school. So I do not know there have been changes or not (CN 5)."*

*"So, people have the skill but most of the skills in NCD it's like new idea that people have brought but we do not actually have proper funding to train people just like in Malaria. You will see in Malaria people are going for trainings on changes of drugs what so ever but NCDs we are using basic skills we got from school. We actually want people to go for trainings and see the changes in management. If you go there and ask, have you ever gone for NCD training some people will say no. But ask, have you gone for Malaria training, they will say yes. Have you gone for training on Cholera, people say yes, I have gone. They usually go for training and updates on that. But NCD is like a new concept (N 1)."*

*"I think there is a problem in our country with non-communicable diseases like hypertension, diabetes and those others. You know people or even the government I feel are not very interested with other things. When there are workshops or trainings you will find that these things are not mentioned. They rely on donor funding on programs. Let's take like Malaria, you find that HIV things like those. But to find a workshop on hypertension in my life I have never seen it. I have never attended such a workshop. Maybe it is just mentioned when we are doing other workshops just within that. Maybe we are doing something on MNH; you will find that within that they talk about something on PIH. But not sorely for that (N 4)."*

One clinician however expressed that lack of motivation to work with NCDs is a key factor that affects management. He says people expect to get allowances when they attend workshops and when workshops without any allowances come up. People are not willing to participate.

*"and it's like people are not motivated. The thing that I see, people go where there is money. We say, come and assist in the clinic, they say, I will not waste my time there is no money there, some say that. Your program, like outside, it's like what I was saying that, every patient, was supposed to be checked BP whatever. People thought they will be getting something out of that. you get it, they thought when they do it they will get something. It's like an extra work and then they get money. Previously there was nothing like that. And then you are introducing a new thing, you do not give them anything; they say that this is extra work and yet they do not benefit*

*anything. So that's a challenge. And then you find that one by one is becoming not interested in doing all those things. "it is better off doing things on Malaria. We have this and that there. Its better off we go to this place where we get this and that something like that. So those are some of the de-motivators (CN 1)."*

Being a pilot district for the implementation of the WHO PEN, many health workers including support staff were trained on NCD management. Two clinicians from the district hospital expressed the challenges faced in training new staff due to staff turnover. Most of the health workers trained have moved away leaving a gap.

*"Because not all who were trained in 2012 are available. Some of them they went away due to staff turnover. We have new staff who are not yet oriented and the staff which is also here is not enough because we have many departments, so we have experienced that some days we are ne clinician or two clinicians running the clinic (CN 2)."*

*"the other challenge we have is staff turnover. Some of the people that were trained in these maybe they have been transferred they are somewhere else (CN 1)."*

One Nurse talked about how improving the skills of community health workers and support staff on the basics of hypertension including blood pressure measurement will assist as they can assist in hypertension awareness and identification.

*"for the skills, we need a briefing, briefing to health workers and other support staff on signs and symptoms of hypertension. That they can go to community. If we also get a chance we can go but they talk on our behalf to the communities. They are close, like the frontline worker. They are close to the community and they are the ones that can assist us. In terms of skills on technical, now the technology is advanced. The BP machines we have now are not those that you have to see where it starts beating no. We have the digital ones. Which means we can do job training for everyone even the support staff that check BP this is how we measure blood pressure. It is really easy because they are digital (N3)."*

# 5 Discussion

As earlier stated, the main objective of this study was to explore the health worker experiences on the diagnosis and management of hypertension. The study also sought to explore their experiences in their role in patients' follow-up in hypertension clinics and OPD to ensure that patients receive the quality care they need.

From the findings in the section above, this discussion section will adopt the Donabedian quality of care model to highlight the health workers perspectives on the diagnosis and management of hypertension. The quality of care model looks at the structure, process and outcome of care. In this study however, only structure and process are discussed. This part of the model will look at how hypertension screening and management is organized at the health facilities according to the health workers.

One common thing noted in this study was that almost all the participants talked about NCDs collectively instead of just hypertension. Even though the researcher addressed the questions to hypertension, the informants would reply and give descriptions on NCDs in general in some instances.

## 5.1 Structure

According to the WHO PEN, there is need to strengthen the primary health care to provide strong and efficient services. The primary health care is the first level of care to which many patients attend and are later referred to secondary level of care if necessary(41). People with NCDS or at risk for developing NCDS require services that are long term, patient centered, community based and sustainable. It is recommended that the first core set of NCD intervention should be made accessible to all people based on need and not availability to pay(41). In Kasungu, the core services to address hypertension are provided at the district hospital. In patient follow-up there is a need to expand the already existing NCD clinic at the district hospital. Participants in this study reported the need to upscale the hypertension services being currently provided. Currently, health workers in health centers are supposed to refer all cases to the district hospital according to the participants. However, health centers would like to have established NCD clinics for effective follow up of the patients. The need to scale up these services health systems for NCD prevention and control needs to be addressed. The district hospital has a more established NCD clinic which have integrated diabetes and

hypertension services and have clear guidelines for follow-up. Patients are then reviewed after from a duration ranging from a week to a month depending on the severity. The case is not the same in health centers where patients are reviewed as they come without comprehensive follow up as desired by the health workers themselves. It is crucially important to strengthen services at all levels of care in management of hypertension(44). Being the primary care level, upscaling health centers and improving the services will ensure equal access to quality hypertension care to communities. Bringing services to people will ensure easy access to health care and follow up as many people travel long distances to access these services and in turn may opt not to seek health services.

Health workers are often overwhelmed with congestion at clinics and the number of patients they must attend to. The shortage of health workers is a well-known problem in Malawi. Even though there has been some improvement in the number of health workers after the implementation of the emergency human resource program (76). Health workers are still faced with increased workload. The professional health workers in the facilities in this study are always overwhelmed with the number of patients they have to consult. This affects the quality of care provided. This highlights the importance of using community health workers and also support staff to assist in conducting the screening including measuring BP and recording the weight. This leaves the professional health workers to do tasks requiring professional training. Several studies have shown the effectiveness of training community health workers in management of hypertension and NCDs especially primary prevention measures but also patient follow up (53, 77, 78). A study conducted in South Africa by Gaziano, Bertram (52) it concluded additional training of CHWs as a cost effective way of hypertension management .

Involving the CHWs means expanding capabilities of the health systems to address the increasing burden of NCDs. The CHWs are the closest links to the villages as they conduct mobile and outreach clinics in the villages. Most of the outreach clinics focus on maternal and child health, communicable diseases such as Malaria, HIV /AIDS, tuberculosis, diarrhea and other infectious diseases(51). Incorporating hypertension services on sensitization and screening would assist to detect hypertension cases at an earlier stage. This will also in turn help address the shortage of infrastructure in the various health facilities. A study in Iran concluded that training CHWs was effective in management of hypertension and diabetes (55). The CHWs are trained to be involved in health education and counseling for reduction

of risk factors, follow up of patients on treatment to assess compliance to medication. The patients are in addition periodically or if they have any symptoms followed up by the physicians. Including CHWs in hypertension does not only relieve the professional health workers freeing queues in health facilities, it is also proven as cost effect(52).

Malawi has been successful in several disease specific programs such as Malaria, HIV and tuberculosis despite the challenging context. There has been an increase in focus on NCDs with the establishment of the NCD unit under the ministry of health. Although there is increased political commitment to addressing NCD, the structural and financial constraints have seen the government increase efforts to integrate these services to existing programs(79). Looking at the crucial role of HSAs in communities, they can play a huge role in NCD prevention and management. Some participants in this study emphasized that training the community health workers to assist in screening for hypertension, health education both as primary prevention but also patient follow up of already know cases. HSAs act as a bridge between the health facilities and the communities. This shows the participants are solution oriented on how they can maximize on existing resources. Training HSAs on skills and instruments to assess individuals for hypertension but also topics to cover during health education will assist to bridge the gap in hypertension care delivery in communities. This can in turn motivate populations to self-management behaviors. Although services are free of charge at the government run facilities, most people opt not to go to the facilities due to the cost of transport among others. These costs are a barrier to seeking health services and contributed to uncontrolled hypertension(80, 81)Bringing services to communities will help people reduce costs incurred due to transport to the facilities when services.

Upscaling the clinics does not only involve infrastructure and human resource but also improved knowledge of the health workers to address hypertension. Much attention for misdiagnosis is often drawn to the lack of resources and lack of awareness in communities. Participants in this study however expressed the need to improve their skills in hypertension care. Despite being aware of hypertension as a public health challenge, there is need for improving the skills levels in hypertension management. In several interviews, there was a split in the what is known on the conditions and what is done in practiced. The participants especially nurses expressed their doubts when dealing with hypertension. Most of them expressed that they use basic knowledge obtained during their formal training and have the need to update their knowledge based on recent research and guidelines. According to the

participants, not enough attention is paid to NCDs hypertension inclusive. Hypertension is often perceived as a new thing, something unknown. The well-known conditions receive funding and support from stakeholders and donors for trainings, outreach programs and management of such conditions. Health workers need to be motivated to participate in hypertension care just as in care of other conditions. This is an issue that need to be addressed by the government and stakeholders so that there is equal attention paid to NCDs as other conditions. Although all the participants were aware of what hypertension is several participants seemed to have lack essential knowledge in hypertension management. In fact, some informants especially nurses generally and clinicians in the health centers expressed the need to improve their skills in hypertension care for them to be confident to handle these cases. They expressed the fact that in some instances, they are not sure on what was required in terms of screening and management of hypertension. Most of them have basic knowledge obtain during their formal training. These skills include screening, diagnosing, prescribing treatment and providing health education. The lack of skills in management of hypertension and other NCDs was mostly attributed to the lack of focus on these diseases in the health facilities but also by donors or other partners. NCDs according to the health workers are often side lined and refresher courses or trainings are not provided. Although training of health workers was conducted at the district hospital following the establishment of the NCD unit in Malawi. With possible changes in hypertension management overtime, health workers need to be up to date on the current guidelines.

Providing health workers with training on hypertension will assist to improve the quality of care provided. With the increasing burden of NCDs alongside the burden of communicable diseases, it is important for government and other stake holders to also increase their attention towards this emerging public health challenge .Skills improvement and capacity building should be a target. (7). The government of Malawi has a taken a step by establishing an NCD unit under the ministry of health to oversee NCD prevention and management in Malawi. However, there is need to continue to strengthen these services.

Kasungu being a Pilot district for implementation of the WHO PEN, only two senior clinicians of the eleven-people interviewed were aware of this program and how it is being implemented. According to these clinicians, trainings were provided only at the district hospital (secondary level of care) were the NCD clinic is conducted. However, the primary level of care needs to be aware and trained on the strategies in the WHO PEN. This

emphasizes the need for refresher courses and trainings to implement this program. It is important essential information regarding implementing policies and strategies is known to the people to be involved in the implementation. There is a need to include health workers at all levels to be conversant with the recommendations management of hypertension. Quality of hypertension care needs to be improved at all levels care that are involved in diagnosis and management of hypertension. For many people according to the participants, the health centers are their closest health facility.

## 5.2 Process

The process involves the interaction between the health workers and the patients as narrated by the health workers. This is a crucial step in diagnosis and managing hypertension. In this section, the experiences of the health workers everyday experiences when interacting with the patients will be highlighted.

In several interviews, the participants said hypertension is not always thoroughly assessed for them to come up with a diagnosis. This was attributed to BP not being routinely checked and due to its asymptomatic nature, hypertension is not commonly thought of in the screening process and patients are treated as if it were another condition. This leads to misdiagnosis of this condition to late discovery of hypertension. Bp measurement is vital for screening and many cases can be missed if bp is not measured. Hypertension often contrasts with common conditions that health workers face daily due to its asymptomatic nature. Thus, measuring BP is mostly considered as a secondary task and not routinely done(15). Routinely assessing patients would assist in identifying hypertensives at an early stage. The challenge of this condition being asymptomatic can be perceived as less severe.

The health facilities face a challenge to replace batteries and broken sphygmomanometers. This is due to the constrained clinical budget. Similar findings were reported in a study conducted Zambia on hypertension management(82). Patients and health workers in some instances buy the batteries to replace in the machines. Unavailability of batteries means no BP measurements are conducted. Treatment is sometimes initiated based on patient history only without confirming hypertension by taking BP. For those already diagnosed, follow up can be challenging if BP is not monitored. BP follow up is essential for patients on treatment and coming for review. The patient master card used at the district hospital indicates that the

patient BP, weight, BMI, fasting blood sugar, urine sample are to be checked to review the outcome of treatment provided. Failure to doing assessment during review can compromise the quality of the care provided. Limited resources are one major barrier addressed in the management of hypertension. Unavailability of resources is not a new finding. Several studies have found similar findings (36, 83). Shortage of resources includes both necessary equipment, materials, medicine but also infrastructure to deliver these services. The participants in this study expressed that most cases of hypertension are misdiagnosed or diagnosed late because of this. Overt resource constraints and less efficient prioritization and foresight of non-communicable diseases can be one of the reasons why fundamental steps of detection and monitoring hypertension in in developing countries are missed(84).

Analog sphygmomanometers were not commonly used at these facilities. These can be used when batteries are unavailable, ensuring that BP is still measured. This however implies that the professional health workers conduct the BP check to ensure accurate measurement, contributing to the increased work load which is already challenging. Having digital sphygmomanometers with rechargeable batteries would help address this problem. The facilities can also stock manual machines as a back-up solution to ensure that BP is still being measured.

Apart from the fact patients are not routinely screened for hypertension. All participants said that they are supposed to conduct three readings as is recommended by the WHO to take several measurements(7). However, there were no set guidelines in the different health facilities in terms of when the control readings are to be conduct. The health workers assess the first readings and control readings for some are conducted the same day, others conduct control readings in three consecutive day one mentioned that control is done after week when medication has already been initiated. Every participant conducted the three reading in different ways. Having set guidelines for all the facilities with improve the quality of the diagnostic process by ensuring health workers follow the same procedures.

The MSTGs are used in all facilities, The MSTGs have a guideline on when to initiate treatments and what medications to initiate. All the health workers were conversant with this guideline and applied it in practice. Even though the guideline is available, shortage of drugs at the facilities lead to health workers differing from protocol. Drugs are prescribed according to the availability at the pharmacy and supply from the central medical stores. With the



shortage of drugs in facilities, some patients not get the treatment required. In some instances, patients have to source their own medication from other private pharmacies or clinics.

Shortage of drugs was described as a barrier to proper management by several participants. In a short interview with the pharmacist who informed the researcher that all drugs in government facilities are supplied by the central medical store. The pharmacist stated that although the facilities use MSTGs to follow when prescribing drugs, it is not always that the drugs are available according to the guideline and protocol. This is dependent on drug availability at the central medical stores.

Clinicians are forced to prescribe drugs based on availability and not necessarily on recommendations and guideline. This was confirmed by some of the participants in this study who stated that they often have to defer from the guidelines and use what is in stock to prescribe treatment. Even though a patient is responding well to the treatment initiated, treatment can be changed if the drugs are not available during follow up visits. In some cases, patients are asked to source their own drugs in private clinics and pharmacies. The health workers fear that not all may comply due to the costs they are to incur in the private facilities. Some may opt not to purchase the drug increasing the chances of complications due to untreated and uncontrolled hypertension. At the NCD clinic at Kasungu district hospital, the patients group sometimes make contributions to assist in sourcing a drug that is out of stock. Health workers were concerned that not all patients purchase the drugs required and might stay at home with untreated hypertension. Untreated hypertension increasing the risk of developing complications.

Another challenge encountered according to participants is lack of awareness in the communities which is a huge setback in the process of assessing and managing hypertension. Most participants reported due to individuals lack information on hypertension, the signs and symptoms most individuals seek the hospital at a later stage. Similar findings were reported in a study by Lupafya, Mwagomba (83) where service provider reported that patients with NCDs wait until their condition is at an advanced stage before seeking medical care. Seeking medical care later leads to late diagnosis of hypertension. According to the informants in this study, some people experience the symptoms of hypertension but do not seek help until at a later stage because of their lack of knowledge of the disease. Most of them with complications due to hypertension.

The health workers experiencing lack of knowledge on hypertension among the communities is not a new finding. Several studies conducted in Africa and other developing countries have displayed the lack of knowledge of hypertension and its risk factors. In a study in Auchi Nigeria that included 108 individuals with hypertension history of more than one year found that about 61 percent of the respondents were aware of hypertension and how it is diagnosed. However, a good number had lack of knowledge to the condition. This was attributed to possible poor educational background. This is believed to have a negative impact on the attitudes to treatment and adapting healthy lifestyles among individuals(85).

Much responsibility of early diagnosis is put on the patients despite the fact that hypertension is unknown to many people in communities. Patients are expected to present a clinical history that will potentially prompt the health workers to explore hypertension. It is the trained health professionals that have knowledge of the conditions and thus have the responsibility to inform communities. Some participants reported that with the congestion at the health facilities, thorough assessment only depends on the symptoms the patient is presenting with. If health workers do not suspect hypertension from the subjective information provided, patients are often treated for other condition not related to hypertension. A thorough clinical assessment by health workers to determine the correct diagnosis of hypertension is essential. Not thoroughly assessing patients leads to further delay in identifying hypertension cases as patients can be misdiagnosed or not even diagnosed during the initial visit but might at a later stage seek medical attention with complications.

Heavily relying on patient presentation alone is one of the reasons patients are missed especially because the silent and asymptomatic nature of hypertension. Patients that are not aware of what symptoms to look for in hypertension. Hypertension is often described as silent and asymptomatic and many people do not have symptoms at all. Patients risk being sent home without proper screening for possible hypertension. Perceived severity of the condition when asymptomatic can also affect the health seeking behaviors. Something that is not uncommon in Malawi. A study conducted in southern Malawi on health seeking behaviors for chronic NCDs reported that out of 5643 individuals interviewed, 475 reported a total of 515 conditions with the three most frequently reported chronic NCDs being chronic pain (126), chronic respiratory diseases (98) and CVDs (95). Out of 475 individuals, 177 (37.3%) did not seek any care, 202 (42.5%) sought formal care, 31 (6.5%) visited a traditional healer, and 65 (13.7%) resorted to home treatment (self-care)(81). Apart from limited knowledge on

hypertension, seeking medical help late can be attributed to other factors such as out of pocket expenditures on travel and medical cost that can pose a challenge to poor households(81)

Health education is the primary strategy to raise awareness among communities. The participants in this study consistently addressed the need to intensify on community sensitization of the condition in the communities. Without knowledge of the symptoms, it is difficult for people in the communities to seek medical care. However, with its asymptomatic nature awareness on getting routinely checked for BP would assist to in early detection. This should also involve upscaling screening for individuals at risk that may not present with symptoms but have hypertension people seek medical attention at a later stage while some have already developed complications such as stroke, heart failure and renal failure.

Currently much of the health education on NCDs including hypertension in Malawi is conducted at the health facilities as compared to outreach in the communities(83). Upscaling community outreach can contribute to reaching out to a larger population. However, this might require an increase need for financial allocation to outreach programs. Programs commonly funded are facility based clinical care and training for personnel.

In two of the health centers included the study, it was indicated that health talk on hypertension or other NCDs is scheduled for once or twice a month. That focus still remains on other communicable diseases such as malaria and HIV. At the district hospital, health education is conducted at OPD, but patients already diagnosed with hypertension have group health talks conducted at the NCD clinic where peer education is encouraged and individual health education during consultation with health workers. However due to congestions at the clinics, the education provided is not as efficient as required making provision of individual health education and counseling challenging.

Most of the risk factors to hypertension are associated with lifestyle. Encouraging healthy lifestyles through health education which is form of primary prevention(5). One of the objectives of the NCD national action plan is to reduce the risk of developing chronic NCDS by promoting healthy lifestyles. This is intended to be done by infrastructure development(49).

The participants awareness of health education on lifestyle changes is an important finding. This was described as the main intervention for hypertension management before initiating medication for those with mild hypertension at almost at the health facilities. All the participants were involved in health talks. It is however important to have guidelines on the

health education. The district hospital had guidelines on areas to focus on in giving health talks. The health centers talked about usually focusing on low salt intake and physical activity during consultations without following a particular guideline on how to conduct health talks. Health workers at health centers have a challenge to conduct group health talks due to the fact that there is no existing NCD clinic to specifically address this challenge. Individuals are seen as they come and during reviews, only individual health talks are done.

Actively involving patients and their families in the care of hypertension is highly recommended. This improves patient centered care but also motivates patients to change in lifestyle, treatment compliance but also self-management(86).

### **5.3 Strengths and limitations**

This study had a number of strengths but also limitations.

Firstly, the research topic is pertinent for evaluation of current practices in hypertension care. It gives a broad understanding of how several aspects in the health system including clinical care, financing, governance and human resource affect the quality of care provided. The health workers who participated in this study were interested in the topic as it is a context relevant topic. The method used help reach the study objectives. There was a diversity among the participants both in profession, years of experience that provided the heterogeneity desired in this study. These varying data sources facilitated triangulation and strengthen the trustworthiness of the study. The use of digital recording was essential in that it was easier to have control of what was said by the participants to have a clear view of what was being informed in the interviews. The findings do not conflict with previous studies but gives further understanding the complexity of the dimensions required to be addressed to improve hypertension services in the LMIC such as Malawi. It also stresses on the significant role HSAs can play in providing hypertension services.

The key findings in this study were that health workers perceive lack of knowledge in communities but also among health workers, unavailability of basic supplies, guidelines and drugs but also human resource shortages as barriers to hypertension management.

The study however had some limitations. The study sites were all situated in one district. Including several districts in Malawi would have assisted in assessing similarities and disparities. Interviewing only health workers has only given an overview of the health workers. Including patients being followed up at the different facilities would have added value as well. Although some health workers were open in addressing the topic, others were a bit reserved in discussing their practice. This might have limited them in providing important information on their experiences. Although the time spent in the field brought out rich data on the topic being studied, long term field work with a combination of other methods such as participant observation but also inclusion of patients in the study would have contributed to the comprehensive understanding and in this case one the researcher would also have been able to assess the outcome of the quality of hypertension currently provided

## 6 Recommendations and future research

Many cases of hypertension are missed due to lack of knowledge of the condition in both the communities but also among the health workers. Other barriers to hypertension management as reported by the participants include lack of essential resources, shortage of human resource but also limited focus on the condition. Even though health workers have basic knowledge on hypertension, it is not always assessed in their daily practice. Therefore, there is need for improved training of the professional health care providers.

Establishment of the NCD unit and policies in addressing hypertension and other NCDs is one way the government of Malawi is responding to the burden. Despite these efforts, there is still an increased need to focus on the primary prevention strategies which involves health education, community outreach on awareness and screening for hypertension. Maximizing on resources by integrating NCD services with the already existing well-structured health program will assist in improving these services. The governments, policy makers and other stake holder need to continue to take an active role to address the increasing burden of NCDs in a country already struggling with other chronic conditions. Involving community health workers in hypertension management can be effective in a financially restrained country such as Malawi.

A multi-faceted intervention to improve hypertension services is necessary. The three dimensions of quality as described by Donabedian influence each other in that the way a health system is structured and set up will influence the process involving patient-care provider interactions which in turn can influence the outcome of care. The provision of clinical guidelines in all facilities availability of basic diagnostic equipment and essential drugs for management will assist improving the primary care of hypertension. Regular trainings and ensuring sufficient knowledge and experience related to hypertension among health workers including clinicians, nurses and HSAs will help improve competences and quality of care provided.

There are a number of gaps in knowledge in this research that follow from the findings, and would benefit from further research.

1. Patients knowledge and understanding of hypertension is an interesting area to explore. Studies including health workers and Involving of the population in communities and the population at large would be helpful to capture qualitatively their experiences and perspectives. It would be essential to assess the outcome of the care provided to patients at the health facilities.
2. The use of several methods in addition to interviews will help but also including several districts in Malawi to look at the similarities and disparities.
3. In order to include HSAs and other support staff at the facilities in hypertension management, there is need to assess the level of knowledge and experience on hypertension but also to understand their roles.
4. Exploring management of NCD collectively will be essential as these services are often integrated in service provision, since health workers address NCDs collectively.

# 7 Conclusion

Health workers in both the primary and secondary levels of care expressed the need to improve the already existing measures that are in place to address hypertension. With the WHO recommending that the primary health care services should be upscaled to manage hypertension as it is the first level of care, more focus need to be put in strengthening the services at this level. Health workers need to be trained on the current guidelines to be able to address hypertension as the existing knowledge is basic in most cases.



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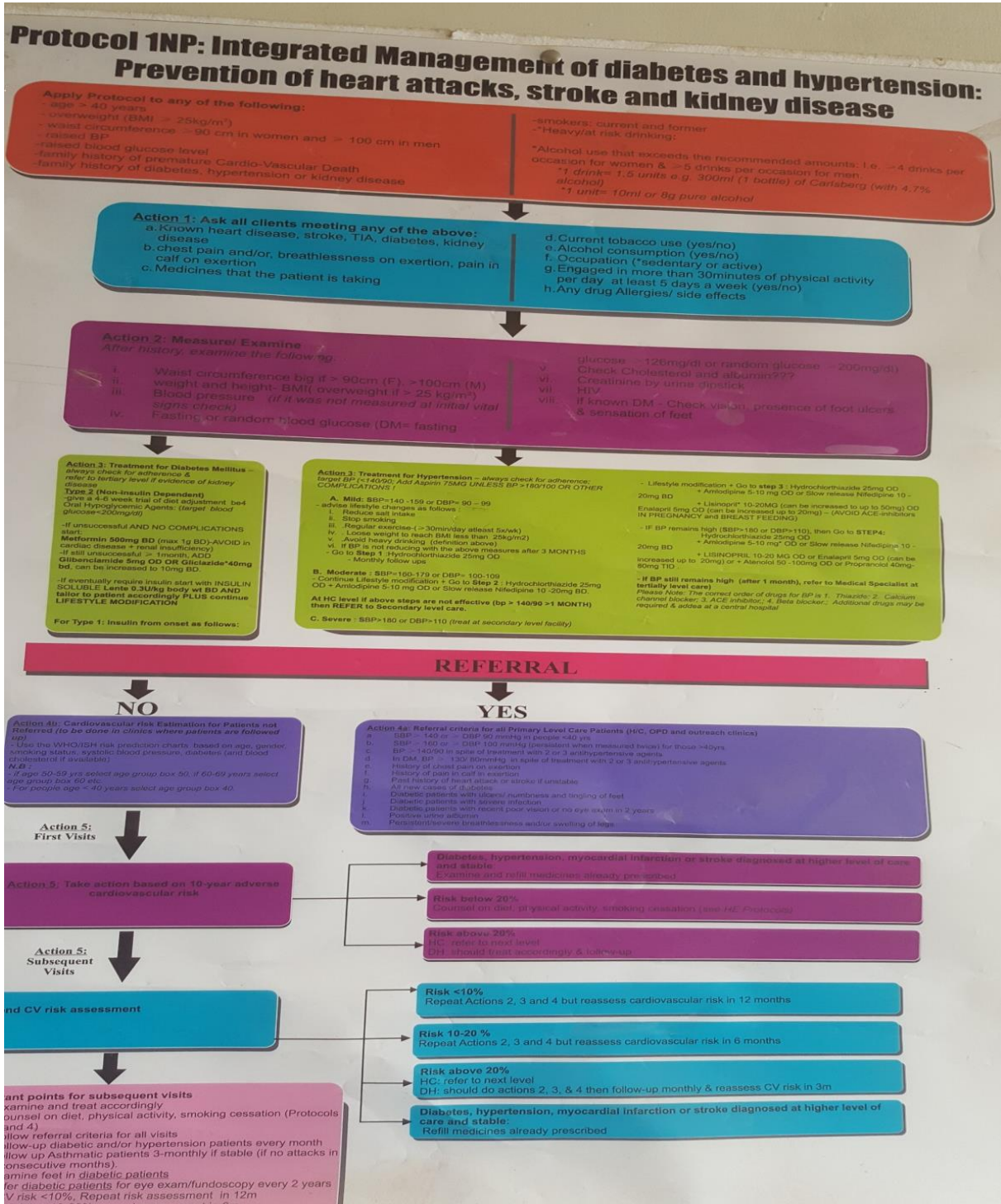
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# 9 Appendices

## 9.1 Appendix A: Guideline for Integrated management of diabetes and hypertension Kasungu District Hospital







### 9.3 Appendix C: DHIS2 Pivot tables

DHIS 2 Pivot Tables

← → ↻ dhis2.health.gov.mw/dhis/dhis-web-pivot/index.html?id=z3BRQ8Jj21M

DHIS 2 Pivot Tables \* Kasungu population analysis

Update Favorites Layout Options Download Embed

Period	2015	2017	2016
Organisation unit / Data	CMED Total Population ↕	CMED Total Population ↕	CMED Total Population ↕
Kasungu District Hospital	123 551	97 830	
Simlemba Health Centre	70 025	33 417	
Wimbe Health Centre	65 050	12 864	
Kaluluma Rural Hospital	52 076	19 621	
Kamboni Health Centre	51 411	31 671	
Santhe Health Centre	46 908	20 984	
Mtunthama Health Centre	42 260	20 496	
Bua Health Centre (Kasungu)	41 402	46 956	
Chamwabvi Dispensary	36 105	42 819	
Khola Health Centre	34 237	47 825	
Chulu Health Centre	33 601	37 517	
Kapelula Health Centre	32 906	288 865	
Mkhota R Growth Health Centre	29 432	24 349	
Linyangwa Health Centre	27 710	31 914	
Kawamba Health Centre	26 788	29 518	
Mziza Health Centre	20 456	28 552	
Dwangwa Health Centre	20 171	35 669	
Gogode Health Centre	17 926	22 255	
Ofesi Health Centre	17 638	16 645	
Mpepa / Chisinga Health Centre	17 636	16 498	
Nkhamenya Hospital	8 181	25 115	
Lodjwa Health Centre	7 705	7 904	
Newa / Mpasazi Health Centre	7 090	5 544	
Mnyanja Health Centre		30 609	

**Data**  
**Periods**  
 Select period type: [v] Prev year Next year  
 Available: > >> << < Selected: 2015  
**Days**  
 Today  
 Yesterday  
 Last 3 days  
 Last 7 days  
 Last 14 days  
**Bi-months**  
 This bi-month  
 Last bi-month  
 Last 6 bi-months  
 Bi-months this year  
**Financial years**  
 This financial year  
 Last financial year  
 Last 5 financial years  
**Weeks**  
 This week  
 Last week  
 Last 4 weeks  
 Last 12 weeks  
 Last 52 weeks  
 Weeks this year  
**Quarters**  
 This quarter  
 Last quarter  
 Last 4 quarters  
 Quarters this year  
**Months**  
 This month  
 Last month  
 Last 3 months  
 Last 6 months  
 Last 12 months  
 Months this year  
**Six-months**  
 This six-month  
 Last six-month  
 Last 2 six-months  
**Years**  
 This year  
 Last year  
 Last 5 years  
**Organisation units**  
**2nd Follow Up**  
**ART Options**  
**ART Outcomes**

## 9.4 Appendix D: Consent form

**Title:** Health worker perspectives on the diagnosis and management of hypertension

### **Statement of the study**

#### Purpose

I invite you to participate in the study on diagnosis and management of adult hypertension. The main objective of this study is to describe perspectives of health care workers in primary and secondary care settings on the diagnosis and management of hypertension. This study will assist in identifying the gaps in, and challenges to the diagnosis and management of hypertension in the out-patient departments as well as hypertension clinics.

#### Procedures

I will ask you for information about your work in relation to hypertension, how patients are diagnosed and managed, the challenges to proper diagnosis and management of hypertension, as well as what you would want improved to facilitate better management of adult hypertension at your facility. I will also ask you some background information which will not include your name.

Should you agree to take part in the study, there is a chance that I will contact you again to re-interview in order to clarify any information which you might have given me in the initial interview.

The interview will take approximately 45 to 50 minutes of your time . With your permission, the interview will be recorded. The information that you provide during the study will be kept confidential. Only the interviewer and researchers will have access to the audio taped interviews and transcripts. This information will be stored on a secured network and will be destroyed on completion of the study.

### **Benefits of the study**

This is not direct benefit to you, however by participating in this study and answering our questions, you will help to increase our understanding on how patients of hypertension are diagnosed managed at primary and secondary levels of care. It would also help you as a health care provider to reflect upon your own efforts in the diagnosis and management of hypertension. We hope that the results of the study will improve the quality of care rendered to patients.

Participating in this study is voluntary and you have the right to refuse to participate or answer any questions with which you feel uncomfortable. You can withdraw from the study during the course of the study should you change your mind on participating. The decision to withdraw will not affect your work or position in anyway. If there is anything that is unclear,

or you need further information, I shall be delighted to provide it. Do you have any questions that you would like me to clarify?

**Declaration of volunteer:**

I have understood that the purpose of the study is to describe health care worker in primary and secondary care levels perspectives on the diagnosis and management of patients with hypertension. This will assist to identify gaps in, and challenges to diagnosis and management of hypertension patients at the out-patient departments and hypertension clinics

I realize that I might be contacted again in a few weeks to be re-interviewed for further clarification of the information I give in the initial interview.

I have read the above information, or it has been read to me.

I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction.

I consent voluntarily to participate as a subject in this study and understand that I have the right to withdraw from the study at any time without in any way affecting my work position.

**Signature of volunteer:**

**Signature of investigator:**

Date: \_\_\_\_\_ Date: \_\_\_\_\_

If you have any further questions or concerns about the study contact my supervisors or me on the following respectively:

Dr. Viva Combs Thorsen

Tel: +47-22850587

Email: [v.c.thorsen@medisin.uio.no](mailto:v.c.thorsen@medisin.uio.no)

Dr. Moffat Nyirenda

Cell: +265 (0) 991451801

Email: [moffat.nyirenda@lshtm.ac.uk](mailto:moffat.nyirenda@lshtm.ac.uk)

Marion Chiwena Edith Mzikamanda

ell: +265 (0) 999610579

Email: [m.chiwena@yahoo.com](mailto:m.chiwena@yahoo.com)

If you have any safety concerns about the study, please do not hesitate to contact: the **COMREC secretariat at College of medicine, P/Bag 360, Chichiri. Phone: +265 1 874 377**

## **Kalata yopempha chilolezo**

**Ofufuza** : Marion Chiwena Edith Mzikamanda

Cell: +265 (0) 999610579 / +4796837036

Email: [m.c.e.mzikamanda@studmed.uio.no](mailto:m.c.e.mzikamanda@studmed.uio.no)

**Mutu:** Maganizo a Wogwira ntchito muchipatala pa kafufuzidwe ndi kasamalidwe ka matenda othamanga magazi.

### **Cholinga cha kafukufuku**

ikukupemphani kuti mulowe nawo mu kafukufuku wofuna kumva maganizo awogwira ntchito pa district hospital komanso health centre pa kayezedwe ndi zakasamalidwe ka anthu omwe apezeka ndi bvuto lothamanga magazi. Cholinga ndi kufuna kudziwa zinthu zomwe zimakulimbikitsani ndi zinthu zomwe zimakufowoketsani pa kasamalidwe ka anthu amene apezedwa ndi bvuto lothamanga magazili ku out-patient komanso ku ma clinic.

### **Ndondomeko ya kafukufuku**

Makamaka tikufuna kudziwa zomwe mumachita pofufuza matenda komanso posamalira anthu amene ali ndi bvuto lothamanga magazi .Tifunanso kudziwa zinthu zomwe zimakuthandizani kuti muwasamalile bwino anthuwa komanso zinthu zomwe zimakufowoketsani.Tifunanso kudziwa zinthu zomwe mungakonde kuti zichitike kuti ntchito yosamalila athu omwe apezeka ndi bvutoli yikhale yopambana.Tikufunsaninso zinthu zina zokhudzana ndi inu,komasitisowa kudziwa dzina lanu.

Ngati mubvomera kutenga nawo mbali mu kafukufuku ameneyu ,mwina pangadzafunike kuti ndidzacheze nanunso pa zinthu zomwe mwina sizinamveke bwino pa kukambilana kwathu koyamba. Zokambilana zathu zidzatenga pafupifupi mphindi makumi anayi ndi zisanu kapena makumi asanu (45 to 50 minutes) yanthawi yanu.Pofuna kuti tisaphonye china chilichonse pazokambirana zathu, ndikukupemphani kuti mundilore kujambula zokambiranazi pa tape recorder iyi.Mawu anu sadzaulutsidwa pawireless kapena pa kanema wina aliyense.

Mwina ndi mwina mutha kupeza kuti mafunso ena atha kukhala okukhudzani/okusautsani 'maganizo.Ndifunakupepeselatu ngati izi zingachitike chifukwa sicholinga changa kutelo.

Ndikoyenera kukudziwitsaninso kuti zonse zomwe titakambilane pano zidzakhala za chinsisi chenicheni.Wokhawokha okhudzidwa ndi kafukufukuyu ndi omwe angapeze mwayi wogwilitsa nchito zotsatila zakafukufukuyu.Zokambilanazi zidzalembedwa ndi kusungidwa bwino lomwe mu komputa yomwe ili ndi chitetezo chokwanira kusukulu yaukachenjede ya Oslo mdziko la Norway, komwe ndikuchita ma phunziro omwe ndikuchitira kafukufuku ameneyu.

### **Phindu la kafukufuku ameneyu**

Potenga nawo mbali mu kafukufukuyu ndi kuyankha mafunso athu mudzatithandiza kumvetsa bwino momwe anthu abvuto lothamanga magazi amasaliridwa pa chipatala

chino. Zidzathandiza inunso ngati wosamalila odwala kulingalira ntchito yabwino imene mumagwira polingalira ndi kudzipoleka kwanu posamalira odwala amenewa. Tili ndi hikhulupiliro kuti zotsatila zakafukufukuyu zitithandiza kupititsa pa tsogolo kasamalidwe ka amayi omwe ali ndi bvuto lothamanga magazi.

Simukukakamizidwa kuyankha funso liri lonse lomwe simuli wokonzeka kuyankha kapena funso lomwe lingakusowetseni mtendere mu mtima. Dziwani kuti ndinu womasuka kusiya kafukufukuyu nthawi ina iliyonse ngati kungafunike kutero. Dziwaninso kuti kutuluka mkafukufuku sikudzasokoneza kagwiridwe kantchito yanu kapena udindo wanu pa ntchito.

Kodi muli ndi funso lina lililonse pa zomwe ndakufotokozelanizi kapena zomwe mwawelengazi?

### **Kuvomeleza kulowa mu kafukufuku**

Ndamvetsa kuti cholinga cha kafukufukuyu ndi kufuna kumva maganizo a wogwira ntchito pachipatala pa zakafufuzidwe ndi zakasamalidwe ka omwe apezeka ndi bvuto lothamanga magazi. Ndikuzindikila kuti ndikhonza kudzayenderedwanso ndi kufunsidwa mafunso ena popitiliza kufotokozera motsindika zokambilana zokhudza kafukufukuyu potsatila zokambilana zathu zoyamba.

Ndawerenga dogosolo lonse lakafukufuku ameneyu ndipo ndakhalanso ndi mwayi ofunsa mafunso pa dongosololi ndipo ndalandira mayankho omwe ndakhutula nawo. Choncho ndikubvomera mwaufulu ndi mwakufuna kwanga kutenga nawo mbali mkafukufukuyu. Komanso ndikuzindikira kuti ndili ndiufulu wotuluka mkafukufukuyu nthawi yina iliyonse ngati nditafuna kutelo, ndipo izi sizidzasokoneza ntchito kapena udindo wanga pantchito.

Signature of volunteer:

Signature of investigator:

ate:

Date:

Ngati mungakhale ndi mafunso ena okhuza kafukufuyu, musakaike kundifunsa ine kapena aphunzitsi anga pa malamya ali mmusiwa:

Dr. Viva Combs Thorsen  
Tel: +47-22850587

Dr. Moffat Nyirenda  
Cell: +265 (0) 991451801

Email: [v.c.thorsen@medisin.uio.no](mailto:v.c.thorsen@medisin.uio.no)

Email: [moffat.nyirenda@lshtm.ac.uk](mailto:moffat.nyirenda@lshtm.ac.uk)

If you have any safety concerns about the study, please do not hesitate to contact: the  
**COMREC secretariat at College of medicine, P/Bag 360, Chichiri. Phone:**

**+265 1 874 377.**

## 9.5 **Appendix E: Interview Guide**

## Interview guide English

Meeting Place: ..... Date: ..... Start  
Time: ..... End: ..... Language: .....

### Interviewee:

Position: .....

Duration in current Position.....

Years of Service:.....

Highest Qualification.....Date Obtained.....

Institution: .....

**Current problem question:** *How do health workers perceive the diagnostic process and management of hypertension in primary and secondary level care in Malawi?*

### Clinical experience

1. How long have you been working as (medical doctor, clinical officer, medical assistant, nurse)
2. How long have you worked at OPD/ hypertension clinic?

### Diagnostic process

3. How do you identify patients with hypertension?
4. What is your experience with identifying hypertension patients?

Probe on screening process and instruments used

### Management

5. Tell me about your working routines at the hypertension clinics at this hospital?
6. What do you think of these routines?
7. What are your experiences in management of hypertension Patients at these clinics?
8. In your opinion what is the best way to manage these patients.

### Challenges/barriers and suggestions

9. What do you have at this hospital for diagnosis of hypertension cases?
10. What is available for management of hypertension?

Probe on what is lacking including skills, equipment, medication, supervision, guidelines.

11. Can you tell me about challenges/barriers you encounter in with patients in screening?

12. Can you tell me about challenges/barriers you encounter in with patients in management?

.

13. Is there anything you would like us to discuss further?

## **Interview guide (Chichewa)**

Meeting Place: ..... Date: ..... Start  
Time: ..... End: ..... Language: .....

### **Interviewee:**

Position: .....

Duration in current Position.....

Years of Service:.....

Highest Qualification.....Date Obtained.....

Institution: .....

### **Za kugwira ntchito**

1. Mwakhalala mukugwira ntchito kwanthawi yaitali bwanji pa udindo wanu (clinical fficer,midwife)?
2. Mwangwira ntchito kwanthawi yaitali bwanji ku outpatient/hypertension clinic?

### **Kufufuza matenda**

3. Odwala womwe ali ndi bvuto lothamanga magazi mumawazindikira bwanji
4. Mumawona bwanji za m'mene mumazindikirira anthu amene ali ndi matenda

Kufusitsa za zipangizo zomwe zimagwiritsidwa ntchito

### **Kasamalidwe ka odwala**

5. Mungandifotokezere za mmene mumagwirira ntchito ku hypertension clinic pa chipatala pano?
6. Mumawona bwanji za kagwiridwe ntchito kanu?
7. umasamala bwanji odwala a matenda othamanga magazi?
8. Kodi inu mukuganiza kuti njira yabwino yosamalira odwala matenda othamanga magazi ingakhale yiti?



### **Ziphyinjo ndi malingaliro a ogwira nchito**

9. Kodi muli ndi zipangizo zANJI zimene mumagwiritsa nchito pofufuza matendawa?

10. Nanga mumagwiritsa ntchito chani posamalira odwala?

Kufusitsa za zipangizo zomwe zikusowa, mankhwala, oyang'anira ndi ndondomeko za kagwiridwe ka ntchito.

11. Ndi zovuta zANJI zomwe mumakumana nazo pofufuza matenda a odwala omwe ali ndi bvuto lothamanga magari ?

12. Nanga ndizovuta zANJI mumakumana nazo?

13. Pali zina zomwe mukufuna tikambirane.

## **9.6 Appendix F: Ethical clearance UIO**

Prosjektansvarlig/veileder: Viva Combs Thorsen  
Masterstudent: Marion Chiwena Mzikamanda

Dato: 15.04.16  
Deres ref.:  
Vår ref.: 2016/4986

Unntatt offentlighet: offl § 13 jf fvl § 13

### **Regarding application for approval of master's thesis project**

Project: Health worker perspectives on diagnosis and management of hypertension

Kvalitetssikringsutvalget, Department of Health Sciences; University of Oslo, have received your application dated 14.03.2016. Your application was assessed by Kvalitetssikringsutvalget 06.04.2016.

### **Methods**

The aim of the project is to assist in identifying the gaps in, and challenges to the diagnosis and management of hypertension in hypertension clinics at the primary and secondary care levels in Malawi. The justifications for the project are well stated, and the research question clearly formulated. Appropriate methods are chosen to address the research question. However, the committee has noticed that sometimes, concepts more usually applied in quantitative studies than in qualitative studies are applied. Also the *random sampling method* is frequently applied in quantitative studies to identify a representative sample, while the purpose of sampling in qualitative methods is usually to obtain variability in the data material and accordingly other methods might be more appropriate. We suggest that other sampling methods are considered. Both supervisors are well qualified in quantitative methods, while only the main supervisor seems to have any experience in doing qualitative studies. This has to be kept in mind and dealt with during the project process. If any dilemmas concerning methodological issues turns up the team is welcomed to discuss methods with the leader of HELSEF4500 Professor Anne Marit Mengshoel.

### **Research ethics**

Questions concerning research ethics are well answered. The committee, however, questions the statement that the project should be assessed by REK as the informants are health professionals and not patients. Based on the project plan, we find that this project is not defined as medical and health research on human beings, human biological material or personal health data according to The Norwegian Health Research Act, but the project should be subscribed to the Norsk Samfunnsvitenskapelig Datatjeneste.



**Institutt for helse og samfunn**  
Avdeling for helsefag  
Postadr.: Postboks 1089 Blindern, 0317 Oslo  
Besøksadr.: Forskningsveien 3a, Harald  
Schjelderups hus, inngang 2

Telefon: 22 84 53 78  
Telefaks: 22 84 53 83  
postmottak@medisin.uio.no  
www.med.uio.no/helsam  
Org.nr.: 971 035 854

**Decision**

Provided that the master study project is carried out in accordance with the project plan, the application and the comments from Kvalitetssikringsutvalget, the project is approved together with the supervisors' agreement.

Good luck with the master project!

Best regards,

Hilde Bondevik  
Programme Leader, Associate Professor

Anne Marit Mengshoel  
Leader, Kvalitetssikringsutvalget, Professor

Dokumentet er elektronisk produsert og godkjent ved UiO i tråd med UiOs reglement for elektronisk godkjenning.

## 9.7 Appendix G: Ethical Clearance NSD

Viva Combs Thorsen  
Institutt for helse og samfunn Universitetet i Oslo  
Postboks 1130 Blindern  
0318 OSLO



Vår dato: 07.09.2016

Vår ref: 49267 / 3 / IJJ

Deres dato:

Deres ref:

### TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 15.07.2016. Meldingen gjelder prosjektet: *49267 Health worker perspectives on the diagnosis and management of hypertension in Malawi*

*Behandlingsansvarlig Universitetet i Oslo, ved institusjonens øverste leder*

*Daglig ansvarlig*

*Viva Combs Thorsen*

*Student*

*Marion Chiwena Edith Mzikamanda*

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering.

Endringsmeldinger gis via et eget skjema,

<http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database,

<http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 01.07.2017, rette en henvendelse angående status for behandlingen av personopplysninger.

*Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.*

Vennlig hilsen  
Kjersti Haugstvedt

Ida Jansen Jondahl  
Kontaktperson: Ida Jansen Jondahl tlf: 55 58 30 19  
Vedlegg: Prosjektvurdering

Kopi: Marion Chiwena Edith Mzikamanda [m.c.e.mzikamanda@studmed.uio.no](mailto:m.c.e.mzikamanda@studmed.uio.no)

# Personvernombudet for forskning



Prosjektvurdering - Kommentar

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Prosjektnr: 49267

## INFORMATION AND CONSENT

The sample will receive written and oral information about the project, and give their consent to participate.

The letter of information/consent form is somewhat incomplete, and we ask that the following is added:

- which institution is responsible for the project
- that this is a student project (master's thesis)
- when the project will be completed
- that the study has been notified to the Data Protection Official for Research, NSD - Norwegian centre for research data.

## REC ASSESSMENT

Norwegian REC (Regional Committees for Medical and Health Research Ethics) has assessed the project not to be medical and health research that falls within the Act on medical and health research (ref.no. 2016/1242/REK nord).

In the notification form, it is stated that the project currently awaits a decision from the College of Medicine Research Ethics Committee (COMREC) in Malawi. We assume that local approval is granted before the data is collected.

## INFORMATION SECURITY

The Data Protection Official presupposes that the researcher and the student follow internal routines of Universitetet i Oslo regarding data security.

## PROJECT END DATE AND MAKING THE DATA ANONYMOUS

Estimated end date of the project is 01.07.2017. According to the notification form all collected data will be made anonymous by this date.

Making the data anonymous entails processing it in such a way that no individuals can be recognised. This is done by:

- deleting all direct personal data (such as names/lists of reference numbers)
- deleting/rewriting indirectly identifiable data (i.e. an identifying combination of background variables, such as residence/work place, age and gender)
- deleting digital audio files

## 9.8 Appendix H: REK feedback



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<b>Region:</b>	<b>Saksbehandler:</b>	<b>Telefon:</b>	<b>Vår dato:</b>	<b>Vår referanse:</b>
REK nord	Veronica Sørensen	77620758	28.06.2016	2016/1242/REK nord
			<b>Deres dato:</b>	<b>Deres referanse:</b>

14.06.2016

Vår referanse må oppgis ved alle henvendelser

Viva Combs Thorsen

PO Box 1130 Blindern

### **2016/1242 helsearbeidernes perspektiver på diagnostisering og behandling av hypertensjon i Malawi**

*Søknaden er behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk*

(REK nord) ved sekretariatet på fullmakt meddelt av komiteen med hjemmel i forskningsetikkforskriften § 10 annet ledd. Søknaden er vurdert med hjemmel i helseforskningsloven (hfl.) § 10, jf. forskningsetikklovens § 4. Søknaden er forelagt komiteens leder.

Forskningsansvarlig institusjon: University of Oslo Prosjektleder: Viva Combs Thorsen

#### **Prosjektomtale (original):**

*Hypertensjon er en av de ikke overførbare sykdommer som er et globalt problem. Hypertensjon kan føre til komplikasjoner som hjerneslag, hjerteinfarkt og nyresvikt. Nivåene av bevissthet, diagnostisering, behandling og kontroll av hypertensjon er fortsatt lav i Afrika. En undersøkelse gjort i Malawi konkluderte at hypertensjon er et problem og det er behov for å sette i gang tiltak i forhold til forebygging, diagnostisering og behandling. I denne undersøkelsen ønsker jeg å utforske helsearbeidernes perspektiver på diagnostisering og behandling av hypertensjon i Malawi og deres erfaringer i pasientenes oppfølging i hypertensjon klinikker. Jeg vil også vurdere utfordringer som er rapportert av helsefagarbeidere og få forslag til bedring i diagnostisering og oppfølging i klinikkene for å sikre at pasientene får behandlingen de trenger. Denne forskningen vil bidra til å bringe i lyset den eksisterende kapasitet til å oppdage og håndtere hypertensjon i primær og sekundær helsetjenesten*



### *Framleggingsplikt*

De prosjektene som skal framlegges for REK er prosjekt som dreier seg om «medisinsk og helsefaglig forskning på mennesker, humant biologisk materiale eller helseopplysninger», jf. helseforskningsloven (h) §2. «Medisinsk og helsefaglig forskning» er i h § 4 a) definert som «virksomhet som utføres med vitenskapelig metodikk for å skaffe til veie ny kunnskap om helse og sykdom». Det er altså formålet med studien som avgjør om et prosjekt skal anses som framleggelsespliktig for REK eller ikke.

I dette prosjektet er formålet å utforske helsearbeidernes perspektiver på diagnostisering og behandling av hypertensjon i Malawi og deres erfaringer i pasientenes oppfølging i hypertensjon klinikker. Prosjektleder vil også vurdere utfordringer som er rapportert av helsefagarbeidere og få forslag til bedring i diagnostisering og oppfølging i klinikkene for å sikre at pasientene får behandlingen de trenger.

Komiteen forutsetter at det ikke skal utleveres personidentifiserbare opplysninger om pasienter.

Selv om dette er en helsefaglig studie og funnene i studien indirekte vil kunne gi en helsemessig gevinst faller ikke prosjektet inn under definisjonen av de prosjekt som skal vurderes etter helseforskningsloven.

Prosjektet skal således ikke vurderes etter helseforskningsloven.

### *Godkjenning fra andre instanser*

Det påhviler prosjektleder å undersøke hvilke eventuelle godkjenninger som er nødvendige fra institusjoner.

### *Vedtak*

*Etter søknaden fremstår prosjektet ikke som et medisinsk og helsefaglig forskningsprosjekt som faller innenfor helseforskningsloven. Prosjektet er ikke fremleggingspliktig, jf. hfl § 2.*

### *Klageadgang*

Du kan klage på komiteens vedtak, jf. forvaltningsloven § 28 flg. Klagen sendes til REK nord. Klagefristen er tre uker fra du mottar dette brevet. Dersom vedtaket opprettholdes av REK nord, sendes klagen videre til Den nasjonale forskningsetiske komité for medisin og helsefag for endelig vurdering.

Veronica Sørensen  
Seniorrådgiver

Med vennlig hilsen

May Britt Rossvoll

Sekretariatsleder

**Kopi til:** a.m.mengshoel@medisin.uio.no

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**Besøksadresse:** MH-bygget UiT Norges arktiske  
**Telefon:** 77646140  
**E-post:** [rek-nord@asp.uit.no](mailto:rek-nord@asp.uit.no)  
**Web:** <http://helseforskning.etikkom.no/>

All post og e-post som inngår i saksbehandlingen, bes adressert til REK the Regional Ethics Committee, REK universitet 9037 Tromsø nord og ikke til enkelte personer

Kindly address all mail and e-mails to the Regional Ethics Committee, REK universitet 9037 Tromsø nord, not to individual staff

9.9 Appendix I : Ethical approval COMREC



9.10 **Appendix J :Letter of Approval: Kasungu district health office**

Telephone: + 265 253 400  
Fax: + 265 253 630

All Communications should be addressed to:

**The District Health Officer**



*In reply please quote No.*

Ref. No. KDH/

MINISTRY OF HEALTH

KASUNGU DISTRICT HOSPITAL

P. O. BOX 19,

**KASUNGU,**

**MALAWI, AFRICA**

**28<sup>th</sup> June, 2016**

TO: MARION CHIWENA EDITH MZIKAMANDA

**LETTER OF SUPPORT FOR MARION CHIWENA EDITH MZIKAMANDA FOR SUBMISSION OF RESEARCH PROPOSAL TO COMREC**

I write to respond to your request to submit to you a support letter for your research proposal submission to COMREC.

Am pleased to inform you that you have been granted permission to do your research at Kasungu District Hospital. Your research on 'Health Worker perspective on the diagnosis and management of hypertension in Malawi' will help our office to know the views of our staff in this area. And, for your information, Kasungu District Hospital is a pilot district for WHO PEN and we have a special clinic for non-communicable diseases. The WHO PEN started in 2012 and a good number of our staff were trained in how to diagnose and treat hypertension. However, since then we have not reviewed the perspective of our staff in diagnosis of hypertension. Hence, this study will be beneficial to us as well.

Once again, you are welcome to do the study at Kasungu District Hospital anytime and I am wishing you all the best.

Yours faithfully,

DR GEORGE TALAMA, MBBS

**DISTRICT HEALTH OFFICER**



