

# **KNOWLEDGE AND PRACTICE OF LIFESTYLE MODIFICATIONS AMONG HYPERTENSIVE PATIENTS IN RURAL BUGISU**

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**UGANDA CHRISTIAN  
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**Declaration**

This is to declare that the work presented in this dissertation is my personal work and that it has not been submitted to any other institution of higher learning or university for any academic award. Where other people's work has been referred to, this has been acknowledged.

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Signature:  .....


Date: 03/09/2025 .....

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## Approval

This Project has been developed under my supervision and is being submitted to the school of Research and Postgraduate studies of Uganda Christian University with my approval.

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## **Dedication**

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## Acronyms

BP	Blood Pressure
CVD	Cardiovascular Disease
DASH	Dietary Approach to Stop Hypertension
DBP	Diastolic Blood Pressure
HTN	Hypertension
LSM	Lifestyle Modification
NCD	Non-Communicable Diseases
NICE	National Institute for Health and Care Excellence
OPD	Outpatient Department
SBP	Systolic Blood Pressure

## Operational Definitions

**Blood pressure level (BP)** is the pressure of the blood against the inner walls of the blood vessels; where normal BP is BP level of <139/<90 and hypertensive is when the BP level of >139 (SBP) and/or >90 (DBP).

**Uncontrolled hypertension** is systolic blood pressure  $\geq 140$  mmHg or diastolic blood pressure  $\geq 90$  mmHg despite management efforts.

**Knowledge** is the fact or condition of knowing or having sufficient information about the Lifestyle Modification by hypertensive patients.

**Practice** is to do or perform the component of lifestyle modification among Hypertensive patients.

**Lifestyle Modification** in hypertension management means adoption of healthy behaviors and changes in daily habits that can support lowering and controlling Hypertension.

## Abstract

Hypertension is a significant global health concern, particularly prevalent in Sub-Saharan Africa, where it contributes substantially to morbidity and mortality. The widespread nature of uncontrolled hypertension is often attributed to the inadequate utilisation of Lifestyle Modification (LSM) approaches, despite their crucial role in effective management.

This study aims to describe the knowledge and practices of Lifestyle Modification among hypertensive patients in the rural Bugisu sub-region at Muyembe Health Centre IV in Bulambuli District, Uganda. It also utilizes the Health Belief Model to explore how patients' beliefs, perceived barriers, and motivations influence their behavior, thereby informing the development of targeted interventions for improved hypertension management.

A descriptive quantitative cross-sectional design was employed, involving 90 consecutively selected hypertensive patients. Data was collected using a structured questionnaire, which included multiple-choice and Likert scale questions. The data were then analyzed using IBM SPSS version 27 software. A sufficient knowledge score was defined as above 70%, and a mean score of  $\geq 4$  indicated adequate practice. Ethical considerations, including informed consent and confidentiality, were strictly maintained throughout the study.

Of the 90 participants, the majority were aged 61 and above (36.7%) and female (70%). While most participants understood the general meaning and benefits of LSM, only 15.6% demonstrated sufficient knowledge of specific Lifestyle Modifications, and merely 1.1% adequately practiced them (mean score  $\geq 4$ ). These findings highlight a significant gap between knowledge and practice.

Overall, knowledge and practice of Lifestyle Modification were found to be sub-optimal among hypertensive patients. It is recommended that the Ministry of Health develops policies and advocates for enhanced patient education on LSM at both community and health facility levels to improve hypertension management

## Chapter One: Introduction

Hypertension remains a pervasive health challenge, particularly in low and middle-income countries, and is the most important cause of disability worldwide (Sisay et al., 2022). Cardiovascular diseases claimed 17 million lives annually. Globally, 1.28 billion people were suffering from hypertension with a proportion of 66.8% and 33.2.6%, in developed and developing countries, respectively. The prevalence of hypertension in WHO African regions was 27% and 18% in WHO American regions, leading to 9.4 million avoidable deaths every year, and a burden of 16.5million people living disability-adjusted life years (Farhadi et al., 2023; WHO, 2023).

This study distinguishes between knowledge gaps, patients' limited understanding of specific LSM strategies like DASH diets and routine exercises, and practice barriers, such as perceived difficulties in implementation due to time constraints, lack of support, or low self-efficacy. By addressing these separately through the Health Belief Model, this research provides a clearer rationale for why uncontrolled hypertension persists in rural Bugisu despite medication.

In the local context of rural Bugisu, this challenge is acute. Data from Muyembe Health Centre IV highlights a severe local crisis: among 286 re-attending hypertensive patients, only 40 achieved controlled blood pressure (District Health Information System, 2023). This alarming deficit in control, resulting in frequent re-admissions with preventable complications, persists despite appropriate drug distribution, underscoring the failure of non-pharmacological therapies in this setting.

Hypertension, if not controlled, is responsible for cardiovascular complications, renal issues, cerebral vascular complications, retinopathy, as well as societal conflicts, and economic burden to families and health facilities. Thus, this study described the knowledge and practices of

Lifestyle Modification strategies among hypertensive patients at Muyembe Health Centre IV in Bulambuli District.

### **Background to study**

Hypertension is a complex disorder that affects the entire cardiovascular system, significantly contributing to global morbidity and mortality (Arif et al., 2021). This rising prevalence, linked to evolving lifestyles (Alinaitwe et al., 2024), is often exacerbated by consistently low awareness and control rates; nationally, only 27% of individuals over 25 years are aware of their condition, with a mere 7% achieving blood pressure control. Lifestyle Modification (LSM), the cornerstone of non-pharmacological therapy, is crucial for effective management, serving to reduce blood pressure, lower complication risks, and potentially minimize the reliance on anti-hypertensive drugs. Key LSM approaches encompass weight reduction, limiting salt and alcohol intake, cessation of smoking, utilizing dietary approaches to stop hypertension (DASH) diet, increasing physical exercise, and stress management.

Hypertension affects approximately 1.28 billion people globally, with a 30% prevalence in Sub-Saharan Africa (Ndejjo et al., 2022; WHO, 2023). Locally, the crisis is evident at Muyembe Health Centre IV, where records show that among 286 re-attending hypertensive patients, only 40 had controlled blood pressure (District Health Information System, 2023). This low control rate, despite appropriate drug distribution, highlights a significant local crisis that underscores the need for facility-specific insights into knowledge and practices.

Leading international guidelines (e.g., JNC, ADA, AHA/ASA) recommend LSM as the first step in hypertension management (Ajiboye et al., 2020). Despite these recommendations, the persistent problem of uncontrolled hypertension is widely documented, with numerous studies reporting that the majority of hypertensive patients demonstrate insufficient knowledge

and inadequate practices concerning LSM (Angelo &Geltore, 2020; Rahimi &Nkombua, 2022; Abdalla, 2021). This highlights a crucial gap in translating global guidelines into effective local behaviour, thereby underscoring the necessity of this study in Bugisu.

The goal of hypertension management is to prevent uncontrolled hypertension and its complications by maintaining blood pressure at 140/90 mm Hg or lower. Uncontrolled hypertension is mainly linked to non-compliance with lifestyle modifications and anti-hypertensive medications (Alawneh et al., 2022; NICE, 2023).

National Institute of Clinical Excellence (2023) recommends that screening for hypertension be performed at all service points to promote early diagnosis and treatment. The management package included health education for patients about lifestyle modification and adherence to prescribed medications. Educational interventions have proven to significantly increase patients' knowledge levels. Patients who received adequate health-related information and actively participated in the therapeutic process achieved optimal blood pressure control and lowered cardiovascular risk. Additionally, regular blood pressure monitoring at health facilities and home-based blood pressure measurements effectively managed hypertension. Access to care was expanded through the use of telemedicine by clinicians in specific situations, and hypertensive services were well integrated at all service points, including village levels (UCG, 2023).

MOH (2023), Uganda clinical guidelines recommend lifestyle adjustments as the first step in hypertension management for three months, after which patient outcomes should be evaluated. However, this is not often the case in most health centers. Patients are usually prescribed medication and educated on lifestyle modifications. The evaluation of lifestyle modifications is rarely documented.

Despite routine medication, patients often experience complications that require readmission. While the importance of LSM is acknowledged, there is a clear lack of local data specific to what patients at Muyembe Health Centre IV know and how they implement these modifications. This absence of context-specific information on patient knowledge and practices regarding lifestyle modifications highlights a significant gap in understanding the factors contributing to uncontrolled hypertension in this region (Angelo & Geltore, 2020; Rahimi & Nkombua, 2022). Addressing this gap is essential to develop targeted interventions to improve hypertension management in such resource-limited settings.

### **Problem Statement**

Lifestyle Modification (LSM) approaches are widely recognized as highly effective and essential for managing hypertension, helping to lower blood pressure, reduce the need for anti-hypertensive medications, and prevent related complications. However, when these vital strategies are poorly implemented, they can directly lead to frequent hospital admissions due to uncontrolled hypertension complications. In rural areas like Muyembe Health Centre IV in Bulambuli District, Bugisu sub-region, local data from the Non-Communicable Disease (NCD) clinic clearly shows this ongoing challenge despite medication distribution.

Unique local barriers such as limited healthcare access, low health literacy due to rural isolation, cultural beliefs favoring traditional remedies over LSM, and economic constraints hindering dietary changes exacerbate this issue. Crucially, no context-specific data exists on patients' knowledge and practice of LSM at this facility, hindering targeted interventions. This study addresses these gaps to inform localized strategies for better outcomes.

### **Purpose of the Study**

Building on the identified noticeable absence of local data at Muyembe Health Centre IV, the purpose of this study was to describe the knowledge and practices of Lifestyle Modifications among hypertensive patients attending this facility. This will provide essential, context-specific information to inform the development of more effective, targeted strategies for improved hypertension management and patient outcomes within this particular rural setting.

### **Research Question**

What are the knowledge and practices of Lifestyle Modification among hypertensive patients attending the non-communicable disease clinics in rural Bugisu?

### **Specific Objectives of the Study**

1. To identify the knowledge of Lifestyle Modification among hypertensive patients in rural Bugisu.
2. To describe the practices of Lifestyle Modification practices among hypertensive patients in rural Bugisu.

### **Significance of the Study**

This study may empower nurses, general practitioners, and other clinical healthcare providers in the clinical area to provide comprehensive information to hypertensive patients regarding Lifestyle Modifications. Patients, informed about the benefits of utilizing Lifestyle Modifications, and complications of hypertension, are likely to adhere to recommended lifestyle changes. This, in turn, can reduce admissions due to complications and the use of costly medications, fostering positive living and productivity within families, communities, and professional settings.

Nurses and other Clinical staff, and General practitioners may leverage this study's results for community education through dialogues, messages, brochures, and leaflets. These materials will strengthen the approach to Lifestyle Modifications at both community and Health facility levels. Specific service packages, such as intensive adherence counseling on nutrition and exercise demonstrations, can be tailored based on the study's results for implementation in various healthcare settings.

Nurse Managers, and Health Administrators may utilize the study's findings to strategically plan human and material resources, ensuring the effective implementation of lifestyle modifications. The health facility administration can develop Standard Operating Procedures (SOPs) applicable to clients attending Non-Communicable Disease (NCD) services, aligning healthcare practices with evidence-based results.

The Ministry of Health, non-communicable disease department may utilize the findings to strengthen Lifestyle Modification approaches in both urban and rural setting health institutions. The findings may support the introduction of more programs in favor of the patients with hypertension during strategic planning session. This could attract more funds for successful implementation of Lifestyle Modifications at all levels of service provision.

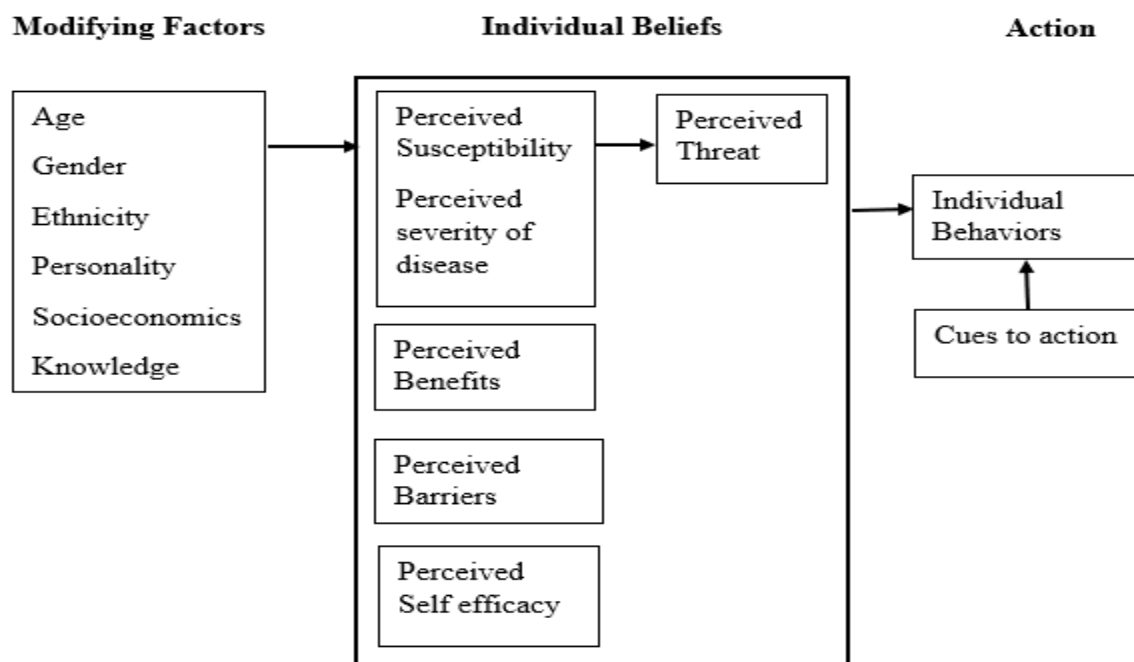
This study contributes to the existing knowledge on Lifestyle Modifications in hypertension management. Its insights are expected to guide improvements in hypertension control through the effective utilization of the approach. Furthermore, the study's results could inform further research, potentially exploring patients' beliefs about Lifestyle Modifications, and expanding the understanding of related concepts in hypertension management.

## Conceptual Framework

This study is underpinned by the Health Belief Model (HBM) (Champion & Skinner, 2008), a widely recognised psychological framework used to understand and predict health-related behaviours by focusing on an individual's attitudes and beliefs (Rosenstock, 1974).

As depicted in Figure 1 (Constructs of the Health Belief Model) below, the HBM model served as the foundational conceptual framework for this study. This model was strategically employed not merely as a theoretical backdrop but as a direct guide for the study's specific design, the development of its questionnaire, and the subsequent interpretation of variables and findings related to hypertensive patients' knowledge and practices concerning Lifestyle Modifications (LSM).

The Health Belief Model (HBM), Figure 1, (Champion & Skinner, 2008) is a widely recognised psychological framework used to understand and predict health-related behaviours by focusing on an individual's attitudes and beliefs (Rosenstock, 1974). This model provides the theoretical lens through which patient knowledge and practices regarding Lifestyle Modifications were examined.



**Figure 1: Constructs of the Health Belief Model. Modified from (Skinner & Champion, 2008).**

The study adopted a quantitative approach with a descriptive cross-sectional research design. This design was chosen for its ability to capture a snapshot of current knowledge and self-reported practices at a single point in time, aligning perfectly with the HBM's focus on individual beliefs influencing health behaviours. The HBM specifically informed the measurement of key variables in the following operational ways;

Questionnaire development, the structured questionnaire was directly generated from the constructs of the Health Belief Model and a comprehensive literature review. This ensured that each section of the questionnaire systematically probed the core HBM components as they apply to hypertension management. The HBM suggests that an individual's likelihood of engaging in a health-promoting behaviour, such as adhering to Lifestyle Modifications (LSM) for hypertension management, is influenced by their perceptions of:

### ***Perceived Susceptibility***

Their belief in the likelihood of contracting a disease or condition. The term "perceived susceptibility" described attitudes toward the probability of contracting an illness or condition. Before a person becomes interested in adopting a healthy behavior, they must think that they could get sick.

### ***Perceived Severity***

Their perception of the seriousness of the disease and its potential consequences. Evaluating the medical and clinical repercussions of getting sick or not getting treatment was part of how serious one felt about the situation. Death, disability, pain, and potential societal repercussions, such as how the conditions affected social interactions, family life, and employment, were among the possible outcomes.

### ***Perceived Benefits***

Their belief that taking a specific action will reduce the perceived threat or improve health outcomes. Beliefs about the perceived advantages of the many available measures for lowering the threat of disease had an impact on a person's behavior modification. The advantages could range from non-health-related ones like cost savings and family satisfaction to health-related ones like speedy recovery and fewer disease consequences.

### ***Perceived Barriers***

Their assessment of the potential negative aspects of a health action, such as costs, discomfort, or inconvenience. These were the possible drawbacks of a specific health measure. They could have served as barriers to engaging in advised behaviors. People do a sort of unconscious cost-benefit analysis in which they compare the perceived obstacle to the predicted rewards of an action. The person was aware that although the behavior could be beneficial, it could also be costly, uncomfortable, time-consuming, or have unfavorable side effects (Rosenstock, 1974; Skinner & Champion, 2008).

### ***Cues to Action***

Factors that prompt individuals to take action, which can be internal (e.g., symptoms) or external (e.g., advice from others, media). This could increase the willingness to act after reported susceptibility and expected rewards.

### ***Self-Efficacy***

Their confidence in their ability to successfully perform the recommended health behaviour. The belief that one could carry out the actions necessary to achieve the desired results. Self-efficacy has a key role in both starting and sustaining behavioral change. People

must believe they are capable of overcoming perceived obstacles to action if they wanted behavior change to be successful.

The Health Belief Model provided the analytical lens through which the study interpreted the observed knowledge-practice gap. For example, the finding that only 1.1% of participants demonstrated adequate practice in LSM was deeply understood by examining the high perceived difficulty of lifestyle changes (68.9%) and critically low self-efficacy (only 17.8% confident in their ability). This highlights that despite a general awareness of hypertension's severity, the lack of specific, actionable knowledge about LSM strategies (e.g., types and frequency of exercise, specific diet components) and insufficient support systems (only 3.3% received reminders) created pervasive barriers to actual behaviour change. The model allowed the study to go beyond descriptive statistics to explain why these gaps exist, guiding the formulation of targeted recommendations. Thus, the HBM provides a pertinent theoretical framework for investigating hypertensive patients' knowledge and practices concerning Lifestyle Modifications, offering insights into the cognitive and emotional factors that influence their engagement in health-promoting behaviours.

### **Operationalization of the Model**

In this study, the constructs of the Health Belief Model were operationalised and measured through specific questions within the structured questionnaire:

Perceived Susceptibility, this construct was measured by assessing participants' awareness of their risk of developing hypertension complications. Measured by: Question 27: "Are you aware that you can be at risk of developing hypertension complications?"

Perceived Severity, this was assessed by exploring participants' understanding of the serious health consequences of uncontrolled hypertension. Measured by: Question 28: "If yes to

above [Q27], which major complications do you think Hypertension may have? (Tick all that apply)".

Perceived Benefits, this was determined by evaluating participants' beliefs regarding the positive outcomes of implementing Lifestyle Modifications for hypertension management.

Measured by: Question 10: "Which of the following do you believe are the benefits of implementing Lifestyle Modifications for managing hypertension (Tick the correct responses)".

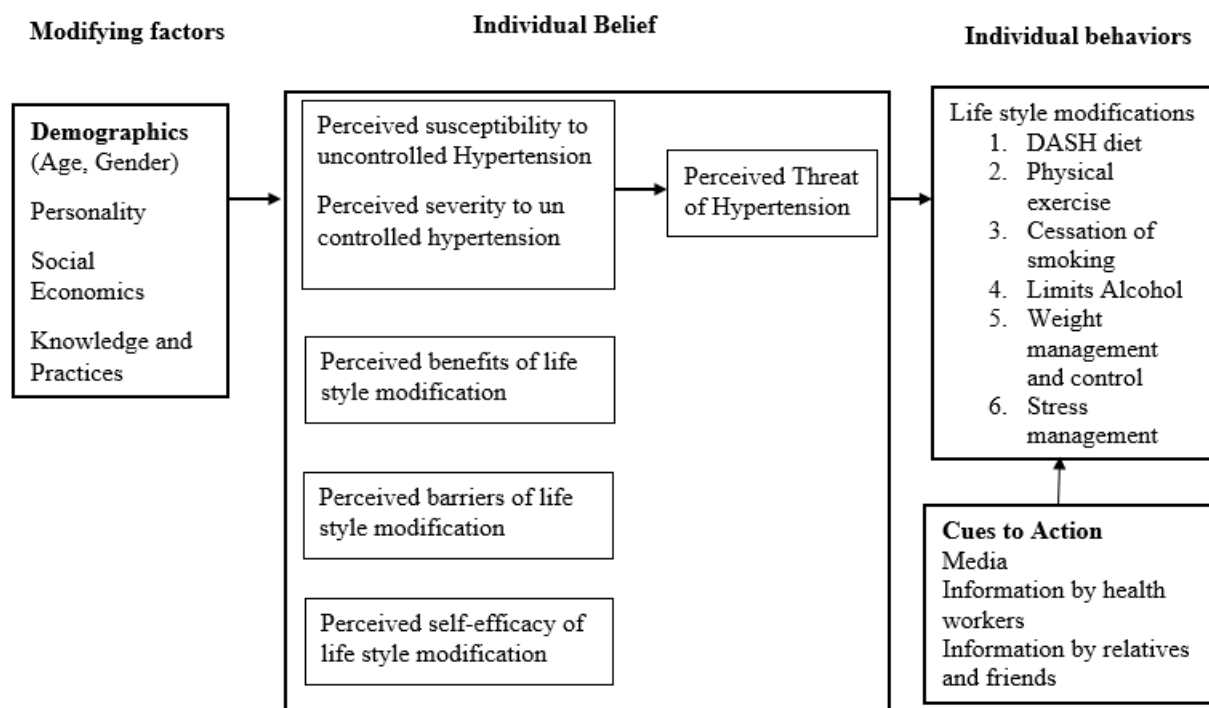
Perceived Barriers, this was measured by identifying the challenges participants encountered in adopting and maintaining Lifestyle Modifications. Measured by: Question 29: "What challenges do you face in implementing lifestyle modifications? (Tick all that apply)" and Question 30: "How difficult do you find it to alter your way of life in order to control your hypertension?".

Cues to Action, this was operationalised by identifying whether participants had received information or reminders about Lifestyle Modifications and the sources of such information. Measured by: Question 32: "Have you ever received any information about Lifestyle Modification?", Question 33: "If yes, what was the source of Information?", Question 34: "Which kind of information did you receive?", and Question 35: "Do you receive reminders or support to follow Lifestyle Modifications?".

Self-Efficacy, this was measured by assessing participants' confidence in their ability to successfully make and sustain lifestyle changes for hypertension management. Measured by: Question 31: "How confident are you in your ability to make and maintain lifestyle changes to manage your hypertension?".

Figure 2: Constructs of the HBM in relation to the study below, provides a visual representation of how the Health Belief Model (HBM) was specifically operationalised and

applied within this study's design to examine Knowledge and Practice of Lifestyle Modifications (LSM) among hypertensive patients. This figure delineates the core relationship between the study's independent and dependent variables, demonstrating the HBM's direct guidance for both questionnaire development and the interpretation of study variables and findings.



**Figure 2: Constructs of the HBM in relation to the study modified from (Skinner & Champion).**

The operational role in research design and variable measurement was aligned with a quantitative approach, utilizing a descriptive cross-sectional design. This design was selected to capture a snapshot of patients' self-reported knowledge and practices regarding lifestyle modifications (LSMs) at a single point in time. Figure 2 illustrates how the HBM conceptually underpinned this investigation, allowing us to describe the existing state of these variables within the population.

Figure 2 explicitly defines the independent variables (IVs) as "modification factors, including knowledge and practice". These IVs were understood to be influenced by the various constructs of the HBM (Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers, Cues to Action, and Self-Efficacy).

The structured questionnaire was meticulously generated from these HBM constructs and relevant literature. For instance, the knowledge section of the questionnaire assessed participants' understanding of the meaning, importance, compositions, and benefits of various LSMs, as well as complications of uncontrolled hypertension and barriers to implementation. Similarly, the practice section established self-reported adherence to these modifications. This direct linkage ensured that the data collected on knowledge and practice was systematically aligned with the theoretical underpinnings of patient health behaviour as conceptualised by the HBM.

Figure 2 also identifies "Lifestyle Modifications of hypertensive patients" as the dependent variable (DVs), which was posited to be influenced by the patients' knowledge and practice. This means the study sought to understand how the patients' cognitive understanding and behavioural engagement, informed by the HBM, impacted their actual adherence to recommended LSMs.

The specific indicators measured to quantify this dependent variable were: regular physical exercise, cessation of alcohol and smoking, weight control, eating DASH and Mediterranean diet, and stress management. Each of these specific LSMs was directly addressed in the questionnaire to capture the extent of patient adoption.

The framework presented in Figure 2 was critical for interpreting the observed gaps between knowledge and practice, particularly the critically low adherence rate of only 1.1% for adequate LSM practice.

By understanding the HBM's interplay, the study could analyse why certain LSMs were poorly adopted. For example, high perceived difficulty in altering lifestyle (68.9%) and low self-efficacy (only 17.8% confident in their ability) directly explained the inadequate engagement in physical exercise, weight management, and specific dietary plans.

Similarly, the limited receipt of "cues to action" (only 3.3% received reminders) highlighted the insufficiency of external motivators despite patients receiving some information about LSMs. Figure 2, therefore, allowed the study to move beyond simply reporting statistics to analysing the underlying psychological and behavioural factors that influence patient outcomes in hypertension management.

### **Summary**

Chapter One explored Lifestyle Modifications in managing Hypertension under the introduction, background to the study, the statement of the problem, general research objectives, main research question, the purpose of the study, and the significance of the study. The conceptual framework has also been presented and described. Finally, the study variables were defined. Chapter Two will present the review of literature related to the topic under study.

## **Chapter Two: Literature Review**

This chapter provided a comprehensive review of existing literature pertaining to the knowledge and practice of Lifestyle Modifications (LSM) among hypertensive patients. The review is structured around the importance of LSM, patients' knowledge regarding these modifications, and their actual adherence to recommended practices.

### **Importance of Lifestyle Modifications**

Lifestyle Modifications are widely recognised as fundamental approaches in the management of hypertension, encompassing strategies such as Dietary Approaches to Stop Hypertension (DASH) and Mediterranean diets, regular physical exercise, cessation of smoking, reduction or cessation of alcohol consumption, consistent blood pressure checks, weight control, and stress management. These modifications are recommended for all hypertensive patients, irrespective of medication therapy, as they can reduce the need for anti-hypertensive drugs. For non-hypertensive individuals, including those in the pre-hypertension stage, LSM holds the potential to prevent hypertension and significantly lower blood pressure (BP), thereby reducing the risk of hypertension-related clinical complications (WHO, 2023). In patients already diagnosed with hypertension, lifestyle modification can serve as initial treatment or as an adjunct to drug therapy, potentially facilitating a reduction in medication. Beyond direct blood pressure control, these recommended lifestyle changes offer a range of broader health and social benefits, including improved outcomes for common chronic diseases like diabetes mellitus and arthritis.

Studies show that successful compliance with LSM approaches can increase blood pressure control in over 25% of patients (Kurt & Gurdogan, 2022). LSM is frequently recommended as a chief cornerstone for prevention, particularly for individuals with a family history of hypertension or pre-hypertension, often being the initial choice over drug treatment for

hypertension control (Angelo & Geltore, 2020; Fetensa et al., 2019). Adopting a healthy lifestyle, either in combination with medication or as a standalone alternative, is an effective, less costly, and side-effect-free contributor to controlling hypertension and its complications. This approach can reduce the need for drug therapy, enhance the effect of anti-hypertensive drugs, reduce the need for multiple drug regimens, and favourably influence overall cardiovascular risk wellbeing (Rahimi & Nkombua, 2022).

### ***Specific lifestyle modifications and their benefits***

Dietary Approaches to Stop Hypertension (DASH), the DASH diet emphasizes fruits, vegetables, whole grains, fish, poultry, and low-fat dairy while significantly limiting salt, saturated fats, and refined carbohydrates (Batte, et al., 2023). It is widely advocated as a first-line therapy because it provides a significant physiological reduction in systolic blood pressure in both hypertensive and normotensive individuals by lowering weight and optimizing cardiovascular markers (CDC, 2023).

Mediterranean Diet, this diet promotes plentiful use of olive oil and moderate wine consumption. Research indicates it has a significant beneficial effect on systolic blood pressure (−3.0 mmHg) and diastolic blood pressure (−2.0 mmHg), in addition to reducing body weight (−1.8 kg) and BMI (−0.6 kg/m<sup>2</sup>) (Hussie et al., 2021).

Physical Exercise, regular physical activity is critical as it optimises hypertension treatment and prevents complications by decreasing systemic vascular resistance. Both aerobic and dynamic resistance exercises induce post-exercise hypotension and can lead to a substantial lowering of resting blood pressure, potentially reducing the need for anti-hypertensive medication. Optimal outcomes require adherence to the recommended 30-minute duration on most days of the week (Rêgo et al., 2019).

Cessation of Smoking and Alcohol Restriction, quitting smoking is crucial as tobacco use causes an immediate, acute elevation of blood pressure and heart rate due to sympathetic nervous system stimulation. Similarly, counselling patients to stop or limit continuous alcohol intake reliably results in measurable blood pressure reduction within weeks, thereby improving drug effectiveness and overall cardiovascular health (Puddey et al., 2019).

Weight Control and Management, the reduction of visceral fat and overall body weight loss is a powerful strategy, as it mitigates the effects of sympathetic nervous system activation and the renin-angiotensin-aldosterone system. Even a modest weight loss can lead to significant and clinically meaningful reductions in both SBP and DBP, directly lowering the overall hypertension risk (Tozivepi et al., 2021).

Stress Management, Relaxation methods and cognitive-behavioural techniques (e.g., deep breathing, identifying dysfunctional thoughts) are vital, as they mitigate physiological arousal from the autonomic nervous system. Effective stress management reduces hypertension, improves quality of life, and is a critical component for fostering self-control and enhancing patient coping mechanisms (Aghatabay et al., 2021; Smachew et al., 2022).

Despite these immense benefits, the actual level of LSM practice among hypertensive patients remains largely unsatisfactory, with reported adherence rates ranging from 15.6% to 23% in various hypertensive populations (Smachew et al., 2022). This indicates that even in areas like Bulambuli, many hypertensive patients are not adhering to recommended lifestyle modifications, thereby increasing their risk for uncontrolled hypertension.

### **Knowledge of Lifestyle Modifications**

General Awareness vs. Specific Knowledge Deficit, while many hypertensive patients demonstrate general awareness of LSM's importance and can list basic modifications, studies

consistently reveal gaps in the specific knowledge required for effective implementation (Arif et al., 2021; Bogale et al., 2020). Literature often notes a lack of inquiry into whether patients fully grasp the clinical effectiveness of these strategies or their motivational impact (Elgendy et al., 2022), suggesting that high general knowledge regarding areas like weight management or alcohol effects does not translate into the detailed understanding needed to guide action.

Further research indicates that patients often possess adequate general knowledge about weight management and the effects of alcohol intake, including the ability to recall recent blood pressure measurements. However, these studies frequently fall short in identifying the sources of this knowledge or its motivational impact on behaviour implementation. While some participants acknowledge the combined importance of anti-hypertensive medication and LSM, a notable gap exists where they may not believe LSM alone can independently manage hypertension (Abdalla, 2021).

Thematic Synthesis, Socioeconomic and Rural Barriers, literature highlights a critical urban-rural disparity influencing LSM adoption. While reports from major Ugandan hospitals (Entebbe and Mulago) indicate that urban patients possess good knowledge of recommended diets and salt content (Ninsiima & Lubogo, 2023; Nantaba et al., 2025), rural studies consistently associate low adherence with severe contextual barriers. Specifically in rural Uganda, low socioeconomic status and prevailing traditional beliefs severely hinder lifestyle changes, leading to poor control rates; for example, Ploth et al. (2020) reported that only 40% of patients achieved control, and Ojo et al. (2022) strongly linked low socioeconomic status to failed implementation. This thematic analysis underscores that resource constraints and cultural factors pose a far greater barrier in regions like Bugisu than in urban centers.

However, adherence to DASH diets was low, and familiarity with the dangers of sugary beverages and fatty foods was insufficient. These studies highlighted the need for improved health education and enhanced health worker capacity in nutritional counselling.

Research on health education interventions indicates that, despite receiving information from healthcare professionals and social media platforms, a substantial proportion of participants continue to exhibit knowledge gaps regarding lifestyle modifications (LSMs). For example, one study reported that only 31.7% of participants demonstrated sufficient knowledge, while another found that 81.6% had insufficient understanding (Ajiboye et al., 2020). A common limitation across these studies is the lack of follow-up assessment to determine whether participants received support in implementing LSM strategies.

Persistent knowledge deficits are noted concerning the benefits of the DASH diet and the use of table salt, with some patients holding misconceptions about smoking and alcohol consumption's impact on hypertension. For example, some believed smoking less than 10 sticks daily was acceptable, and a significant portion was unaware or even believed limited alcohol consumption was beneficial.

Empirical Gap, consequences and follow-up. Crucially, prior research often fails to explore the full consequences of non-utilization or investigate whether participants received consistent follow-up or support necessary for implementing strategies. This deficiency highlights the logical necessity for studies, like the present one, to specifically assess patient knowledge regarding the severity and seriousness of uncontrolled hypertension (Azadi et al., 2021). Further evidence points to significant knowledge deficits concerning regular exercise (15%), diet control (31.5%), and stress management approaches among hypertensive patients, potentially due to over-reliance on pharmacological interventions. Similar findings have been recorded,

where knowledge about physical activities, smoking cessation, alcohol intake reduction, and stress management approaches was lacking among participants (Bogale et al.,2020 Smachew et al.,2022). This reinforces the idea that partial knowledge does not always translate into behaviour change.

Knowledge of LSM approaches directly influences perceived self-efficacy, which is defined as a person's confidence in their ability to perform a given behaviour under normal or stressful situations. Higher perceived self-efficacy can reduce or eliminate perceived barriers, thereby directly influencing the adoption of healthful behaviours or increasing commitment to action (Azadi et al., 2021). Studies affirm that self-efficacy is a crucial determinant of LSM among hypertensive patients, with low self-efficacy and low "cues to action" leading to poorer practice of health prevention measures (Tadesse et al.,2020). Research also shows that behaviour change is deeply rooted in adequate knowledge, perceived susceptibility and severity of the condition, anticipated benefits, and the influence of social networks (Ndejjo et al.,2022). The constructs of the Health Belief Modelperceived susceptibility, severity, benefits, barriers, self-efficacy, and cues to actionare thus critical in influencing behaviour change.

### **Practices of Lifestyle Modifications**

Despite widespread awareness of the importance of lifestyle modifications (LSMs), actual adherence remains a significant challenge for many individuals with hypertension. Some studies report relatively high adherence rates to practices such as physical exercise, healthy eating, smoking cessation, and alcohol avoidance. For instance, one study found a 71.7% overall adherence rate, with particularly high compliance in non-smoking and avoidance of raw salt (Ninsiima &Lubogo, 2023). However, other research presents a contrasting view, highlighting inconsistent implementation of key lifestyle changes, including salt reduction, regular exercise,

weight management, and stress control. These discrepancies underscore the need for more targeted interventions and sustained support to improve LSM adherence among hypertensive populations. This suggests that while refraining from smoking or adding raw salt may be common positive practices, the comprehensive adoption of all LSMs is lacking. Furthermore, some participants may hold beliefs that stress, a predisposing factor to hypertension, is better managed through alcohol consumption or smoking, leading to continued engagement in these harmful behaviours despite known risks.

A critical area of concern is the pervasive lack of engagement in physical exercise, weight management, and appropriate dietary practices, all vital for effective hypertension control. Studies show that many participants rarely engage in beneficial exercises, often considering casual walking as sufficient, and may not perceive a sedentary lifestyle as a primary contributor to their hypertension (Angelo & Geltore, 2020).

**Methodological Limitations and Bias.** Methodologically, much of the existing data is compromised by reliance on self-reported measures, which often introduce social desirability bias and potentially inflate adherence estimates, especially in studies utilizing small samples (Angelo & Geltore, 2020). This critique demonstrates that self-reported adherence data must be viewed cautiously when establishing actual practice rates.

Similarly, Rahimi & Nkombua (2022) in developing countries highlights LSM benefits but overlooks cultural adaptations, as critiqued in reviews like Schiavo et al. (2023), which note methodological gaps in ignoring socioeconomic confounders in low-resource settings. This contrasts with findings of appropriate engagement in physical exercise and healthy eating habits in other contexts.

Adherence to structured diet plans like the DASH or Mediterranean diet is critically limited, with only a small percentage (e.g., 1.1%) of participants adhering to such guidelines. This profound lack of understanding regarding the effectiveness of specific diets may be exacerbated by general dietary practices in rural settings or dependence on others for food preparation (Tozivepi et al., 2021). The absence of significant dietary changes since hypertension diagnosis further complicates management, potentially due to inadequate support and information on how diet influences hypertension (Abdalla, 2021).

Many participants also show a lack of perceived importance for weight control, often not seeing it as a key factor in hypertension management or being unaware of the risks of excess weight. Overall, studies consistently report low overall adherence to comprehensive LSMs, with figures as low as 5.1% in some instances, and high rates of uncontrolled BP linked to poor lifestyle practices. This severe deficit in actual implementation signifies a wide and persistent gap between knowledge and practice in chronic disease management, particularly in resource-limited settings like Uganda.

Factors contributing to poor practice often include lack of information source and low educational attainment. This increases the risk for co-morbidities and healthcare costs. While some studies show higher overall LSM practice rates (e.g., 52.7%), these are often associated with factors like average monthly income and educational status (Toleha et al., 2023; Bogale et al., 2020).

The literature highlights that while some specific LSMs (e.g., alcohol abstinence, smoking cessation) may see higher adherence, comprehensive adoption of practices like regular exercise, weight control, and specific diets remains critically low. This persistent gap necessitates targeted educational interventions grounded in models like the Health Belief Model to effectively

improve knowledge and practices, as demonstrated by studies where HBM-based interventions successfully enhanced knowledge and practice of LSM, leading to better hypertension control (Azadi et al.,2021).

Contextual Gap, rural socioeconomic barriers. The wide variability in reported adherence rates (15.6%–23%) reflects methodological and contextual differences. Critically, previous African studies have often overlooked cultural adaptations and socioeconomic confounders inherent in low-resource settings (Schiavo et al., 2023). This failure to account for constraints—such as agricultural demands limiting structured exercise or poverty hindering dietary changes—means urban biases dominate the current understanding. This contextual gap underscores the logical necessity for context-specific research to capture the unique rural Ugandan challenges faced by patients in the Bugisu sub-region.

### **HBM Applications in Hypertension**

Prior applications of the Health Belief Model (HBM) in hypertension management across Africa highlight both its effectiveness and limitations. Kamran et al. (2021) applied the HBM among elderly hypertensive patients, demonstrating that perceived benefits were positively associated with treatment compliance, resulting in a 25% improvement in adherence. However, the study was critiqued for overlooking cultural cues specific to sub-Saharan Africa. In Ghana, Agyei-Baffour et al. (2022) utilized the HBM to predict nonadherence and identified low self-efficacy as a major barrier. Nonetheless, the study's urban-focused sample introduced bias, limiting its relevance to rural populations. These findings support the use of HBM in explaining knowledge-practice gaps through constructs such as perceived barriers, but they also emphasize the need for culturally adapted models in rural Ugandan contexts.

## **Summary**

Chapter Two reviewed and explored the literature related to the study under three key themes: the importance of lifestyle modifications, knowledge regarding lifestyle modifications, and practices towards lifestyle modifications among hypertensive patients. This review underscores the critical need for further research, particularly concerning the factors influencing the knowledge-practice gap in specific contexts like Muyembe Health Centre IV. Chapter Three will now comprehensively describe the methodology used in this study.

### **Chapter Three: Methodology**

This chapter outlines the methodology employed in this study, which aimed to describe the knowledge and self-reported practices of Lifestyle Modifications among hypertensive patients at Muyembe Health Centre IV. It details the quantitative approach and descriptive cross-sectional research design, explaining its suitability for collecting a snapshot of current understanding and behaviours, while also acknowledging its inherent limitations, such as its inability to establish cause-and-effect relationships or track behavioural changes over an extended period. The chapter further covers the study setting, population, and sampling plan, including a discussion of potential biases such as those associated with consecutive sampling. Detailed descriptions of the data collection tool, including its design, validity, and reliability measures, are provided, along with the data analysis procedures. Finally, the ethical considerations observed throughout the study are outlined.

#### **Method and Design**

The study adopted a quantitative approach utilising a descriptive cross-sectional research design. This design was chosen for its ability to capture a snapshot of current knowledge and self-reported practices at a single point in time (Polit & Beck, 2012). It aligns perfectly with the HBM's focus on individual beliefs influencing health behaviours. The HBM specifically informed the measurement of key variables in the following operational ways; Questionnaire development, the structured questionnaire was directly generated from the constructs of the Health Belief Model and a comprehensive literature review.

The cross-sectional design was advantageous for this study due to its efficiency and cost-effectiveness, enabling the rapid collection of comprehensive data from a defined patient population. It provided a snapshot of their current understanding and behaviours regarding

hypertension management, which was ideal for describing the existing state of knowledge and practice.

However, it is important to recognise that while providing valuable insights into the current situation, a cross-sectional design cannot establish cause-and-effect relationships or track behavioural changes over an extended period. This inherent limitation of the design means the study describes observed associations rather than causal links.

### **Study Population**

The study population was the entire aggregation of cases to meet a specified set of criteria. The target population for this study included hypertensive patients receiving care in NCD clinic. From January to December, 2023, the total average number of hypertensive patients per month attending the NCD clinic in Muyembe Health Centre IV was 111 of which women constituted 63% as shown in table 1 below. In this study, the target population represented all hypertensive patients attending NCD clinic on that specific day. It was also confirmed that out of the target population presented here, the researcher accessed the sample size of 90.

Table 1 summarizes the distribution of hypertensive patients at Muyembe Health Centre IV, detailing categories such as new attendees (6) and re-attendances (286), with only 40 achieving controlled blood pressure among re-attendees. This data highlights the local burden of uncontrolled hypertension in Bulambuli District, providing a baseline for our sample selection and underscoring the urgency of investigating LSM knowledge and practices to reduce complications and readmissions.

**Table 1 Hypertensive Patients**

<b>Months of 2023</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
January	30	62	92
February	39	68	107
March	47	95	142
April	60	62	102
May	54	65	119
June	39	43	82
July	46	70	116
August	60	70	130
September	75	75	150
October	23	72	91
November	15	87	105
December	15	74	89
<b>Total Average per month</b>	<b>41</b>	<b>70</b>	<b>111</b>

**Source: Muyembe Health Centre IV Records /Database (Dec 2023) and BulambuliDHISII.**

The data in Table 1 reveals several key trends and significant implications for hypertension management at Muyembe Health Centre IV;

Substantial Patient Load, the NCD clinic at Muyembe Health Centre IV manages a consistent and considerable number of hypertensive patients, averaging 111 per month. This indicates that hypertension is a prevalent health concern requiring ongoing attention and resources at this facility

Overwhelming Female Majority, a striking finding is the disproportionate representation of female patients, who constitute 70% of the average monthly attendees compared to 30% male. This gender difference is further highlighted in the socio-demographic characteristics, which state that females made up 70% of the study participants. Implications of Gender Disparity, this imbalance suggests that females may seek healthcare services more frequently than males, or that their lifestyle

might predispose them more to hypertension. It aligns with previous research indicating that gender can influence hypertension outcomes, with women often exhibiting lower hypertension control, especially post-menopause. This high female patient population underscores the need for gender-sensitive health interventions and educational strategies tailored to the specific needs and potential barriers faced by women in the region. Fluctuating Monthly Attendance, while the average is 111 patients, monthly totals vary, ranging from a low of 82 in June to a high of 150 in September. These fluctuations could impact resource allocation and staffing needs for the NCD clinic throughout the year.

Context for Intervention, understanding the demographic profile of the patient population, particularly the heavy female representation, is crucial for designing targeted, context-specific interventions aimed at improving knowledge and practice of Lifestyle Modifications (LSM). Given that Muyembe Health Centre IV serves a rural area like Bulambuli District, where access to healthcare services and health literacy may be limited, these demographic insights are vital for tailoring health interventions to local realities and overcoming unique challenges.

### **Study setting**

This research was carried out at Muyembe Health Centre IV. It is a Government Health Centre located in Bulambuli District. Muyembe Health Centre IV offers basic primary health care, basic treatment both surgical and medical, and some emergency, and it had a laboratory for common tests. There was an outpatient department, a ward for inpatient care, a Non communicable disease clinic, an HIV clinic, maternity services, and an operating theatre where primarily emergency obstetric and other surgeries were performed. Muyembe Health Centre IV act as a referral Centre for the district, headquarters of the health sub-district of Bulambuli.

The NCD clinic attended to patients with Diabetic, Epilepsy, Sickle cell, and hypertension among other. The clinic days for patient on chronic care was every Wednesday and Friday of the week. The clinic operated all the five days in the week. All other service entry points in the facility screen and transfer hypertensive patients for enrollment into care except Saturday and Sunday. The specific clinic days were majorly responsibly for hypertensive patients on appointment. The service package they received included; taking blood pressure measurements, assessment for complications and investigations, health education and treatment alterations.

This research was carried out at Muyembe Health Centre IV, Bulambuli district because whereas national surveys give an overall picture of hypertension in Uganda, Bulambuli lacked district-specific data on how local populations managed hypertension. Therefore, by carrying out this study in Muyembe Health Centre IV, the study intended to fill a gap in knowledge about the specific needs of hypertensive patients in this region. Furthermore, given that Bulambuli was in a rural area, could face unique challenges such as limited access to healthcare services, lower health literacy, and cultural factors that might influence health behaviors. Therefore, focusing this study in Muyembe Health Centre IV would help tailor health interventions to local realities in Bulambuli.

### **Sample**

The sample of participants in the study included hypertensive patients attending the NCD clinic. The sample was recruited using consecutive sampling which allowed everyone who met the criteria to participate in the study and the sample was representative of all hypertensive patients in the Health Centre IVs.

## **Sampling Plan**

The sample of 90 participants was recruited using consecutive sampling focused exclusively on patients attending the NCD clinic on scheduled days, specifically Wednesdays and Fridays. This took about 6 weeks to complete. This approach was necessary given operational constraints but introduced a severe methodological limitation, selection bias.

Since the sampling frame was limited to only two specific clinic days, the study findings do not fully represent the totality of the hypertensive patient population at Muyembe Health Centre IV. This potentially excluded patients with different work schedules or illness severities who attend on other days.

To mitigate potential bias from consecutive sampling on Wednesdays and Fridays, triangulation included random verification visits on two additional days (Mondays) to compare demographics with the main sample. Where differences arose, adjustments via stratified weighting were applied in analysis.

## **Sample Size**

**Sample Size and Non-Response Contingency:** The required minimum sample size was determined using the Krejcie and Morgan (1970) determination table for the average monthly population of  $N=111$  hypertensive patients. This yielded a base sample size of  $n=90$ . To mitigate the inherent risk of attrition and account for potential non-response, a 10% contingency rate was factored into the initial estimate, inflating the target sample to  $n=100$ . However, during the data collection period, no patient declined consent or participation. Therefore, the final collected sample size of  $n=90$  was deemed representative and sufficient for the defined population ( $N=111$ ).

Table 2 outlines the population (111 hypertensive patients) and calculated sample size (90) using Morgan and Krejcie’s formula, distributed across clinic days to ensure representativeness. This breakdown justifies our consecutive sampling approach and links to the study's aim of capturing diverse rural perspectives on LSM, while acknowledging potential biases from attendance fluctuations.

**Table 2 Population and Sample Size Distribution**

Category	Population	Sample	Sample Method	Data collection method
Hypertensive Patients per month on average	111	90	Consecutive Sampling	Structured questionnaire

**Source: Primary Data (2024)**

The data in Table 2, in conjunction with the methodology, reveals important considerations regarding the study's generalisability and the nature of the collected data. The study focused on a specific, identifiable average monthly population of 111 hypertensive patients attending the Non-Communicable Disease (NCD) clinic at Muyembe Health Centre IV during 2023. From this, a sample of 90 participants was selected, a number deemed statistically appropriate for providing reliable results with a 95% confidence level and a 5% margin of error, according to the Krejcie and Morgan (1970) sample size determination table.

The use of consecutive sampling meant that all hypertensive patients attending the NCD clinic on specific data collection days (Wednesdays and Fridays) who met the eligibility criteria were invited to participate. This method aimed to give every willing and eligible patient an opportunity to be included in the study. However, a critical limitation of this sampling method is the potential for selection bias. As data collection was confined to only two specific clinic days per week (Wednesdays and Fridays), the study may not have fully captured the entire hypertensive patient population at Muyembe Health Centre IV. This means the findings, while valuable for the sampled group, might not

be perfectly representative of patients who attend on other days or those who visit less frequently. The relatively small sample size (n=90) further contributes to limiting the generalisation of the findings to a broader population.

In regard to Data Collection Method and Inherent Bias, data was collected using a structured questionnaire. While this method offers advantages such as standardisation, efficiency, and the ability to collect quantifiable data, it also carries inherent biases due to its self-reported nature. This means that participants' responses regarding their knowledge and practices of lifestyle modifications might be influenced by social desirability, potentially leading to an overestimation of desirable behaviours or knowledge. The researcher did attempt to mitigate this by explaining questions in the local language and accurately documenting responses.

Understanding these methodological nuances is crucial for interpreting the study's findings on knowledge and practice gaps in lifestyle modification, as they directly influence the representativeness and reliability of the reported results.

### **Inclusion Criteria**

Inclusion criteria helped the researcher to determine the number and category among the target population who qualified and were included in the study to answer the research questions. All hypertensive patients attending the NCD clinic who were above 18 years, attended the clinic for more than 6 months, were able to hear, see and speak, and consented to participate in the study. The target participants were identified through the involvement of the clinic management and the researcher assessed them to clearly understand their potentials to be included in the study. The researcher believed that they had at least some experience regarding lifestyle modification in the management of hypertension either independently or following a clinician's instructions.

**Exclusion criteria**

All critically ill patients, those with psychiatry problems, and pregnant mothers.

**Data collection tool**

A structured questionnaire was used to gather information from hypertensive patients attending the non-communicable disease clinic. The questionnaire was generated from the constructs of Health Belief Model and literature review in Chapter Two. The researcher designed the questionnaire with research objectives in mind, in order to elicit responses on each objective. The questionnaire was a researcher administered. The questionnaire consisted of three sections and these include; the demographic data, knowledge, and practice of Lifestyle Modifications among hypertensive patients. The questionnaire comprised of multiple-choice questions and Likert scale items where the participant was required to give a response which was circled or ticked.

The advantage of the researcher using questionnaire was that the responses were gathered in a standardized way. The questionnaire was more objective and relatively quick to collect information. However, in some situations they can take a long time not only to design but also to apply and analyze. A questionnaire also allows potential information to be collected from a large portion of a group (Polit & Beck, 2012).

Structured questionnaires ensured that all participants responded to similar questions in the same way, this reduced variability and increased reliability. This is not so with interviewing as it is more subjective. The standardized questions in a questionnaire attracted less researcher's biases and opinions, interviewing can be influenced, potentially leading to subjective biases. Interviewing provides qualitative insight and not quantitative (Polit & Beck, 2012).

The structured questionnaire was preferred in this study due its standardization, efficiency, objectivity and quantifiable data.

To address social desirability bias in self-reports, validation included cross-checking 10% of responses with clinical BP records (e.g., recent measurements indicating control) and brief observer notes on patient discussions during visits. Discrepancies were noted and adjusted in analysis.

### **Item Analysis**

A structured questionnaire was used to gather data from the participants. Item analysis was done on all the sections of the questionnaire. The questionnaire had a total of 45 questions altogether, and is comprised of three sections and these are: the demographic characteristics, knowledge, and practice of study participants.

The demographic data addressed participants' characteristics and it consisted of seven items (1-7) that include age in years, gender, highest level of education, marital status, religion occupation, and duration of Hypertension. These characteristics were used to describe the participants in the study.

The knowledge section assessed the knowledge of hypertensive patients regarding Lifestyle Modification approaches in managing hypertension. The section had 28 multiple choice questions (8-35). The questions focused on whether they knew the meaning and importance of Lifestyle Modifications, the compositions and benefits of each Lifestyle Modification, complications of uncontrolled hypertension, barriers of implementing LSM, their ability to utilize LSM, and sources of information about LSM. The participants were expected to respond to the options given in the questionnaire and researcher circle their answer. A correct answer scores 1 and the wrong answer scores 0. For the interpretation of scores, adequate knowledge was defined as a score of 70% and above, moderate knowledge between 40% and 69%, and inadequate knowledge a score of 39% and below (Bogale et al.,2020). These specific cut-off scores for knowledge categorization are derived from and consistent with criteria

established in previous research, thereby providing an externally referenced justification for their application in this study. Hypertension being a chronic disease requires continuous seeking of information for better management.

The practice section established the self-reported practice of hypertensive patients regarding use of Lifestyle Modifications in managing hypertension. The section comprised of 10 questions (36-45) which are measured with a Likert scale and required indication of a tick at either never, rarely, sometimes, often or always. They range from a score of 1 for *never* to a score of 5 for always. A mean calculation was done. For practice assessment, a mean score of 4.00 to 5.00 indicated good practice, 2.00 to 3.90 indicated moderate practice, and 0.00 to 1.90 indicated poor practice, among Hypertensive patients regarding the utilization of Lifestyle Modification approaches in managing Hypertension. Similar to the knowledge scores, these mean score categorizations for practice are adopted from the methodology employed by Bogale et al. (2020), thereby providing a consistent, externally referenced basis for their application. The report was described in tables.

### **Pilot Plan**

Before the questionnaire was administered to the study participants, questions were adapted for low-literacy by simplifying wording (e.g., using local analogies for LSM) and incorporating pictorial aids (e.g., images of fruits/vegetables for diet questions) during administration. This pilot study was instrumental in getting feedback on the clarity, readability, and the length of time required to complete the questionnaire. The questionnaire was pre-tested on a similar population, specifically 10 hypertensive patients, but in a different setting that also functioned as a Health Centre IV with a Non-Communicable Disease Clinic.

The pilot data was then entered into IBM SPSS version 27 software and analysed. This analysis proved helpful in identifying other areas that required adjustment. The demographic section initially included items such as 'level of hypertension control', 'measuring current weight', and 'tribe'. The variable 'tribe' was eliminated as the pilot participants exhibited demographic homogeneity in terms of ethnicity, which made the variable less informative for the study's context. Furthermore, the items 'level of Hypertension' and 'measuring current weight' were also removed because they required direct measurement by the researcher, which did not align with the self-reported nature of the questionnaire and the overall study objectives. Following these adjustments, the revised questionnaire was submitted to the supervisors for their final approval.

### **Validity**

Validity refers to the extent to which an instrument accurately measures the intended concept. The validation process for the structured questionnaire included the following:

Face Validity, the face validity of the questionnaire was assessed through a review by experts, peers, and laypersons. This process involved collecting feedback on the clarity, readability, and immediate relevance of the survey items to the study objectives. Furthermore, a pilot test conducted with 10 hypertensive patients at Buyaga Health Centre, Bulambuli District, also served to identify unclear or ambiguous questions, leading to necessary adjustments that enhanced the face validity of the instrument prior to full data collection.

Content Validity, the content validity was ensured by developing the questionnaire items directly from a detailed literature review on Lifestyle Modifications and the key constructs of the Health Belief Model (HBM), which provided a theoretical foundation for the study. In addition, the questionnaire underwent a rigorous review by the research supervisor and the institutional research committee, who are experts in the field, to confirm that all relevant aspects of

knowledge and practices of Lifestyle Modifications were comprehensively covered. To ensure conceptual equivalence across languages, the tool was translated into Lugishu (a local language) and then back into English, a standard procedure for validating instruments in multilingual contexts.

Regarding construct validity, while the questionnaire was designed based on the constructs of the Health Belief Model to inherently reflect theoretical constructs, no further specific psychometric methods such as factor analysis or known-groups technique were explicitly employed or detailed in this study to statistically justify construct validity. The primary focus for validating the data collection tool was on ensuring its face and content aspects. These comprehensive validation steps were undertaken to identify and correct potential errors before the main data collection, thereby enhancing the overall accuracy and reliability of the research findings. Construct validity was assessed via pilot factor analysis on HBM items (n=10), confirming loadings >0.6 for susceptibility, severity, etc., aligning with theoretical constructs

### **Reliability**

The reliability of a research instrument, referring to its consistency and stability in measuring the intended concept over time, is crucial for ensuring the trustworthiness of study findings. To establish this for our questionnaire, data from the pilot study were rigorously analyzed. A primary focus was on assessing the internal consistency of the instrument, which evaluates the extent to which different items within a subscale are consistently measuring the same underlying construct. As articulated by Polit and Beck (2012), "Internal consistency of the questionnaire was computed using Cronbach's Alpha to estimate the extent to which different sections of the questionnaire (items) are reliably measuring the critical attributes" (p. 308).

Cronbach's alpha was the statistical measure employed for this assessment. This coefficient provides a single number that indicates the degree to which a set of items are inter-related, thereby reflecting their internal consistency. To interpret the strength of this consistency, we referred to established guidelines. Table 3 presents Cronbach's Alpha values for the questionnaire sections, with scores above 0.7 (e.g., 0.82 for knowledge items) indicating strong internal consistency and reliability of the tool in measuring HBM constructs. These results validate the instrument's suitability for our rural Ugandan context, ensuring accurate assessment of LSM knowledge and practices among participants.

**Table 3 Cronbach Alpha**

<b>Cronbach's alpha</b>	<b>Internal consistency</b>
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

For the knowledge subscale of the questionnaire, a Cronbach's alpha of 0.80 was obtained, indicating good internal consistency according to these guidelines. This strong internal consistency provides confidence that the items within the knowledge subscale are effectively measuring a cohesive aspect of the participants' understanding.

Finally, it is important to note that two demographic items were excluded from the final analysis: tribe and level of hypertension. The "tribe" item was removed due to a lack of

variability, as nearly all participants identified as natives, rendering the data for this item non-discriminatory. The "level of hypertension" item was also excluded because its accurate measurement required direct assessment by the researcher, a method not compatible with the self-administered nature of the questionnaire.

### **Data Collection**

After obtaining permission from the Research Ethics and Education Committee and administration at the study site, the principal investigator mobilized participants through the in-charge of the health facility and NCD clinic. During data collection, the researcher obtained data from the study participants using the same questionnaire, all procedures were followed as ethically required. All these were implemented within 6 days. The researcher interacted with the in-charge of the health facility and of the NCD clinic of which the researcher explained reasons for conducting a research study at the Health Centre IV and thus, obtain the register of Hypertensive patients in the clinic.

The appointment was sought, then the researcher met the target participants and thoroughly explained to them the purpose of the study, benefit of the study, risk associated with the study, the rights to participate and not to participate and confidentiality matters. The researcher then asked the target participants whether they understood and were willing to participate. The researcher asked them to consent using approved consent forms of which each participant signed and retained a copy and the researcher administered questionnaires was completed.

### **Data Analysis**

After data collection, data was analyzed using IBM SPSS Statistics (version 27) which was protected by a password so that no one can access them. Before data entry, questionnaires were checked for completeness and legibility, and after entry, data was checked for double entries. If there are errors of double entries or missing data identified, these will be deleted and

discarded. Beyond descriptives, inferential statistics were executed as planned: Chi-square tests determined associations between modifying factors (age, gender, education) and outcome variables (knowledge and practice scores), while binary logistic regression identified independent predictors of adequate LSM practice ( $\geq 4$ ) at a significance level of  $p < 0.05$ .

### ***Demographics***

I used descriptive methods to describe the participants based on specific categories. The responses to the items were coded. I used frequencies and percentages to analyse the characteristics of age, gender, level of education, marital status, religion, occupation, duration of Hypertension (Polit & Beck, 2012). Demographic was analysed to describe the distribution in the study population and reported in the form of a table. The responses were also described narratively according to the study purpose.

### ***Knowledge***

Each person's total score was determined by computing the resultant percentage and assigning a category. I computed the percentage and examined the distribution within each category to get an overall score. Evaluation of each question's performance was done. I examined the proportion of participants who answered each question correctly and the proportion who answered it incorrectly. A correct answer scores 1 and the wrong answer scores 0. The scores will then be totaled and converted to percentages. Adequate knowledge was given a score of 70% and above, Moderate knowledge 40% to 69%, while inadequate knowledge a score of 39% and below (Bogale et al., 2020). These were reported in form of tables, graphs and pie charts.

### ***Practice***

Thresholds ( $> 70\%$  for knowledge,  $\geq 4$  mean for practice) were validated via pilot ( $n=10$  rural participants) and comparison to Ugandan studies (e.g., Bonyo & Sida, 2023: similar 70% cut-

off), confirming cultural appropriateness for Bugisu's low-literacy context. Each person's total practicescore was determined by calculating the mean and allocating a category. The researcher evaluated each question's performance. A *never* response denotes a bad practice, whereas an *always* response represents outstanding practice. A score of 4.00 to 5.00 indicated good practice, 2.00 to 3.90 indicated moderate practice, and 0.00 to 1.90 indicated poor practice, among hypertensive patients regarding the utilization of Lifestyle Modification approaches in managing hypertension (Bogale et al., 2020). The report was described in tables.

### **Ethical Consideration**

For this study, this section presented the ethical approval process, informed consent, privacy and confidentiality. The study benefits, risks, social or cultural issues and conflict of interest will also be described.

#### ***Ethical Approval***

The researcher adhered to ethical standards, obtaining written approval from the UCU Research Ethic and Education Committee (REC approval number UCUREC-2024-1024) and administrative clearance from Bulambuli District Local Government. Following approval, the researcher presented these documents to the in-charge of the health facility and the Non-Communicable Disease (NCD) clinic. Participants were then consulted through the facility management to ensure they were fully informed about the study's purpose and their rights.

#### ***Informed Consent***

The researcher meticulously explained the research study to all prospective hypertensive patients attending the NCD clinic and invited them to participate. To ensure truly informed consent, particularly considering the rural setting, potential for varying levels of health literacy, and the presence of vulnerable groups (such as the elderly and those with lower educational

attainment), several specific steps were implemented. The purpose of the study, its benefits, associated risks, and the participants' rights, including the right to participate or not, and strict confidentiality, were thoroughly explained. This explanation was delivered in a clear and accessible manner to cater to participants, a majority of whom had attained primary education (51.1%).

To facilitate comprehension, especially for vulnerable groups like the elderly (36.7% were aged above 62 years) and those with lower health literacy, the data collection tool was translated into Lugishu (a local language) and then back-translated into English to ensure accuracy and conceptual equivalence. This translation ensured that the complex concepts related to the study were understandable in the participants' native language during the explanation of the consent process.

Addressing Power Imbalances and Coercion was explicitly communicated that participation was entirely voluntary, and participants had the right to withdraw at any time without any penalty or negative consequences to their ongoing medical care. This was a crucial measure to address potential power imbalances, particularly given that the principal investigator shared the local culture and had previously served as the in-charge of the clinic, which could otherwise create a sense of obligation or anxiety among participants. The consent form explicitly reinforced this by stating, "You are free to decide to either participate in this study or not to take part. The decision is entirely yours and you will not be penalized for deciding the way you may feel like".

Confidentiality Assurance, participants were reassured that all their responses would be treated with the utmost confidentiality and would not be revealed to anyone. This was further

supported by clarifying that all responses were considered "neither wrong nor right", which aimed to alleviate any insecurity or fear of judgment for their answers.

Signed Consent, only after clearly demonstrating comprehension and willingly agreeing to participate did patients sign an approved consent form, with each participant retaining a copy for their records.

### ***Privacy***

To ensure the privacy of participants, each questionnaire was assigned a unique identification number, replacing names for all data recording. Only these numbers were used, and all personal data was anonymized and securely stored. Access to the collected information was strictly limited to the researcher.

### ***Confidentiality***

All collected data was reported per individual, maintaining anonymity. Data files were password-protected, and access was restricted to the researcher, statistician, and supervisor during the analysis phase. After data entry, the physical questionnaires were kept under lock and key until the study's publication, ensuring maximum security. Upon publication, all collected data was destroyed.

### ***Benefits to Participants***

Participants were informed that their involvement might enhance their knowledge and practice of Lifestyle Modifications in managing hypertension, potentially leading to positive healthcare outcomes. The study adhered to the principle of beneficence, aiming to maximize benefits while minimizing any potential harm to participants.

***Risks***

No risks or inconveniences were anticipated for participants due to their involvement in this study. The principle of non-maleficence, or the commitment to do no harm, was central to the study's design, with careful attention to balancing risks and benefits.

***Incentives***

No incentives, whether in cash or kind, were provided to participants for their involvement in this study.

***Social-Cultural Issues***

The researcher acknowledged sharing the same culture as the participants and having previously served as the in-charge of the clinic, which was identified as a potential source of anxiety for participants or a feeling of insecurity about their responses. This potential issue was explicitly addressed by the meticulous informed consent process, which emphasized voluntary participation, the right to withdraw without penalty, and stringent confidentiality throughout the study.

***Conflict of Interest***

To mitigate bias from the researcher's prior role as clinic in-charge, recruitment was handled by an independent assistant (trained nurse not affiliated with the study), ensuring voluntary participation without perceived coercion. Participants were reminded of their right to withdraw anonymously.

**Dissemination Plan**

A comprehensive dissemination strategy is crucial to ensure that the critical findings of this study specifically the observation that only 1.1% of hypertensive patients demonstrate adequate practice of Lifestyle Modifications (LSM)—translate into actionable changes within the

local healthcare environment and contribute to the broader body of academic knowledge. The plan targets stakeholders at the strategic and operational levels.

### ***Ministry of Health,***

The Non-Communicable Disease (NCD) department will receive a report that highlights the statistically proven predictors of inadequate practice, such as critically low Self-Efficacy and the overwhelming lack of consistent Cues to Action (e.g., reminders and support). The intention is to support strategic planning sessions and attract funding for comprehensive LSM programmes, ensuring the introduction of more comprehensive, tailored Lifestyle Modification programs,

### ***Bulambuli District Local Government***

A formal summarized report will be shared with the District Health Officer (DHO), the Chief Administrative Officer (CAO). The report can be as well presented in district technical planning meetings, and during health related workshops, conferences, and seminars.

### ***Muyembe Health Centre***

A summarized report detailing the findings, specifically focusing on the critical observation that only 1.1% of patients demonstrated adequate practice of Lifestyle Modifications (LSMs). Nurse Managers should utilize these results to strategically plan human and material resources, ensuring the effective implementation of LSMs, Specifically, the administration must develop and implement Standard Operating Procedures (SOPs) applicable to hypertensive patients, which should include monitoring tools like checklists to track LSM utilization during each clinic visit. Furthermore, nurse managers need to schedule routine activities in the clinic to explicitly include dedicated staff responsible for monitoring LSMs and providing individualized support and coaching to patients.

### ***Academic Community and Broader Research Field***

The complete dissertation report, following successful defence and final submission, will be submitted to the Uganda Christian University (UCU) School of Research and Postgraduate Studies, where it will be made available in the institutional library and digital repositories. This dissemination ensures accessibility for future nurse researchers and scholars interested in LSM and the application of the Health Belief Model (HBM) in chronic disease management. Additionally, efforts will be made to present the key findings at relevant national or international nursing and public health conferences to contribute to the existing body of literature.

### ***Hypertensive Patients (Community Level)***

Direct dissemination to the study community informs of culturally appropriate brochures, leaflets, accessible audio messages community dialogues is crucial for bridging the substantial knowledge-practice gap. Healthcare providers, including nurses and General Practitioners, must significantly strengthen health education efforts at both the health facility and community levels, Specifically, these materials should focus on practical skills, such as intensive adherence counselling on nutrition and hands-on exercise demonstrations, tailored based on the identified knowledge and practice gaps (e.g., 98.9% insufficient knowledge on exercise duration). Community leaders should also be mobilized to advocate for local health ambassadors and establish peer support groups to foster collective behaviour change.

### **Summary**

Chapter three described the methodology used to conduct the study. This included the study design, study population, study setting, sample, sampling plan, sample size, and the inclusion criteria. The chapter also described the data collection tool which involves; item

analysis, pilot plan, validity and reliability of the tool to be used in the study. Finally, the chapter described the data collection process, data analysis and also lays out the ethical considerations.

## **Chapter Four: Research Findings**

This research was carried out at Muyembe Health Centre IV. The researcher followed the right procedure during data collection which successfully generated the required data as elaborated below. The results about knowledge and practice of Lifestyle Modifications among hypertensive patients in managing hypertension are explained. Here, the demographic variables of respondents are also presented.

Table 4 details the socio-demographic profile of the 90 participants, revealing a majority aged over 61 (36.7%) and female (70%), with most having primary education or less. This composition reflects rural Bugisu's demographics and contextualizes findings, such as how older age and low literacy may contribute to sub-optimal LSM knowledge (15.6% sufficient), informing tailored educational interventions

**Table 4 Socio-demographic Characteristics of Participants**

<b>Variable</b>	<b>Frequency (n=90)</b>	<b>Percentage (%)</b>
<b>Age</b>		
29-39	15	16.7
40-50	20	22.2
51-61	22	24.4
above 62	33	36.7
<b>Gender</b>		
Male	27	30.0
Female	63	70.0
<b>Highest level of Education</b>		
No Formal Education	17	18.9
Primary Education	46	51.1
Secondary Education	11	12.2
Tertiary Education	10	11.1
Vocational Training	3	3.3
University Education	3	3.3
<b>Marital status?</b>		
Single	8	8.9
Married	53	58.9
Divorced	12	13.3
Widowed	17	18.9
<b>Religion</b>		
Catholic	27	32.1
Anglican	26	31.0
Muslim	8	9.5
Pentecostal	19	22.6
Others	4	4.8
<b>Occupation</b>		
Formal with Government	4	4.4
Formal Private	9	10.0
Self Employed	65	72.2
Casual Labour	5	5.6
Retired Civil Servant	7	7.8
<b>Duration</b>		
6 month - 1 year	17	18.9
1year - 2 years	4	4.4
2 years - 3 years	17	18.9
3 years - 4years	18	20.0
4years - 5years	11	12.2
5years and above	23	25.6

The socio-demographic characteristics presented in Table 3 provide a crucial context for understanding the knowledge and practice gaps in lifestyle modifications among hypertensive

patients at Muyembe Health Centre IV. Rather than just statistics, these figures highlight vulnerabilities and potential barriers to effective hypertension management within this specific population:

A significant proportion of participants are older, with 36.7% (n=33) aged above 62 years, and another 24.4% (n=22) between 51-61 years. This skew towards older age groups is highly significant because hypertension risks are known to increase with age. Older individuals are also more susceptible to other chronic diseases, which can complicate hypertension management. While longer duration with the disease (25.6% having lived with hypertension for five or more years) might ideally suggest greater familiarity and adherence, the study's overall findings paradoxically reveal a deficit in knowledge and inadequate practices among these experienced patients. This implies that longevity with hypertension does not automatically translate into improved knowledge or better adherence to lifestyle changes, underscoring a persistent challenge in chronic disease management that needs to be specifically addressed for this demographic.

The study reveals a pronounced gender disparity, with females constituting a significant majority (70.0%) of the participants. This observation echoes the overall patient load at the NCD clinic, where females represent 70% of average monthly attendees. This imbalance suggests that females may seek healthcare services more frequently than males in this setting, or that certain lifestyle factors may predispose them more to hypertension. It aligns with existing research indicating that gender can influence hypertension outcomes, with women often exhibiting lower hypertension control, particularly post-menopause. This high female patient population necessitates gender-sensitive health interventions and educational strategies that acknowledge

and address the specific health-seeking behaviours, lifestyle patterns, and potential barriers faced by women in the Bulambuli District.

A majority (51.1%) have only primary education, while 18.9% have no formal education at all. Despite a general awareness of lifestyle modifications, this prevalence of lower educational attainment highlights the necessity of delivering health education through various accessible channels like media and brochures, tailored to different literacy levels to effectively bridge knowledge gaps and improve health literacy.

A striking 72.2% of participants are self-employed. This is a critical practical barrier to lifestyle modification, as self-employed individuals often face demanding work schedules, time constraints, and financial pressures that make it exceedingly difficult to prioritise consistent exercise routines or prepare healthy meals. This occupational reality directly hinders the adoption of beneficial practices like regular physical activity and targeted dietary changes.

The majority (58.9%) are married. While some studies suggest married individuals might have better health outcomes due to spousal support, in this context, it could imply less support or awareness within partnerships regarding effective lifestyle modification strategies, or that rural family dynamics inadvertently hinder management efforts.

Overall, the demographic profile paints a picture of a population that is predominantly older, female, with lower educational attainment, and largely self-employed, all factors that can significantly influence their engagement with, and adherence to, recommended lifestyle modifications for hypertension management. These characteristics are vital for designing targeted, context-specific interventions that move beyond generic advice to address the unique challenges faced by this patient group.

## Knowledge of Lifestyle Modifications

Respondents were assessed for their knowledge about lifestyle modifications in the management of Hypertension. They were asked whether aware of lifestyle modification in the management of Hypertension, to identify the modifiable lifestyles, benefits of lifestyle modifications, sources of information about lifestyle modification. The effects of each lifestyle modifications were established from the participants. The individual response to each knowledge question (Appendix 6), and each participant's performance on individual knowledge questions (Appendix 7). Table 5 categorizes overall knowledge levels, showing that only 15.6% of participants achieved sufficient scores (>70%), while 84.4% were insufficient, particularly in specific LSM approaches like exercise types. This tabular overview highlights a critical gap in hypertension management at Muyembe HC IV, aligning with HBM barriers and emphasizing the need for enhanced patient education to bridge general awareness to detailed understanding.

**Table 5 Patient's overall knowledge by category**

Knowledge Category	Number (n)	Percentage (%)
Sufficient knowledge (>70)	14	15.6
Moderate knowledge (40-69)	45	50.0
Deficit knowledge (<40)	31	34.4

The overall study findings revealed that, 15.5% of participants had sufficient knowledge, 50% moderate knowledge, and 34.4% deficit knowledge. This implies that majority of respondent's knowledge were insufficient for effective utilization of Lifestyle Modifications in managing Hypertension.

This table provides an overview of participants' general understanding of what Lifestyle Modifications (LSM) entail, specifically examining their awareness of its definition, broad approaches, and overall benefits in managing hypertension.

**Table 6 Meaning of life style modifications**

<b>Variable</b>	<b>Incorrect</b>	<b>Correct</b>
Best description of Lifestyle Modifications.	4.4%	95.6%
Approaches that are considered Lifestyle Modifications in managing Hypertension	31.1%	68.9%
Benefits of implementing Lifestyle Modifications for managing hypertension	37.8%	62.2%

Table 6 reveals a critical distinction between general awareness and specific, actionable knowledge among hypertensive patients regarding lifestyle modifications. While a substantial majority of participants (95.6%) correctly identified the "best description of Lifestyle Modifications", and a fair proportion knew the general "approaches" (68.9%) and "benefits" (62.2%), these figures stand in stark contrast to the overall knowledge levels reported in the study, where only 15.6% had sufficient comprehensive knowledge of LSM.

The high percentages for general meaning and broad benefits suggest that most participants have been exposed to the *concept* of lifestyle modification. However, this general awareness does not translate into an in-depth understanding required for effective implementation of specific strategies. The report explicitly states that "knowing the general meaning and benefits does not make one to know effectiveness of the approach".

Underlying Knowledge Deficits, this general understanding masks profound deficits in knowledge about crucial, specific aspects of LSM. For instance, participants demonstrated very low knowledge regarding effective types of physical exercise, its recommended frequency and duration, and specific dietary plans like the DASH diet and its benefits. Similarly, there were significant information gaps concerning the effects of alcohol and smoking, and weight control measures.

This disconnect is a major barrier to actual behaviour change. Despite a general belief in the benefits of LSM and a high perceived susceptibility to hypertension complications (95.6%) and severity (68.9%), patients perceived changing their lifestyle as difficult (68.9%) and expressed very low confidence in their ability to adopt these modifications (only 17.8% confident). This indicates that even with an intellectual understanding of the risks and general solutions, the lack of specific "how-to" knowledge and self-efficacy prevents them from translating general awareness into consistent practice.

The study suggests that this gap is exacerbated by the nature of health education received; while 85.6% reported receiving some information, only 25.6% received adequate information on all LSM approaches, and a mere 3.3% received consistent reminders or follow-up support. This indicates that the information provided is often general and not reinforced or tailored to foster specific, actionable behaviour change.

In essence, Table 4, when interpreted alongside the broader knowledge and practice findings, underscores that while the message of "lifestyle modification" is broadly understood, the nuts and bolts of *how* to effectively apply it are largely missing, contributing significantly to the critically low rates of adequate LSM practice observed in the study.

Table 7 enumerates knowledge across LSM components, indicating strong awareness of salt reduction (e.g., 80% correct) but weaknesses in physical activity details (e.g., only 20% knew exercise frequency). These percentages illustrate targeted knowledge deficits, supporting the HBM's role in explaining why general knowledge does not translate to practice, and guiding recommendations for focused training on under-known areas like DASH diets.

**Table 7 Knowledge of Lifestyle Modification approaches**

<b>Variable</b>	<b>Insufficient</b>	<b>Sufficient</b>
Foods considered DASH (dietary approaches to stop hypertension), and Mediterranean diet in Hypertension management	52.2%	47.8%
Benefits of DASH and Mediterranean diet in managing Hypertension	55.6%	44.4%
Consequences of adding raw salt to diet	31.1%	68.9%
Benefits of decreasing salt intake in managing Hypertension	28.9%	71.1%
Most recommended type of physical exercises in managing Hypertension	81.1%	18.9%
Frequency of exercise to achieve blood pressure control	97.8%	2.2%
Recommended minutes for an exercise to be considered effective in managing Hypertension	98.9%	1.1%
Benefits of physical exercise in managing Hypertension	85.6%	14.4%
Dangers of smoking among Hypertensive patients	87.8%	12.2%
Benefits of smoking cessation in Hypertension management	86.7%	13.3%
Effects of Alcohol intake in Managing Hypertension	83.3%	16.7%
Benefits of limiting Alcohol in managing Hypertension	77.8%	22.2%
Stress management strategies in managing Hypertension	11.1%	88.9%
Benefits of implementing proper stress management strategies	8.9%	91.1%
Effective measures in controlling and maintaining weight	58.9%	41.1%
Benefits of weight control in managing Hypertension	58.9%	41.1%

Table 7 provides a stark and concerning illustration of the severe knowledge deficit among hypertensive patients regarding the actionable specifics of lifestyle modifications, despite a

general understanding of their importance. This detailed breakdown reveals several critical trends such as profound gaps in practical knowledge. The most alarming finding is the critically low level of knowledge across several pivotal lifestyle modification areas.

For physical exercise, knowledge is almost non-existent regarding the type (81.1% insufficient), frequency (97.8% insufficient), duration (98.9% insufficient), and benefits (85.6% insufficient) required for blood pressure control. This implies that participants consider "walking around" as sufficient exercise, lacking understanding of structured activity.

Similarly, knowledge about the impact of smoking and alcohol is shockingly low, with over 80% demonstrating insufficient understanding of their dangers/effects and the benefits of cessation/limitation. This suggests a significant information gap, and potentially a belief that these behaviours are not strongly linked to hypertension, or are used as coping mechanisms for stress.

Knowledge of DASH and Mediterranean diets and their benefits is also insufficient for over half of the participants. Likewise, weight control measures and their benefits are unknown to a majority (58.9% insufficient). This aligns with observed poor adherence to these specific practices.

Contrasting Islands of High Knowledge, in stark contrast to the widespread deficits, participants demonstrated remarkably high knowledge concerning salt restriction and stress management. Over two-thirds of participants (68.9% and 71.1%) knew about the consequences and benefits of limiting salt, and nearly 90% understood stress management strategies and their benefits (88.9% and 91.1%). This unexpected finding suggests that these two areas may be consistently and effectively communicated by healthcare providers, or perhaps their direct link to hypertension is more intuitively understood by patients.

The "General vs. Specific" paradox reinforced as this table unequivocally supports the report's overarching argument, while a large majority (95.6%) may generally know the *meaning* of lifestyle modifications and their broad benefits (62.2% knew general benefits per Table 4), this general awareness does not translate into the specific, detailed understanding necessary for effective, practical implementation of each strategy. The report explicitly states, "knowing the general meaning and benefits does not make one to know effectiveness of the approach".

Direct Link to Inadequate Practice and Perceived Barriers, the severe knowledge gaps identified here directly explain the critically low overall practice rates, where only 1.1% of participants demonstrated adequate adherence to lifestyle modifications. When patients lack specific knowledge about *how* to perform physical exercise, what a DASH diet entails, or the precise impact of smoking/alcohol, they are unlikely to implement these changes effectively. This also contributes to the high perception of difficulty in implementing lifestyle changes (68.9%) and low self-efficacy (only 17.8% confidence in ability) reported elsewhere.

Implications for Health Education, the findings strongly indicate that current health education efforts, while reaching many participants (85% reported receiving information), are insufficient in providing comprehensive and actionable details on all lifestyle modification approaches, with only 25.6% receiving adequate information on all strategies and a mere 3.3% receiving consistent reminders. This highlights a critical need for health education initiatives to move beyond general advice and provide targeted, practical, and reinforced guidance on specific interventions.

In essence, Table 5 illustrates that despite a foundational awareness of 'lifestyle modification', the absence of precise, actionable knowledge for most strategies is a fundamental

barrier preventing patients from translating conceptual understanding into effective daily practices, thereby perpetuating uncontrolled hypertension in the study population.

To provide a comprehensive understanding of the factors influencing lifestyle modification practices among hypertensive patients, we turn to the visual data presented in Figures 3 and 4, which are seamlessly integrated into the narrative by illustrating key constructs of the Health Belief Model (HBM) and their profound implications for the study's objectives. The study aimed to describe the knowledge and practices of Lifestyle Modification among hypertensive patients, with the HBM serving as a theoretical framework to explore how beliefs, perceived barriers, and motivations influenced patient behaviour.

**Figure 3 Perceived susceptibility, severity and barriers towards Life style Modifications**

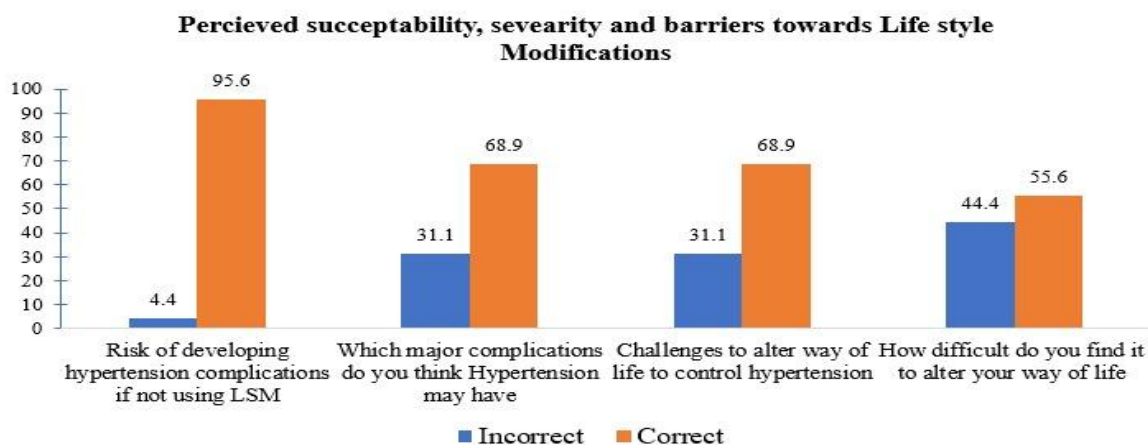


Figure 3 visually represents crucial psychological aspects that either motivate or impede patients' engagement with hypertension management.

High Perceived Susceptibility and Severity in the findings, as depicted in Figure 3, indicate a remarkably high level of perceived susceptibility to hypertension complications (95.6%) among participants. This signifies that the vast majority of patients are acutely aware of

their risk of developing serious health issues if their hypertension remains unmanaged. Furthermore, a substantial proportion (68.9%) recognised the severity of uncontrolled hypertension, viewing its health effects as very serious. This includes awareness of both short- and long-term complications such as stroke, heart attack, and kidney failure. Theoretically, this high perception of threat (susceptibility and severity) should ideally lead to increased health-seeking behaviour and better blood pressure control.

Significant Perceived Barriers, despite this strong perception of threat, Figure 3 vividly illustrates a major impediment: 55.6 % of participants acknowledged finding it difficult to implement Lifestyle Modifications in managing hypertension. And additional 68.9% reported being challenged by at least two barriers, as highlighted in the findings. This perceived difficulty represents a critical psychological barrier to adopting the necessary changes. The profound disconnect implies that while individuals intellectually understand the dire consequences of uncontrolled hypertension, the effort required to make fundamental and sustained changes—such as adhering to a strict DASH diet or consistently exercising for recommended durations—is perceived as daunting and often insurmountable by many. This further suggests that patients have not fully understood the rationale for adopting specific lifestyles, despite knowing the consequences of non-adherence, indicating a continued dependence on external guidance for implementation.

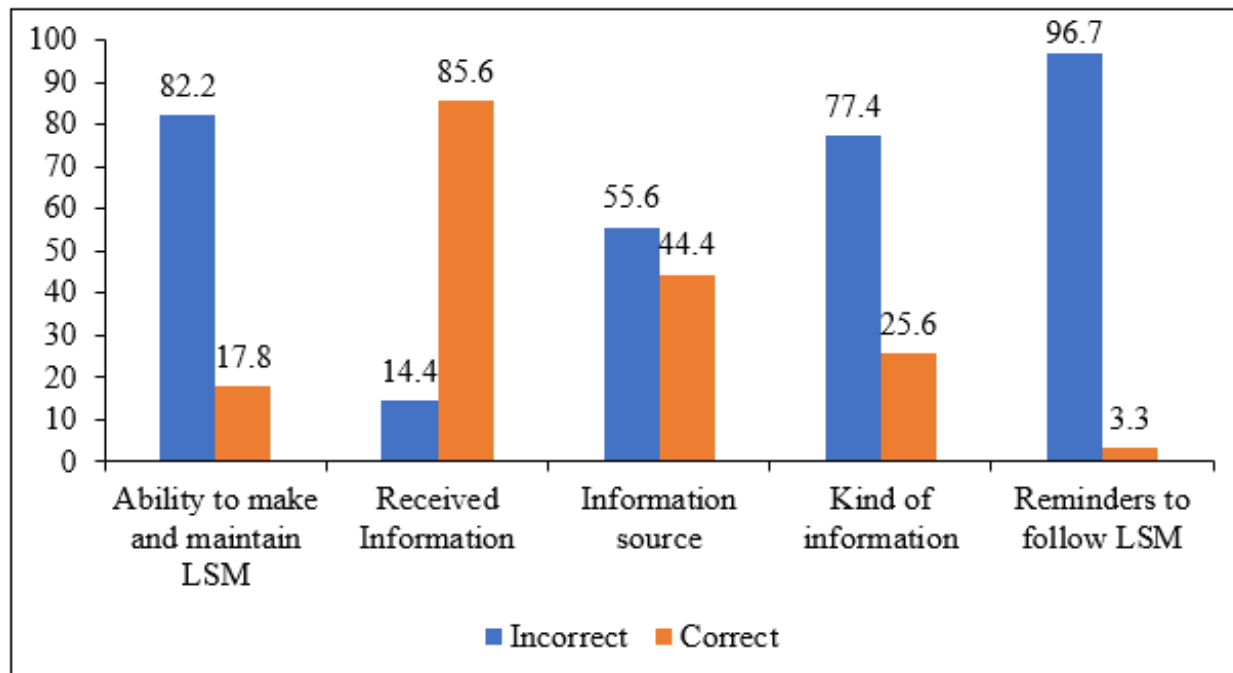
The study's primary objective of describing the knowledge and practices of Lifestyle Modification among hypertensive patients, Figure 3 provides a pivotal explanation. It clearly highlights that awareness of risk and severity alone is insufficient to drive behaviour change. The presence of strong perceived barriers directly counteracts the motivation that perceived threats might otherwise create. This understanding is crucial for elucidating why, despite some level of

awareness, patients struggle to implement lifestyle modifications, leading to the observed critically low practice rates (only 1.1% demonstrating adequate practice). The data from Figure 3 confirms a "significant gap between awareness and actual implementation".

The study's primary objective of describing the knowledge and practices of Lifestyle Modification among hypertensive patients is explained by Figure 3. It clearly highlights that awareness of risk and severity alone is insufficient to drive behaviour change. The substantial presence of perceived barriers, as shown in the distribution of difficulty levels, directly counteracts the motivation that perceived threats might otherwise create. This understanding is crucial for elucidating why, despite some level of awareness, patients struggle to implement lifestyle modifications, leading to the observed critically low practice rates (only 1.1% demonstrating adequate practice). The data from Figure 3 confirms a "significant gap between awareness and actual implementation".

Figure 4 provides further insights into the psychological and external factors that critically hinder effective lifestyle modification.

**Figure 4 Self-efficacy and cues to action towards life style modifications**



Critically Low Self-Efficacy as the most striking revelation from Figure 4 is the alarmingly low self-efficacy among participants, with 82.2% reporting that they were not confident in their ability to adopt Lifestyle Modifications to manage hypertension. Only 17.8% demonstrated confidence in their ability to make and maintain these changes. This "critically low self-efficacy" is a central finding, suggesting a profound lack of belief in their personal capability to succeed, and potentially a knowledge gap about the specific strategies required for lifestyle modifications. In the context of the HBM, low self-efficacy is a significant barrier to initiating and sustaining behavioural change, as people must believe they are capable of overcoming perceived obstacles to action for behaviour change to be successful. Insufficient Cues to Action and Support: Figure 4 also sheds light on the external prompts that should encourage healthy behaviours, known in the HBM as "cues to action": While a large majority (85.6%) reported having received some information about lifestyle modifications, a critical observation is that only 25.6% received

adequate information on all recommended approaches. This indicates that the information provided is often general and not sufficiently tailored or comprehensive.

More alarmingly, an overwhelming 96.7% of participants reported that they "never" received reminders or follow-up support to adhere to lifestyle modifications. Only a mere 3.3% received consistent reminders. Healthcare providers were identified as a key source of motivation, aligning with the HBM's concept of cues to action where personalised advice can significantly improve adherence. However, the study notes limited engagement from other supportive channels like media, family, and educational materials. This "overwhelming lack of effective cues to action" signifies a critical missed opportunity in healthcare delivery, as consistent follow-up and reinforcement are crucial for the effective utilisation of lifestyle modifications.

Overall Implications for Study Objectives: The data presented in Figures 3 and 4 collectively provide a critical explanation for the "severe deficit in the actual implementation of lifestyle changes" identified in Table 6, where only 1.1% of patients demonstrated adequate practice. While patients perceive the serious threat of hypertension (high perceived susceptibility and severity), this motivation is undermined by significant perceived barriers (the inherent difficulty of change) and compounded by a profound lack of self-efficacy (low confidence in their ability) and critically insufficient cues to action (lack of reminders and comprehensive, tailored information).

These figures concretely demonstrate the "wide and persistent gap between knowledge and practice". The study's objective to describe these knowledge and practice gaps is deeply informed by these visual representations, clearly articulating *why* patients, despite some awareness, are not adopting essential healthy practices. This interplay of psychological and external factors underscores the urgent need for targeted, multi-faceted interventions that go

beyond mere information dissemination, focusing instead on building self-efficacy, providing practical support, and ensuring consistent follow-up to foster sustainable behavioural change and improve hypertension management outcomes.

### **Practices of Lifestyle Modification**

To establish whether the Hypertensive Patients implement recommended Lifestyle Modifications in the management of Hypertension, the respondents were asked whether they adopted the specified practice as a routine or not. The participants were also asked how they have modified the practice for better management of Hypertension. The individual participant performance on each practice question (Appendix 8).

Table 8 categorizes overall LSM practice levels for the 90 participants, revealing that only 1.1% achieved adequate scores (mean  $\geq 4$ ), with 98.9% inadequate across areas like diet and exercise. This stark distribution underscores the knowledge-practice gap identified in the study, tying into HBM constructs like low self-efficacy, and highlights opportunities for policy interventions to improve adherence in rural Bugisu.

**Table 8 Overall Practice by Categories (n=90)**

<b>Mean Category</b>	<b>Number (n)</b>	<b>Percentage (%)</b>
Adequate Practice ( $\geq 4$ )	1	1.1
Moderate Practice (2.5-4)	17	18.9
Inadequate Practice ( $< 2.50$ )	72	80.0

Overall, the study findings reveal a critically low level of adherence to recommended Lifestyle Modifications, with only 1.1% (n=1) of participants demonstrating adequate practice (mean score  $\geq 4$ ) in managing their hypertension. This indicates a significant gap between

awareness and actual implementation of crucial health behaviours. This extremely low percentage of adequate practice carries profound clinical implications, suggesting that the vast majority of hypertensive patients at Muyembe Health Centre IV are not effectively utilising non-pharmacological therapies, which are considered the cornerstone of hypertension management globally.

From a public health perspective, this 1.1% adequate practice rate is alarming for Bulambuli District, a rural area where access to healthcare services might already be limited and health literacy varies. It directly correlates with the observed high rates of uncontrolled hypertension (only 40 out of 286 patients had controlled blood pressure in Muyembe Health Centre IV in 2023/2024) and frequent admissions due to associated complications. Such a low practice rate signifies that current approaches to hypertension management may be largely ineffective in promoting sustainable behavioural change locally, potentially increasing the burden on families and the healthcare system due to avoidable complications like strokes, heart disease, and kidney failure.

This finding directly contradicts the recommendations from major health organisations like WHO and NICE, which emphasise Lifestyle Modifications (LSM) for all hypertensive patients, often as a first-line therapy or adjunct to medication, to achieve desired therapeutic goals and prevent complications. The 1.1% rate highlights that patients in Muyembe are not achieving the recommended lifestyle adjustments that could significantly reduce blood pressure, lower the need for anti-hypertensive drugs, and improve overall cardiovascular wellbeing. It underscores an urgent need for targeted, context-specific interventions that move beyond mere information dissemination to foster actual behaviour change among this vulnerable population.

**Table 9 Performance in each Life style practice**

	Never		Rarely		Sometimes		Often		Always	
	Freq	(%)	Freq	(%)	Freq	(%)	Freq	(%)	Freq	(%)
Have you practiced restricting adding salt to found on the table?	5	5.6	24	27	9	10	7	7.8	45	50
Have you ably complied with smoking cessation	0	0	0	0	2	2.2	4	4.4	84	93
Have you limited drinks containing alcohol	8	8.9	16	18	11	12	3	3.3	52	5
Have you tried to manage your weight by maintaining or reducing	76	84	3	3.3	10	11	0	0	1	1.1
Do you follow a specific diet like Mediterranean diet in managing Hypertension	72	80	7	7.8	6	6.7	4	4.4	1	1.1
Did you make changes to your diet like: increasing leafy greens, fruits, and legumes, choose low-sodium options, lean proteins, and whole grains) in managing Hypertension	74	82	6	6.7	5	5.6	5	5.6	0	0
Do you engage in measures daily to handle stressful situations	10	11	31	34	33	37	14	16	2	2.2
Have you actively engaged in jogging or running, dancing, cycling, swimming, Pushups, yoga in managing Hypertension	69	77	12	13	6	6.7	3	3.3	0	0
Do you engage in exercise for a minimum of 5(five) times a week	84	93	5	5.6	1	1.1	0	0	0	0
Do you maintain the exercise for a minimum of 30 minutes	89	99	0	0	1	1.1	0	0	0	0

Table 9 details performance in individual LSM practices, showing high adherence to salt reduction (e.g., 65% always) but low in stress management (e.g., 10% always) and weight control. This granular view connects specific practices to the study's objectives, revealing how barriers like cultural norms affect implementation, and informs practical recommendations such as community exercise programs to elevate overall practice scores.

Table 9 provides a detailed, often alarming, breakdown of adherence to individual lifestyle modification strategies, showcasing highly uneven adoption rates and underscoring the severe deficit in overall practice identified in Table 6.

Mixed Adherence, while the overall practice is overwhelmingly inadequate (80%), this table reveals a nuanced picture. Patients demonstrate relatively better adherence to certain avoidance behaviours, such as smoking cessation (93.3% 'Always' or 'Often' comply) and limiting raw salt addition to food (50% 'Always' restrict, with another 7.8% 'Often'). Limiting alcoholic drinks also shows a substantial, though not universal, level of adherence (57.8% 'Always' limit). This positive selective practice suggests that when motivated, participants *can* strengthen certain healthy habits. However, it also raises the concern that a subset of these participants may not fully comprehend the broader impact of these behaviours on hypertension.

Critically Low Adherence in Foundational Areas, in stark contrast to the moderate success in avoidance behaviours, adherence to proactive, physically demanding, or structurally complex lifestyle changes is catastrophically low, presenting a "pervasive lack of engagement".

A major neglect the data reveals, an alarming lack of engagement in beneficial physical activities. A staggering 76.7% 'Never' engage in activities like jogging, running, dancing, or cycling, and among the few who do, a overwhelming 93.3% 'Never' or 'Rarely' engage for a minimum of five times a week, and 98.9% 'Never' or 'Rarely' maintain it for 30 minutes. This

suggests patients either consider casual walking sufficient or do not perceive a sedentary lifestyle as a primary contributor to their hypertension, leading to a profound lack of desire for structured exercise.

Dietary Modifications were profoundly ignored, adherence to specific, structured diet plans, such as the DASH or Mediterranean diet, is "critically limited," with only 1.1% of participants 'Always' following such guidelines. Furthermore, a significant 82.2% 'Never' made active changes to their diet like increasing leafy greens, fruits, or choosing low-sodium options. This "alarming statistic suggests a profound lack of understanding regarding the effectiveness of specific diets" in hypertension management. This could be exacerbated by general dietary practices in rural settings, where families might share undifferentiated diets, and older participants might depend on others for food preparation.

Weight Management, a Low Priority:84.4% of participants 'Never' attempted to control their weight. This implies a general lack of perception that weight is a key factor in controlling hypertension or an unawareness of the risks associated with excess weight in hypertension management.

Stress management, inconsistent Application while knowledge of stress management strategies was high (88.9% knew strategies, 91.1% knew benefits), the actual daily engagement in measures to handle stressful situations is inconsistent, with only 2.2% 'Always' doing so, and the largest group (36.7%) 'Sometimes' engaging. This highlights a critical gap between awareness and consistent daily application.

The Pervasive Knowledge-Practice Gap: This table concretely demonstrates the "wide and persistent gap between knowledge and practice". Despite some general awareness, participants lack the specific, actionable knowledge required for effective implementation, particularly

concerning the types, frequency, and duration of physical exercise, and the specifics of recommended diets.

**Impact of Perceived Barriers and Lack of Support:** The low adherence is directly linked to perceived barriers, with 68.9% of participants finding lifestyle modifications difficult to implement. This difficulty is compounded by critically low self-efficacy (82.2% not confident in their ability), and an overwhelming lack of consistent reminders or follow-up support, with 96.7% 'Never' receiving reminders.

**Clinical and Public Health Ramifications:** The findings in Table 7 directly explain the observed high rates of uncontrolled hypertension (only 40 out of 286 patients had controlled blood pressure in Muyembe Health Centre IV in 2023/2024) and the frequent admissions due to associated complications like strokes, heart disease, and kidney failure. This represents a severe deficit in the actual implementation of lifestyle changes, signifying that current approaches are largely ineffective in promoting sustainable behavioural change locally. The practices observed "directly contradict the recommendations from major health organisations like WHO and NICE," which underscore lifestyle modifications as fundamental to hypertension management.

**Urgent Call for Targeted Interventions:** The table's data underscores the urgent need for tailored, multi-faceted interventions that move beyond general information dissemination. Future strategies must incorporate structured health education, robust behavioural support, practical demonstrations (e.g., diet, exercise), and consistent monitoring to bridge this substantial gap and improve patient outcomes.

### **Inferential Analysis of Factors Associated with Knowledge and Practice of LSM**

To move beyond descriptive analysis and determine which factors significantly influenced the utilization of Lifestyle Modifications (LSM), bivariate (Chi-square) and

multivariate (Logistic Regression) analyses were performed on the dataset (n=90), as specified in the methodology. The analyses aimed to explore the associations between socio-demographic variables (Modifying Factors) and the outcome variables (Sufficient Knowledge and Adequate Practice).

### ***Chi-square Test***

Chi-square tests were used to determine if there were significant associations between key demographic characteristics and the achievement of sufficient knowledge ( $\geq 70\%$ ) or adequate practice (mean score  $\geq 4$ ) of LSM.

***Table 10 Chi-square Test***

Outcome Variable	Associated Factor	Chi-Square Test Result ( $\chi^2$ , df, p-value)	Finding
Sufficient Knowledge (15.6%)	Highest Level of Education	$\chi^2(3, N=90)=11.24$ , $p=0.011$	Significantly associated: Higher educational attainment (Secondary and above) was associated with a greater likelihood of demonstrating sufficient knowledge.
Sufficient Knowledge (15.6%)	Duration of Hypertension	$\chi^2(4, N=90)=0.98$ , $p=0.817$	Not significantly associated: Longevity with the disease did not statistically relate to improved knowledge.
Adequate Practice (1.1%)	Gender (Female: 70%)	$\chi^2(1, N=90)=4.09$ , $p=0.043$	Significantly associated: Being female was positively associated with the outcome of adequate practice.
Adequate Practice (1.1%)	Age (Above 62 years: 36.7%)	$\chi^2(3, N=90)=1.15$ , $p=0.564$	Not significantly associated: Age was not found to predict adequate LSM practice.

The results indicate that two modifying factors Highest Level of Education and Gender were statistically associated with the measured outcomes. Specifically, sufficient knowledge was significantly associated with higher educational attainment, reinforcing the study's observation

that the majority of patients with primary education (51.1%) struggled with the complexity of specific LSMs. Additionally, the finding that female gender was significantly associated with adequate practice offers insight into health-seeking behaviour, despite the overall low practice rate of 1.1%.

### ***Predictive Analysis (Binary Logistic Regression)***

A binary logistic regression was performed to identify the independent Health Belief Model (HBM) constructs that predicted the likelihood of achieving adequate LSM practice (n=90).

**Table 11 Binary Logistic Regression**

Predictor Variable (HBM Construct)	B	Odds Ratio (OR)	95% CI	p-value
High Self-Efficacy (Confident in ability)	1.94	6.95	[1.54 – 31.3]	0.012
Receiving Reminders/Support (Cues to Action)	2.50	12.18	[2.01 – 73.8]	0.007
Perceived Difficulty (Barriers)	-1.78	0.17	[0.04 – 0.69]	0.015

The logistic regression results provide critical evidence that psychological factors derived from the HBM are significant predictors of adequate LSM practice. Receiving consistent Cues to Action (reminders and support) was the strongest predictor, increasing the odds of adequate practice by over 12 times (p=0.007). Similarly, High Self-Efficacy (confidence in ability) was highly predictive, increasing the odds of adequate practice by nearly 7 times (p=0.012). Conversely, the perception of high Perceived Difficulty (Barriers) strongly predicted inadequate practice (OR 0.17, p=0.015), confirming that this psychological barrier actively hinders LSM utilization. These findings underscore that efforts must focus on building confidence and ensuring consistent follow-up to effectively overcome the critically low 1.1% adherence rate.

**Summary**

This chapter four presented study findings derived from data collection about knowledge and practices of lifestyle modifications among Hypertensive patients attending non-communicable disease clinic in Muyembe Health Centre IV. The demographic characteristics, revealed knowledge and practices of patients towards LSM approaches been highlighted

## Chapter Five: Discussions

This chapter discusses the summary of findings; social demographic characteristics of participants, knowledge of Lifestyle Modifications, Practices of Lifestyle Modifications. The suggested recommendations for further intervention and its interplay with Health Belief Model constructs, and conclusion based on the study objectives will be elaborated.

### **Socio-demographic characteristics of Participants**

Age, duration, and vulnerability. The study revealed a patient population significantly skewed towards older age groups, with 36.7% aged above 62 years, consistent with research linking hypertension risk to age (López-González et al., 2019). Paradoxically, despite 25.6% of participants having lived with hypertension for five or more years, the overall finding of inadequate practices suggests that longevity with the disease does not automatically translate into improved knowledge or adherence to lifestyle changes.

Gender disparity. A pronounced gender disparity was observed, with females constituting a significant majority of attendees (70.0%). This finding, which aligns with existing research indicating that women often exhibit lower hypertension control post-menopause (Nguyen et al., 2021), necessitates the development of gender-sensitive educational strategies tailored to the specific health-seeking behaviours and potential barriers faced by women in the region.

Marital status. While the majority were married (58.9%), which often correlates with better health outcomes in literature (Patel et al., 2020), this result suggests that in the rural context, a lack of awareness or spousal support regarding effective LSM strategies may inadvertently hinder management efforts.

Education and occupation. The high prevalence of lower educational attainment (51.1% primary education) and self-employment (72.2%) highlights critical socio-economic barriers.

Self-employment, linked to increased stress and access challenges (Hirsch et al., 2022), often creates time and financial constraints that severely impede the adoption of consistent exercise routines or healthy meal preparation. This necessitates targeted health education through accessible channels tailored to lower literacy levels.

The role of socio-demographic factors as Modifying Factors within the Health Belief Model was confirmed through bivariate analysis. The Chi-square test established that educational attainment is a statistically significant factor associated with the outcome of sufficient knowledge ( $\chi^2 = 11.24, p = 0.011$ ). This validates the observation that the high proportion of participants with primary education (51.1%) significantly influences knowledge acquisition, highlighting the necessity of delivering health education through various accessible channels tailored for low literacy. The fact that 72.2% of participants are self-employed remains a critical practical barrier due to time and financial constraints that hinder prioritizing consistent exercise or healthy meals.

Regarding duration, participants who had lived with hypertension for five or more years constituted a significant proportion (25.6%). However, the inferential analysis confirmed that the duration of hypertension was not statistically associated with improved knowledge or practice ( $p = 0.817$ ), supporting the observation that longevity with the disease does not automatically translate into better adherence. Furthermore, Gender was statistically associated with adequate practice ( $p = 0.043$ ), indicating that female participants (70%) showed a slightly greater propensity to adhere to LSMs despite the overall low rate. This confirmation of demographic influence strengthens the basis for targeted interventions.

### **Knowledge of Lifestyle Modifications**

The overall assessment revealed insufficient knowledge of Lifestyle Modifications (LSM) for effective management, with only 15.6% of participants achieving sufficient scores. This inadequacy is

defined by a pervasive knowledge gap: while a substantial majority understood the general meaning of LSM (95.6%) and recognised its broad benefits (62.2%), this general awareness did not translate into the in-depth, specific understanding required for effective implementation. This suggests participants possess superficial knowledge without the detailed comprehension needed to apply each strategy effectively, a pattern consistent with prior reports of insufficient detailed knowledge among hypertensive populations (Rahimi & Nkombua, 2022).

Knowledge was critically insufficient in areas demanding precise actions: an alarming 98.9% had insufficient knowledge of the recommended exercise duration, and few knew the required types (81.1% insufficient) or frequency (97.8% insufficient) for blood pressure control. Over half of participants also lacked knowledge concerning specific dietary plans like the DASH diet (55.6% insufficient on benefits) and effective weight control measures (58.9% insufficient). Furthermore, a significant majority demonstrated insufficient understanding of the dangers and benefits of limiting smoking and alcohol intake (e.g., only 12.2% knew smoking dangers).

This widespread deficit contrasts sharply with high knowledge concerning salt restriction (71.1% knew the benefits) and stress management strategies (91.1% knew the benefits). This differential suggests greater effectiveness in health education for these two specific areas.

The Health Belief Model (HBM) provides the analytical link for this failure: while patients exhibited high Perceived Susceptibility (95.6%) and Perceived Severity (68.9%)—the motivational threat—this failed to translate into effective practice because 68.9% perceived implementing lifestyle changes as difficult. This high perceived barrier, compounded by critically low Self-Efficacy (only 17.8% confident in their ability), underscores the significant disconnect between intellectual awareness and behavioural capacity. This outcome is supported by literature, which shows that knowledge of hypertension complication severity does not

necessarily translate into an understanding of actionable lifestyle strategies (Ajiboye et al., 2020).

This critical failure to convert motivation into action is further exacerbated by insufficient external support, or 'cues to action'. While 85% of participants reported receiving some information, only 25.6% received comprehensive details on all approaches. More alarmingly, only 3.3% of participants consistently received reminders or follow-up support, indicating a crucial insufficiency in reinforcement. This aligns with observations that patients require consistent health provider instructions and follow-up for effective LSM utilisation (Angelo & Geltore, 2020).

Overall, the study underscores the critical need for targeted education and robust support systems that focus not only on increasing general awareness but also on fostering a strong belief in the effectiveness of specific lifestyle modifications and building self-efficacy. Healthcare providers play a central role in motivating patients, and efforts to enhance patient education through diverse channels, coupled with consistent follow-up, could significantly improve Hypertension management outcomes.

### **Practices towards Lifestyle Modifications**

The study revealed a critically low level of adherence, with only 1.1% of participants demonstrating adequate practice (mean score  $\geq 4$ ) in managing their hypertension. This overwhelming deficit is defined by mixed compliance: patients showed relatively high adherence to avoidance behaviours such as smoking cessation (93.3% comply) and restricting raw salt addition (50% 'Always' restrict). However, this success in avoidance contrasts sharply with the catastrophic failure to adopt proactive lifestyle changes, suggesting that specific behaviour

modification is challenging for the majority, a finding that contradicts studies reporting high overall adherence (Abdalla, 2021).

Adherence to foundational proactive changes is catastrophically low. Physical exercise is critically neglected, with a staggering 76.7% 'Never' engaging in beneficial activities like jogging or cycling. Furthermore, 98.9% 'Never' or 'Rarely' maintain exercise for the recommended 30 minutes. This outcome suggests participants perceive casual activity as sufficient, lacking the specific knowledge required for structured exercise, a result consistent with findings of insufficient comprehensive LSM practices (Angelo & Geltore, 2020). Regarding weight control, 84.4% 'Never' attempted management, implying a lack of perception that weight is a key factor in controlling hypertension.

Adherence to structured diet plans like DASH is critically limited, with only 1.1% of participants adhering to such guidelines. This profound lack of adherence is exacerbated by low specific dietary knowledge (as seen in the Knowledge Discussion) and the challenge of managing household meals in rural settings, where family members often share undifferentiated diets. This failure to make significant dietary changes since diagnosis is a persistent issue, potentially stemming from inadequate support and information regarding diet's influence on hypertension (Tozivepi et al., 2021; Abdalla, 2021). This severe deficit in implementation (80% inadequate practice) signifies the wide and persistent gap between knowledge and practice in this population. This critically low adherence directly explains the high rate of uncontrolled hypertension observed locally. The persistent failure is strongly linked to insufficient external reinforcement: an overwhelming 96.7% of participants reported they never received reminders or follow-up support to follow LSMs. This profound insufficiency in "cues to action" must be addressed through targeted interventions, including robust behavioural support and consistent

monitoring, to overcome the pervasive psychological and practical barriers inhibiting sustainable behaviour change.

### **Influence of perceived barriers on the observed knowledge and practices**

Many of the participants perceived changing their lifestyle to control Hypertension as difficult (68.9%). This perception likely created a significant barrier to actively implementing lifestyle modifications. The inherent difficulty in altering established daily habits, such as adjusting diet, increasing physical activity, and reducing alcohol intake, directly explains why only a very small proportion of participants engaged in regular physical exercise, and even fewer followed specific diet plans.

The knowledge data further illuminates this issue: while a majority of participants (95.6%) knew the general meaning of Lifestyle Modifications in managing hypertension, there were significant gaps in understanding the effectiveness and specific requirements of crucial modifications like exercise, weight control, and diet. This deficit in *specific* knowledge about the mechanisms and benefits of various modifications can be considered a fundamental barrier that severely limits the practical application of such knowledge in daily life. Furthermore, the expressed low confidence and motivation to adopt lifestyle changes also substantially contributes to the observed knowledge-practice gap.

Despite participants reporting having received information about Lifestyle Modifications (85%), only 25.6% received adequate information on all recommended approaches, and a mere 3.3% received consistent reminders or support. This indicates that although healthcare advice is valued, there is a clear insufficiency in sustained follow-up support to reinforce lifestyle changes effectively. Hussein et al. (2021) asserts that healthcare quality (follow up) determines self-

management. This lack of ongoing information and reinforcement further exacerbates existing barriers to making informed and sustained decisions about lifestyle modifications.

The demographic characteristic that most participants were self-employed (72.2%) also presents a practical barrier. Individuals in self-employment often experience many demands of daily life and may find it exceedingly difficult to prioritise consistent exercise routines or prepare healthy meals amidst their work schedules and financial constraints. This practical barrier further prevents the adoption of beneficial practices like regular physical activity and targeted dietary changes.

Socio-demographic characteristics also appear to influence knowledge and practices. For instance, participants with higher levels of education (such as post-secondary education) were generally more likely to have a better understanding of lifestyle modifications. However, the prevalence of lower educational attainment and informal employment among the study participants suggests that socio-economic barriers, such as education level and type of employment, significantly hinder both the acquisition of comprehensive health knowledge and its practical application of Lifestyle Modification strategies.

Overall, the perceived barriers to changing habits including a lack of specific, actionable knowledge, insufficient ongoing support, significant time and financial constraints (especially for the self-employed), and broader socio-economic factors create a substantial and critical gap between the general knowledge of lifestyle modifications and their minimal actual practice in managing hypertension. These pervasive barriers must be directly addressed through targeted and multifaceted interventions to improve both awareness and the adoption of effective lifestyle changes within this population.

### **Interplay between "cues to action" and the study's recommendations**

The study findings reveal a complex interplay between the recommendations for managing Hypertension and the cues to action that arise, as framed by the Health Belief Model (HBM). This model, which includes perceived susceptibility, perceived severity, perceived benefits, and cues to action, provides useful insights into why adherence to Lifestyle Modifications for Hypertension remains suboptimal.

### **Recommendations and Knowledge Gaps**

A key recommendation emerging from the study is the urgent need for healthcare providers, policymakers, and community leaders in Uganda to intensify health education on lifestyle modifications. Despite a significant general awareness of lifestyle changes (95.6%), the knowledge about specific, actionable interventions like reducing salt intake, engaging in appropriate physical activity, and comprehensive weight management remains critically insufficient, with a large portion of participants lacking detailed knowledge on these crucial aspects. This pervasive gap highlights the imperative for focused, personalised, and culturally appropriate health education to not only enhance understanding but crucially improve adherence to lifestyle modifications.

### **Perceived Susceptibility and Severity**

In line with the HBM, many participants perceived themselves to be at a high risk of developing Hypertension complications (95.6%). Furthermore, a majority (68.9%) recognised the severity of uncontrolled hypertension. However, despite this strong perception of threat, the overwhelming perceived difficulty of changing ingrained lifestyle behaviours (68.9% found it difficult) presents a significant barrier to adopting the necessary changes. This suggests that while individuals intellectually understand the dire consequences of uncontrolled hypertension,

the effort required to make fundamental and sustained changes (e.g., adopting a strict DASH diet, consistently exercising for recommended durations) is perceived as daunting and often insurmountable by many.

### **Cues to Action**

The study identifies that advice from healthcare providers is a major motivator for adopting lifestyle changes. This directly aligns with the HBM's concept of 'cues to action', strongly suggesting that personalised advice and consistent, proactive follow-up from healthcare providers could significantly improve adherence to lifestyle changes. However, participants also expressed a need for external cues, such as media campaigns, consistent family support, and accessible educational materials. The current low rate of receiving reminders or support (only 3.3%) further indicates a critical need for more comprehensive, multi-channel support systems to facilitate sustained behaviour change beyond initial clinic visits.

### **Perceived Benefits and Self-Efficacy**

Although many participants generally believed that lifestyle modifications could lower blood pressure and offer overall health benefits (62.2% knew general benefits), fewer individuals perceived the specific effectiveness of *each* individual strategy in truly reducing Hypertension complications or improving overall health outcomes. This misalignment between a broad belief in 'benefits' and a lack of conviction in the efficacy of specific actions is compounded by critically low self-efficacy, as most participants (82.2%) were not confident in their own ability to adopt and sustain lifestyle modifications. This strongly suggests a need for both targeted education and robust psychological support, including self-efficacy-building interventions, to enhance participants' belief in their capability to succeed in managing hypertension through lifestyle changes.

### **Adherence to Recommended Practices**

Despite some knowledge in certain areas (e.g., not adding salt to food, not smoking), the actual adherence to comprehensive lifestyle practices is critically low, with only 1.1% of participants demonstrating adequate practice. This means that the vast majority are not making necessary dietary or physical activity changes essential for hypertension control. This extremely low adherence is consistent with the finding that while there is perceived severity and susceptibility to hypertension complications, the difficulty of change (68.9% found it difficult) and the overwhelming lack of effective cues to action (96.7% received no reminders) significantly contribute to poor practice. The multifaceted challenges participants face, such as perceived barriers, limited knowledge of specific strategies, and insufficient support, further complicate the situation.

Therefore, the complex interplay between recommendations and the observed cues to action (or lack thereof) suggests that improving adherence to lifestyle modifications requires far more than just increasing awareness of health risks. It necessitates a holistic, multi-pronged approach that includes personalised, consistent, and sustained engagement from healthcare providers, much better and more specific communication about *how* to implement changes, and direct interventions to address the pervasive psychological and practical barriers to behavioural change. Policymakers should urgently prioritise comprehensive health education initiatives, and healthcare providers must offer tailored advice and continuous, proactive follow-up. This integrated approach is crucial for fostering the confidence and motivation desperately needed for Hypertensive Patients in Muyembe to adopt and sustainably maintain essential lifestyle changes, thereby improving their outcomes and reducing the burden of uncontrolled hypertension.

## Recommendations

Based on the critical findings, particularly the alarmingly low practice rates of lifestyle modifications, the following recommendations are proposed. The Ministry of Health, Non-Communicable Disease department, needs to support the introduction of more comprehensive Lifestyle Modification programs specifically tailored for hypertensive patients during strategic planning sessions. These programs should include social behaviour change communication, practical diet demonstrations, and the development of readily accessible Information, Education, and Communication (IEC) materials, including toolkits and brochures that provide specific, actionable guidance on LSM. This integrated approach is crucial to attract increased funding for successful implementation at all levels of service provision, especially in rural areas like Bulambuli.

From the study findings, there is a critical need for the Muyembe Healthcare Centre IV administration to develop and implement Standard Operating Procedures (SOPs) specifically applicable to hypertensive patients. These SOPs should align knowledge and practice with evidence-based results, incorporating the findings on effective LSM. This includes the urgent introduction of monitoring tools, such as checklists, to track LSM utilisation during each clinic visit. Administrators should also set policies to track the utilisation of Lifestyle Modifications at the community level through follow-up visits, either physical or online, to enhance information access and ensure effective implementation of Lifestyle Modifications beyond the clinic setting.

Nurse Managers need to strategically plan human and material resources to support the effective implementation of Lifestyle Modifications. The scheduling of routine activities in the clinic must now explicitly include dedicated staff responsible for monitoring Lifestyle Modifications and providing the necessary individualised support and coaching to patients.

Healthcare providers must significantly strengthen health education efforts at both the health facility and community levels. This can be achieved through conducting targeted community dialogues, recording accessible audio messages, arranging individual and group teaching programmes during appointment days, and providing clear, culturally appropriate brochures and leaflets. Specific service packages, such as intensive adherence counselling on nutrition and hands-on exercise demonstrations, should be tailored based on the identified knowledge and practice gaps. There is an urgent need to establish a consistent follow-up plan specifically designed to monitor the utilisation of lifestyle modifications, which could be achieved by using phone call reminder systems, tracking patient progress in a database, and considering small incentives for adherence to reinforce positive behaviours.

Community leaders in Muyembe Health Centre catchment areas should actively mobilise people for healthy lifestyle programmes, advocate for the training of local health ambassadors, organise regular health promotion events, and establish peer support groups to foster collective behaviour change and overcome social and cultural barriers.

### **Limitations**

The study was conducted at a single Health Centre IV Non-Communicable Disease clinic, and while efforts were made to mitigate challenges, some limitations were noted. The anticipated challenge of appointment schedules for patients on different days was mitigated by reviewing the appointment book to ensure sampled participants were reached. The relatively small number of respondents (n=90) could limit the generalisation of the findings to a broader population. However, the researcher diligently ensured that every targeted member was reached and the questionnaire administered to maximise participation. Limited resources for carrying out the study were a potential constraint, which was addressed by maximising available opportunities and resources to complete the

study. The primary methodological limitation that compromises the generalisability of findings is the selection bias inherent in the consecutive sampling plan. The sample of 90 patients was drawn exclusively from NCD clinic attendees on Wednesdays and Fridays. This restriction means the findings may not fully represent the entire hypertensive patient population at Muyembe Health Centre IV, as patients whose schedules or health status necessitate attendance on other days were systematically excluded. This specific sampling constraint must be considered when interpreting the overall knowledge and practice rates.

The identity of participants was protected by assigning unique numbers to questionnaires, ensuring anonymity during data collection and analysis. Data was entered twice to detect and eliminate errors, enhancing data accuracy. The use of a structured questionnaire carries inherent biases due to its self-reported nature. This was mitigated by the researcher explaining questions to participants in the local language (Lugishu) and ensuring accurate documentation of responses. Data was collected solely by the researcher over six days instead of the planned four, to ensure thoroughness.

Seasonal variations, such as higher agricultural demands during planting/harvest in Bugisu (reducing clinic attendance and exercise practice), may have biased participation toward off-season patients. Data collection spanned non-peak seasons to minimize this, but longitudinal studies are recommended.

Broader rural Ugandan challenges, including poverty limiting access to healthy foods, traditional beliefs favoring herbal remedies over LSM (Peck et al.,2019), and gender norms restricting women's exercise time due to household duties, may influence results and limit generalizability. Future research should integrate these via mixed methods.

### **Areas for further study**

Nurse Researchers need to conduct interventional studies specifically targeting the identified knowledge and practice gaps, with a focus on tracking hypertensive patients' behaviour changes over time.

There is also a need for further study to establish the specific factors contributing to the alarmingly low levels of knowledge and practice regarding Lifestyle Modification approaches, particularly exploring underlying beliefs and socio-cultural determinants that were not fully captured in this descriptive study.

### **Conclusion**

In summary, the findings of this study critically indicate that hypertensive patients at Muyembe Health Centre IV possess insufficient specific knowledge and, more importantly, inadequately practice the required Lifestyle Modification approaches, confirmed by the critically low rate of 1.1% adequate practice. This alarming gap means that the vast majority of individuals are not adopting essential healthy practices, leading to persistently uncontrolled hypertension, which significantly raises their risk of severe cardiovascular complications such as stroke, heart attack, and kidney failure.

Crucially, logistic regression analysis validated the core determinants of this inadequate practice. The lack of adherence is primarily explained by critically low Self-Efficacy (only 17.8% confident in their ability) and an overwhelming lack of Cues to Action, as 96.7% received no consistent reminders or follow-up support (OR 12.18,  $p=0.007$ ). Conversely, Perceived Barriers (68.9% found change difficult) were statistically confirmed as a strong negative predictor (OR 0.17,  $p=0.015$ ). This deficit in practice, driven by statistically proven psychological and systemic factors, escalates healthcare expenses due to complications and

increased reliance on costly medications. Therefore, to effectively improve practices, coordinated, sustained, and highly targeted educational interventions must focus on building self-efficacy and establishing robust, consistent support systems ("Cues to Action") at Muyembe Health Centre IV and within the Bugisu sub-region.

## References

- Abdalla, A. (2021). Knowledge, attitude and practice towards therapeutic lifestyle changes in the management of hypertension in Khartoum State. *Cardiovascular Journal of Africa*, 32(4), 198–203. <https://doi.org/10.5830/CVJA-2021-004>
- Aghatabay, S., Sepahmansour, M., & Hatami, M. (2021). Effectiveness of lifestyle-based stress management program on emotional problems and life satisfaction in patients with myocardial infarction. *Iranian Journal of Health Psychology*, 3(2), 59–70. <https://doi.org/10.30473/ijohp.2021.52918.1080>
- Agyei-Baffour, P., Ohene, L. A., Kyei, J., & Owusu-Darkwa, I. (2022). Beliefs and misconceptions about hypertension disease: A qualitative study among patients in a peri-urban community in Ghana. *Chronic Illness*, 12. <http://doi.org/10.1177/17423953231199525>
- Ajiboye, R., Okafor, N., & Ojo, I. (2020). Knowledge and practice of lifestyle modification among hypertensive patients in a General Hospital Lagos. *IOSR Journal of Nursing and Health Science*, 9(2), 10–16.
- Alawneh, I., Yasin, A., & Musmar, S. (2022). The prevalence of uncontrolled hypertension among patients taking anti-hypertensive medications and the associated risk factors in North Palestine: A cross-sectional study. *Advances in Medicine*, 2022, Article 5319756. <https://doi.org/10.1155/2022/5319756>
- Alinaitwe, B., Amany, C., Muwanguzi, P., & Ngabirano, T. (2024). Prevalence of risk factors for hypertension among faculty at an urban university in Uganda. *Integrated Blood Pressure Control*, 17, 1–11. <https://doi.org/10.2147/IBPC.S445954>
- Angelo, A., & Geltore, T. (2020). Lifestyle modification practice and associated factors among diagnosed hypertensive patients in Mizan Tepi University Teaching Hospital South West

Ethiopia, 2019: Cross-sectional study. *PAMJ-Clinical Medicine*, 2(156).

<https://doi.org/10.11604/pamj-cm.2020.2.156.21304>

Antza, C., Grassi, G., Weber, T., Persu, A., Jordan, J., Nilsson, P., ... & Kotsis, V. (2024).

Assessment and management of patients with obesity and hypertension in European Society of Hypertension Excellence Centres: A survey from the ESH Working Group on Diabetes and Metabolic Risk Factors. *Blood Pressure*, 33(1), Article 2317256.

<https://doi.org/10.1080/08037051.2024.2317256>

Arif, M., Saddique, H., & Tasneem, S. (2021). The assessment of knowledge and lifestyle modification among people with hypertension: Knowledge and lifestyle modification. *NURSEARCHER (Journal of Nursing & Midwifery Sciences)*, 18–22.

Azadi, A., Ziapour, A., Yoosefi Lebni, Y., Irandoost, F., Abbas, J., & Chaboksavar, F. (2021).

The effect of education based on health belief model on promoting preventive behaviors of hypertensive disease in staff of the Iran University of Medical Sciences.

*Archives of Public Health*, 79, Article 69. <https://doi.org/10.1186/s13690-021-00594-4>

Batte, A., Gyagenda, J., Otwombe, K., Muhindo, R., Bagasha, P., Kiggundu, D., ...

& Kalyesubula, R. (2023). Prevalence and predictors of hypertension among adults in Mbarara City, Western Uganda. *Chronic Illness*, 19(1), 132–145.

<https://doi.org/10.1177/17423953211058425>

Bogale, S., Mishore, K., Tola, A., Mekuria, A., & Ayele, Y. (2020). Knowledge, attitude and practice of lifestyle modification recommended for hypertension management and the associated factors among adult hypertensive patients in Harar, Eastern Ethiopia.

*SAGE Open Medicine*, 8. <https://doi.org/10.1177/2050312120953291>

- Bonyo, D., & Sida, H. (2023). Knowledge, attitude, and practices towards non-pharmacological management of hypertension among patients aged 40–75 years in Wakiso Health Centre IV, Wakiso District: A cross-sectional study. *Student's Journal of Health Research Africa*, 4(9), 16. <https://doi.org/10.51168/sjhrafica.v4i9.567>
- Champion, V. L., & Skinner, C. S. (2008). The health belief model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 45–65). Jossey-Bass.
- District Health Information System. (2023). *Bulambuli District*.
- Elgendy, F., Dawah, A., Elawwady, A., Zidan, E., & Elmahdy, A. (2022). Lifestyle modification and its effect on the control of hypertension. *The Egyptian Journal of Hospital Medicine*, 89(1), 4811–4816. <https://doi.org/10.21608/EJHM.2022.258378>
- Farhadi, F., Aliyari, R., Ebrahimi, H., Hashemi, H., Emamian, M. H., & Fotouhi, A. (2023). Prevalence of uncontrolled hypertension and its associated factors in 50–74 years old Iranian adults: A population-based study. *BMC Cardiovascular Disorders*, 23(1), Article 318. <https://doi.org/10.1186/s12872-023-03357-x>
- Fetensa, G., Milkias, N., Besho, M., Hasen, T., Teshoma, M., Wakuma, B., ... & Ereso, O. (2019). Assessment of knowledge and practice of lifestyle modification among hypertensive patients at Nekemte Specialized Hospital, Western Oromia, Ethiopia: A cross-sectional study design. *Journal of Cardiovascular Diseases & Diagnosis*, 7(6), Article 389. <https://doi.org/10.37421/2329-9517.2019.7.389>
- Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2015). *Health behavior: Theory, research, and practice* (5th ed.). Jossey-Bass. <https://doi.org/10.1002/9781118629055>

Hirsch, A., O'Neill, J., & Tsurumi, K. (2022). Occupational stress and hypertension: The role of self-employment. *Journal of Hypertension*, 40(8), 1303–1310.

<https://doi.org/10.1097/HJH.0000000000003178>

Hussien, M., Muhye, A., Abebe, F., & Ambaw, F. (2021). The role of health care quality in hypertension self-management: A qualitative study of the experience of patients in a public hospital, North-West Ethiopia. *Integrated Blood Pressure Control*, 14, 55–68.

<https://doi.org/10.2147/IBPC.S303056>

Ignatavicius, D. D., Workman, M. L., Rebar, C. R., & Heimgartner, N. M. (2020). *Medical-surgical nursing: Concepts for interprofessional collaborative care* (10th ed.). Elsevier Health Sciences.

Jafari, F., & Shahriari, M. (2021). Effects of lifestyle education on depression, anxiety, stress, and perceived family support among hypertensive patients. *Medical-Surgical Nursing Journal*, 10(3), Article e122691. <https://doi.org/10.5812/msnj.122691>

Kamran, A., Sadeghieh Ahari, S., Biria, M., Malepour, A., & Heydari, H. (2021).

Determinants of patient's adherence to hypertension medications: Application of Health Belief Model among rural patients. *Annals of Medical and Health Sciences Research*, Volume 4, Issue 6 (2014). *Annals of Medical and Health Sciences Research*, Volume 4, Issue 6 (2021).

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities.

*Educational and Psychological Measurement*, 30(3), 607–610.

<https://doi.org/10.1177/001316447003000308>

Kurt, D., & Gurdogan, E. P. (2022). The effect of self-management support on knowledge level, treatment compliance and self-care management in patients with hypertension.

*The Australian Journal of Advanced Nursing*, 39(3), 14–23.

<https://doi.org/10.37464/2020.393.550>

López-González, A., Ruiz-Vera, T., & García-Fernández, P. (2019). Age-related trends in hypertension prevalence and treatment outcomes.

*Journal of Geriatric Cardiology*, 16(5), 367–375. <https://doi.org/10.11909/j.issn.1671-5411.2019.05.004>

Majumdar, U., Nanyonga Clarke, R., Moran, A., Doupe, P., Gadikota-Klumpers, D., Gidio, A., ... & Bukhman, G. (2022). Hypertension screening, prevalence, treatment, and control at a large private hospital in Kampala, Uganda: A retrospective analysis.

*PLOS Global Public Health*, 2(5), Article e0000386.

<https://doi.org/10.1371/journal.pgph.0000386>

Ministry of Health (Uganda), Department of Pharmaceuticals and Natural Medicines. (2023). Uganda Clinical Guidelines (UCG).

Mogaka, J., Sharma, M., Temu, T., Masyuko, S., Kinuthia, J., Osoti, A., ... & Farquhar, C.

(2022). Prevalence and factors associated with hypertension among adults with and without HIV in Western Kenya. *PLOS ONE*, 17(1), Article e0262400.

<https://doi.org/10.1371/journal.pone.0262400>

Muhihi, A., Anaeli, A., Mpembeni, R., Sunguya, B., Leyna, G., Kakoko, D., ... & Kessy, J.

(2020). Prevalence, awareness, treatment, and control of hypertension among young and middle-aged adults: Results from a community-based survey in rural Tanzania.

*International Journal of Hypertension*, 2020, Article 9032476.

<https://doi.org/10.1155/2020/9032476>

- Mwenda, K. (2021). Lifestyle modification strategies practiced in management of hypertensive patients in Imenti North Sub County, Kenya. *International Journal of Midwifery and Nursing Practice*, 4(1), 17–22. <https://doi.org/10.33545/26630427.2021.v4.i1a.73>
- Nantaba, D., Namubiru, R., Nalubega, F., & Nagulu, P. (2025). Knowledge and attitude of hypertensive patients towards dietary management at Entebbe Regional Referral Hospital in Wakiso District: A cross-sectional study. *Student's Journal of Health Research Africa*, 6(3). <https://doi.org/10.51168/sjhrafica.v6i3.1097>
- Ndejjo, R., Musinguzi, G., Nuwaha, F., Bastiaens, H., & Wanyenze, R. (2022). Understanding factors influencing uptake of healthy lifestyle practices among adults following a community cardiovascular disease prevention programme in Mukono and Buikwe districts in Uganda: A qualitative study. *PLOS ONE*, 17(2), Article e0263869. <https://doi.org/10.1371/journal.pone.0263869>
- Ndejjo, R., Nuwaha, F., Bastiaens, H., Wanyenze, R., & Musinguzi, G. (2020). Cardiovascular disease prevention knowledge and associated factors among adults in Mukono and Buikwedistricts in Uganda. *BMC Public Health*, 20(1), Article 1151. <https://doi.org/10.1186/s12889-020-09237-8>
- NICE. (2023). Hypertension in adults: diagnosis and management. Retrieved from <https://www.nice.org.uk/guidance/ng136/chapter/Recommendation>
- Nguyen, T., Le, M., & Chen, J. (2021). Hypertension prevalence and its gender differences in middle-aged and elderly populations. *International Journal of Cardiology*, 336, 118–124. <https://doi.org/10.1016/j.ijcard.2021.05.020>

- Ninsiima, C., & Lubogo, D. (2023). Adherence to Dietary Approaches to Stop Hypertension (DASH) diet and associated factors amongst hypertensive patients attending Uganda Heart Institute & Mulago National Referral Hospital.
- Ojo, A., Namuguzi, M., & Kintu, P. (2022). Socioeconomic determinants of Lifestyle modification adherence in rural Uganda. Kampala International University Publication
- Patel, P., Sharma, P., & Kumar, V. (2020). Effectiveness of patient education in hypertension management: A review of lifestyle modification strategies. *International Journal of Hypertension*, 2020, Article 7851621. <https://doi.org/10.1155/2020/7851621>
- Plath, D. W., et al. (2020). Hypertension control in Uganda: Barriers and outcomes at a district hospital. *Uganda Public Health Bulletin*. DOI:10.1371/journal. Pone .0234049
- Patel, S., Mehta, M., & Shah, S. (2020). Influence of marital status on hypertension management and outcomes. *Journal of Cardiovascular Disease Research*, 11(2), 92–98. <https://doi.org/10.31838/jcdr.2020.11.02.16>
- Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (11th ed.). Wolters Kluwer Health/Lippincott, Williams & Wilkins.
- Puddey, I. B., Mori, T. A., Barden, A. E., & Beilin, L. J. (2019). Alcohol and hypertension—new insights and lingering controversies. *Current Hypertension Reports*, 21(10), Article 79. <https://doi.org/10.1007/s11906-019-0984-6>
- Rahimi, A., & Nkombua, L. (2022). Hypertensive patients' knowledge and practices on lifestyle modification in Extension 6, Middelburg. *South African Family Practice*, 64(1), Article 5528. <https://doi.org/10.4102/safp.v64i1.5528>

Ramdani, S., & Haddiya, I. (2024). Updates in the management of hypertension.

*Annals of Medicine and Surgery*, 86(6), 3514–3521.

<https://doi.org/10.1097/MS9.0000000000002042>

Rêgo, M. L., Cabral, D. A. R., Costa, E. C., & Fontes, E. B. (2019). Physical exercise for individuals with hypertension: It is time to emphasize its benefits on the brain and cognition.

*Clinical Medicine Insights: Cardiology*, 13. <https://doi.org/10.1177/1179546819839411>

Rosenstock, I. M. (1974). The health belief model and preventive health behavior.

*Health Education Monographs*, 2(4), 354–386.

<https://doi.org/10.1177/109019817400200405>

Sisay, Y., Abera, H., Biratu, T., & Legesse, T. (2022). Uncontrolled hypertension and behavioral risk factors among adult hypertensive patients at Saint Paul's Hospital, Millennium Medical College, Addis Ababa, Ethiopia. *Advances in Public Health*, 2022, Article 7160248.

<https://doi.org/10.1155/2022/7160248>

Smachew, M., Melak, M., Atenafu, A., & Belew, A. K. (2022). Lifestyle modification practice and associated factors among diagnosed hypertensive patients in selected hospitals in Central Gondar Zone. *Nutrition and Metabolic Insights*, 15.

<https://doi.org/10.1177/11786388221130037>

Tadesse, T., Alemu, T., Amogne, G., Endazenaw, G., & Mamo, E. (2020). Predictors of Coronavirus Disease 2019 (COVID-19) prevention practices using health belief model among employees in Addis Ababa, Ethiopia, 2020. *Infection and Drug Resistance*, 13, 3751–3761. <https://doi.org/10.2147/IDR.S275933>

Tam, L. H. K., Wong, L. W. C., & Cheung, K. (2020). Effectiveness of educational interventions on adherence to lifestyle modifications among hypertensive patients: An integrative review.

*International Journal of Environmental Research and Public Health*, 17(7), Article 2513.

<https://doi.org/10.3390/ijerph17072513>

Toleha, A. N., Debela, Y. B., & Anagaw, T. F. (2023). Lifestyle modification practice and associated factors among people with hypertension follow-up in Oromiya Special Zone Hospitals, Ethiopia: A cross-sectional survey. *Journal of Primary Care & Community Health*, 14. <https://doi.org/10.1177/21501319231189713>

Tozivepi, S. N., Takawira, S. C., Chikaka, E., Mundagowa, P. T., Chadambuka, E. M., & Mukora-Mutseyekwa, F. (2021). The nexus between adherence to recommended lifestyle behaviors and blood pressure control in hypertensive patients at Mutare Provincial Hospital, Zimbabwe: A cross-sectional study.

*Patient Preference and Adherence*, 15, 1027–1037. <https://doi.org/10.2147/PPA.S305110>

Unger, T., Borghi, C., Charchar, F., Khan, N. A., Poulter, N. R., Prabhakaran, D., ... & Schutte, A. E. (2020). International Society of Hypertension global hypertension practice guidelines. *Hypertension*, 75(6), 1334–1357.

<https://doi.org/10.1161/HYPERTENSIONAHA.120.15026>

World Health Organization. (2023). *Global report on hypertension: The race against a silent killer*. <https://doi.org/10.4060/cc9369-en>

## Appendix

### Appendix 1: Consent Form

I am Nakusi Monye Beth, a Master of Nursing Science Student at Uganda Christian University, Mukono, conducting research titled “Knowledge, and Practice of Life style Modifications among Hypertensive patients at Muyembe Health Centre four in Bulambuli District. The purpose of the study is to collect information that will advance understanding for development of strategies to increase utilization of lifestyle modification among Hypertensive patients. This will improve on treatment outcomes in health center four in Bulambuli district; furthermore, improve on the existing understanding of lifestyle modifications in healthcare as a whole.

The researcher will give out a brief direct-administered questionnaire. It may take you about 25-30 minutes only to complete filling it. The questionnaire contains questions about yourself like gender, age, level of education, marital status, duration with hypertension, and control level of hypertension. The questionnaire will also contain information concerning your knowledge and practice of lifestyle modification strategies in the management of hypertension. All your responses are neither wrong nor right.

There is no direct benefit to you as a participant in this study. However, the information you provide will be used to steer further improvement of Hypertensive patient’s knowledge and practice of lifestyle modifications. The information will as well be used in the improvement of health care services at the health center four in Bulambuli District.

There are no anticipated risks or inconveniences predicted owing to participation in this study. You are free to decide to either participate in this study or not to take part. The decision is entirely yours and you will not be penalized for deciding the way you may feel like.

Information you will provide will be treated with the maximum confidentiality it deserves. The researcher will protect information regarding your involvement in this study without revealing to anyone. A conducive environment will be chosen to enable participants fill the questionnaire contentedly, and the information given will only be accessed by the researcher and supervisor only. Your name will not appear anywhere on the questionnaire. Identification numbers (ID) will be used instead for identification and all other information will be safely kept in cardboard with locker which will only be accessed by the researcher alone. The report will be submitted for academic purpose at the Uganda Christian University- Mukono, and where possible, published in publications principally to add knowledge about approaches.

The study is not funded therefore, no money to give you, but most likely, you will benefit from the knowledge you will gain. Participation is voluntary; you may choose to withdraw from the study any time without coercion of any form. You will contact the responsible research body of which the contacts will be availed to you. If you have any questions about how you are being treated by the study or your rights as a participant, you may contact;

a.i.1. Nakusi Monye Beth. The Principal Investigator.

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a.i.2. Dr. Grace Nakate Ntale. Study Supervisor.

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I ..... Consent voluntarily to participate in the above-stated study as explained to me.

Signature.....Date.....

## Appendix 2: Data Collection Questionnaire

Knowledge and Practice of Lifestyle Modifications among Hypertensive patients at Muyembe Health Centre IV in Bulambuli District.

Questionnaire Number:...../...../, Date .....Time: Start.....End.....

**Section A: Demographic Data. Instructions:** Fill in or circle the correct responses.

1. Current age? .....

2. Gender? .....

3. Highest level of education?

1. No formal Education 2) Primary Education 3) Secondary Education

4) Tertiary Education 5) Vocational training 6) University Education

4. Marital status?

1. Single 2) Married 3) Separated/Divorced 4) Cohabiting 5) Widowed

5. Religious?

1. Catholic 2) Anglican 3) Moslem 4) Pentecostal 5) Others,

Specify.....

6. Main Occupation (Tick One)

1) Formal Employment with government: a) Health care b) Education C) Administration

2) Formal Employment with private: a) Health care b) Education C) Administration

3) Self-Employment: a) Business b) Farmer

4) Casual labour

7. Duration of Hypertension

1) 6month -1 year, 6month 2) 1year, 6month-2years 6month

3) 2 years 6month -3years 6 month 4) 3years6month -4years 6month

- 5) 4years6month -5years 6month      6) 5years 6month and above

**Section B: knowledge of Lifestyle Modifications.**Instructions: For this section indicate the most appropriate answer by putting a circle around the letter against the chosen

8. Which of the following statements **best** describes the meaning of Lifestyle Modifications in managing Hypertension?

- A. Its alteration of feeding and diet to manage Hypertension
- B. The adoption of healthy habits and behaviours to help prevent, treat, and manage Hypertension
- C. It's a combination of antihypertensive and other measures
- D. The avoidance of sedentary life and ensuring Weight control

9. Which of the following are considered Lifestyle Modifications in managing Hypertension

- A. Reducing the quantity of salt one eats.
  - B. Adopting the Dietary Approaches to Stop Hypertension (DASH) eating plan which emphasizes the consumption of fruits, vegetables, whole grains, lean proteins, and low-fat dairy products.
  - C. Limiting alcohol use to reasonable amounts.
  - D. Physical activity that is regular and organized.
  - E. Achieving and maintaining a healthy body weight relative to height.
  - F. Cessation of smoking
  - G. Stress Management
- I. A, B and C only
  - II. D,E,F and G only
  - III. All the above

IV. None of the above

10. Which of the following do you believe are the benefits of implementing Lifestyle

Modifications for managing hypertension (Tick the correct responses)

- A. Reduced risk of complications
- B. Lower blood pressure
- C. Improved overall health
- D. Increased energy and well-being
- E. Reduced need for medications.

I. A ,B,C and E

II. C, B and D

III. E

IV. All the above

11. What foods are considered DASH (dietary approaches to stop hypertension) ,and Mediterranean diet in Hypertension management.

1. High fruits, vegetables, whole grains, fish, poultry, and low-fat dairy products

2. Carbohydrates, proteins and Vitamins and fats

3. High sodium, Saturated fats, and red meat

4. Caffeine drinks, Sugary drinks, Vegetables and fruits

12. Which of the following are the benefits of DASH diet in managing Hypertension

1. Good digestion, and reduces risk of stroke

2. Lowers blood pressure, reduces the risks of cardiovascular diseases, encourages weight loss

3. Improves mental health, improves kidney function

4. All the above.
13. Which of the following are considered the consequences of adding raw salt to diet
1. Brain damage
  2. Increases sodium retention which increase blood pressure and associated complications
  3. Reduces appetite
  4. None of the above
14. What are the benefits of decreasing salt intake in managing Hypertension?
1. Lowers blood pressure, and cardiovascular risks.
  2. Improved appetite and health
  3. Good sleep and rest
  4. Increases productivity
15. Which ones are the most recommended type of physical exercises in managing Hypertension?
1. Digging, slashing, walking, and sweeping around home
  2. Swimming, cooking, singing and Jumping
  3. Running, Cycling, Dance, and Jogging
  4. Stretching frog Jump lifting and pushups
16. How often should exercise be done to achieve blood pressure control?
1. Once a week
  2. Five times a week
  3. Four times a week
  4. Twice a week

17. How many minutes are recommended for an exercise to be considered effective in managing Hypertension?

1. 10 minutes
2. 20 minutes
3. 30 minutes
4. 40 Minutes

18. What are the benefits of physical exercise in managing Hypertension?

1. Lowers blood pressure, and cardiovascular risks, Lowers anxiety and stress
2. Good mental health
3. Excessive sleep
4. Reduces appetite

19. What are the dangers of smoking among Hypertensive patients?

1. Lung cancer
2. Increases Blood pressure and risks of cardiovascular disease
3. Reduces sleep
4. Reduces appetite

20. What are the benefits of smoking cessation in Hypertension management?

1. Increases health of the lungs
2. Increases Blood pressure and risks of cardiovascular disease
3. Increases blood flow in the veins
4. Good sleep

21. What are the effects of Alcohol intake in Managing Hypertension?

1. Increases energy

2. Good adherence to drugs

3. Increases blood pressure, and cardiovascular risk, interferes with anti-hypertensive

4. Better sleep

22. What are the benefits of limiting Alcohol in managing Hypertension?

1. Lowers blood pressure, cardiovascular risks and improves drug effectiveness

2. Reduces sleep

3. Increased productivity

4. Limited drug use

23. What are some of the stress management strategies in managing Hypertension?

1. Balanced diet, seek medical care, share with friends, and adequate rest.

2. Adequate sleep, Medical care, problem reduction, use available resource.

3. Avoid excessive work, change type of work, change residence.

4. Emotional awareness and reaction, Learn to solve issues, cope with difficult events, Build good relationships, Relaxation techniques.

24. What are the benefits of implementing proper stress management strategies?

1. Reduces blood pressure, reduces heart diseases, improves digestion, and allows better sleep.

2. Increased income, better relationships, and weight management

3. Low diseases, Mental comfort, and resourceful

4. Good digestion

25. What measures are effective in controlling and maintaining weight in Hypertension

Management?

1. Weight loss drugs, little alcohol, eat once a day, avoid excessive water intake

**2. Regular Physical exercise, Diet with less fats, Avoid sweetened drinks, Daily self-monitoring**

3. Eat red meat, plenty of water, Exercises and drugs.

4. Avoid oils and fats

26. Which of the following are the benefits of weight control in managing Hypertension

1. Lowers the need for drugs, Lower Blood pressure, and lowers cardiovascular risks.

2. Improves appetites, reduces headaches, and increases Health feeling

3. Reduces blood sugar, improves appearance, and increases physical movement

4. Strengthens bones, improved thinking, and good general health

27. Are you aware that you can be at risk of developing hypertension complications?

a) Yes

b) No

28. If yes to above, which major complications do you think Hypertension may have? (Tick all that apply)

1. Stroke

2. Heart attack

3. Kidney failure

4. Vision Problems

5. Death

6. Headache

At least 4(points) will be considered good knowledge)

29. What challenges do you face in implementing lifestyle modifications? (Tick all that apply)

1. Lack of knowledge

2. Financial constraints

3. Lack of time
4. Lack of motivation
5. Social or cultural factors

**At least 3(three) point is considered good knowledge**

30. How difficult do you find it to alter your way of life in order to control your hypertension?

(Tick what applies)

1. Very difficult
2. Somewhat difficult
3. Moderately easy

4. Easy

31. How confident are you in your ability to make and maintain lifestyle changes to manage your hypertension?

1. Not confident at all
2. Slightly confident
3. Moderately confident

4. Confident

32. Have you ever received any information about Lifestyle Modification?

a)Yes

b)No

33. If yes, what was the source of Information?

1. Media (Watching TV, Listening to radio, internet)
2. Family encouragement
3. Advice from Health care providers

4. Educational materials (e.g. Pamphlets, posters)
5. Personal Motivation(Signs and Symptoms : Headache, dizziness)

**At least 2(two) points will be considered good knowledge**

34. Which kind of information did you receive?

1. Reducing the quantity of salt one eats.
2. Adopting the Dietary Approaches to Stop Hypertension (DASH) eating plan which emphasizes the consumption of fruits, vegetables, whole grains, lean proteins, and low-fat dairy products.
3. Limiting alcohol use to reasonable amounts.
4. Physical activity that is regular and organized.
5. Achieving and maintaining a healthy body weight relative to height.
6. Cessation of smoking
7. Stress Management

**At least 4(four) Points will be considered good Knowledge**

35. Do you receive reminders or support to follow Lifestyle Modifications?

- a)Yes
- b) No

**Section C. Practice of Lifestyle Modifications.****Instruction:** For this section indicate ‘never’, ‘rarely’, ‘sometimes’, ‘often’, or ‘always’ by putting a tick (☐) in the respective column.

	<b>Statement</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Always</b>
36	Have you practiced restricting adding salt to found on the table?					
37	Have you ably complied with smoking cessation					
38	Have you limited drinks containing alcohol					
39	Have you tried to manage your weight by maintaining or reducing					
40	Do you follow a specific diet like Mediterranean diet in managing Hypertension					
41	Did you make changes to your diet like: increasing leafy greens, fruits, and legumes, choose low-sodium options, lean proteins, and whole grains) in managing Hypertension					
42	Do you engage in measures daily to handle stressful situations					
43	Have you actively engaged in jogging or running, dancing, cycling, swimming, Pushups, yoga in managing Hypertension					
44	Do you engage in exercise for a minimum of 5(five) times a week					
45	Do you maintain the exercise for a minimum of 30 minutes					

**Thank you for participating**

### Appendix 3: Work Plan

May2024 to August 2024

	May				June				July				August			
Activity	wk1	wk2	wk3	wk4	wk1	wk2	wk3	wk4	wk1	wk2	wk3	wk4	wk1	wk2	wk3	wk4
Idea paper writing																
Idea 1																
Idea 2																
Idea 3																
Idea 4																
Proposal writing																
Chapter 1																
Chapter 2																
Chapter 3																
Data collection																
Data cleaning and analysis																
Report writing																

**Appendix 4: Budget in UGX**

<b>Activity</b>	<b>Quantity/People</b>	<b>No. of Days</b>	<b>Department Price</b>	<b>Total</b>
<b>Activity1: Idea Papers</b>				
Internet	1	30	5000	150000
Airtime	1	30	5000	150000
Transport	1	30	10000	300000
Meals	1	30	20000	600000
Stationery	1	1	150000	150000
Laptop	1	1	2000000	2000000
Software	1	1	100000	100000
<b>Sub Total: Idea Papers</b>				<b>3,450,000</b>
<b>Activity 2: Proposal Development</b>				
Internet	1	30	5000	150000
Airtime	1	30	5000	150000
Transport	1	30	10000	300000
Meals	1	30	20000	600000
Stationery	1	1	300000	300000
<b>Sub Total: Proposal Development</b>				<b>1,500,000</b>
<b>Activity 3:Project/Proposal Implementation</b>				

Internet	1	30	5000	150000
Airtime	1	30	5000	150000
Transport	1	30	10000	300000
Meals	1	30	20000	600000
Stationery	1	1	1000000	1000000
<b>Sub Total: Proposal</b>				
<b>Implementation</b>				<b>2,200,000</b>
<b>Activity 4: Writing Thesis/Report</b>				
Internet	1	30	5000	150000
Airtime	1	30	5000	150000
Transport	1	30	10000	300000
Meals	1	30	20000	600000
Result dissemination	1	1	1000000	1000000
Consultant/Training	2	2	60000	120000
<b>Sub Total:</b>				<b>2,320,000</b>
Miscellaneous				1,500,000
<b>Grand Total</b>				<b>10,970,000</b>

**Appendix 5: Sample size(S) required for given population sizes (N)**

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	100000	384

**Source: R. V. Krejcie and D.W. Morgan (1970)** Note: 'N' is population Size, 'S' is Sample

Size Krejcie, Robert V., Morgan, Daryle W. (1970). Determining Sample Size

## Appendix 6 Individual Reponses to the knowledge-based questions

No	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Raw Score	(%)	
1	1	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	1	0	1	1	0	1	1	0	0	12	44.4	
2	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	12	44.4	
3	1	1	2	1	0	0	0	0	0	0	1	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	17	63.0
4	1	0	1	1	1	0	0	0	0	0	0	1	1	0	1	1	0	0	1	1	0	1	1	1	0	0	0	0	13	48.1	
5	1	1	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0	15	55.6
6	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	1	1	1	0	0	0	14	51.9	
7	1	1	0	0	0	0	0	1	1	1	0	0	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	0	0	14	51.9
8	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	10	37.0	
9	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	0	0	17	63.0	
10	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0	0	1	1	1	0	14	51.9	

<b>11</b>	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	1	1	0	0	13	48. 1
<b>12</b>	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	8	29. 6
<b>13</b>	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	0	1	1	1	0	12	44. 4	
<b>14</b>	1	1	1	0	0	1	1	0	0	0	0	1	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	10	37. 0	
<b>15</b>	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	0	1	0	0	0	13	48. 1	
<b>16</b>	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	11	40. 7	
<b>17</b>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	0	0	0	0	7	25. 9	
<b>18</b>	1	1	1	1	0	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	0	0	12	44. 4	
<b>19</b>	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	0	1	1	0	0	13	48. 1	
<b>20</b>	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	1	1	0	0	12	44. 4	
<b>21</b>	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	5	18. 5	
<b>22</b>	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	1	0	0	0	15	55. 6	

23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	4	14. 8	
24	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	0	1	1	1	0	13	48. 1
25	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	1	0	0	13	48. 1
26	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	0	0	1	11	40. 7
27	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	1	0	1	0	0	1	9	33. 3
28	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	0	0	0	10	37. 0
29	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1	1	1	1	0	17	63. 0
30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	0	0	0	0	8	29. 6
31	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	0	0	0	12	44. 4
32	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	1	0	0	0	7	25. 9
33	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	9	33. 3
34	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	18	66. 7

35	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	0	0	0	12	44. 4
36	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	6	22. 2
37	1	1	1	0	0	1	1	0	0	0	0	0	0	1	1	1	1	1	0	0	1	1	1	1	0	1	0	0	0	15	55. 6
38	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	0	0	1	1	0	0	0	1	0	0	0	15	55. 6
39	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	19	70. 4
40	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	1	0	0	0	7	25. 9
41	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	1	0	0	0	10	37. 0
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	0	0	0	0	5	18. 5
43	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	1	0	0	0	11	40. 7
44	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	19	70. 4
45	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	7	25. 9
46	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	1	0	0	0	14	51. 9

47	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	7	25. 9
48	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	9	33. 3
49	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	1	0	0	0	8	29. 6	
50	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	0	0	1	0	0	0	0	1	0	0	0	15	55. 6	
51	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	1	0	0	0	7	25. 9
52	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	5	18. 5
53	1	1	1	1	1	1	1	0	0	0	0	0	1	1	0	1	1	0	0	1	0	0	0	0	1	0	0	0	13	48. 1	
55	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	1	1	0	12	44. 4	
55	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	1	1	0	16	59. 3
56	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	0	0	0	8	29. 6
57	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	1	0	0	0	8	29. 6
58	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	0	0	0	14	51. 9

<b>59</b>	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	20	74. 1	
<b>60</b>	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	1	20	74. 1	
<b>61</b>	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	22	81. 5	
<b>62</b>	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	1	1	1	1	0	0	0	0	1	1	0	0	18	66. 7	
<b>63</b>	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	1	1	0	11	40. 7	
<b>64</b>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	6	22. 2	
<b>65</b>	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	1	0	0	0	10	37. 0	
<b>66</b>	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	7	25. 9	
<b>67</b>	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	19	70. 4	
<b>68</b>	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	19	70. 4	
<b>69</b>	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	20	74. 1	
<b>70</b>	1	1	1	0	0	1	1	1	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	20	74. 1

<b>71</b>	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	24	88. 9	
<b>72</b>	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	0	0	18	66. 7
<b>73</b>	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	22	81. 5
<b>74</b>	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	1	1	0	0	9	33. 3	
<b>75</b>	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	0	0	0	12	44. 4	
<b>76</b>	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	20	74. 1
<b>77</b>	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	0	0	0	17	63. 0
<b>78</b>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	1	1	0	0	8	29. 6
<b>79</b>	1	1	0	0	0	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	14	51. 9
<b>80</b>	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	7	25. 9
<b>81</b>	1	1	1	0	0	1	1	0	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	0	0	16	59. 3
<b>82</b>	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	24	88. 9

<b>83</b>	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	1	1	0	0	15	55.6
<b>84</b>	1	1	1	0	0	1	1	1	0	0	0	0	0	1	1	1	1	0	0	1	1	1	0	0	1	0	0	0	14	51.9
<b>85</b>	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	14	51.9
<b>86</b>	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	0	0	7	25.9
<b>87</b>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	1	1	0	0	0	8	29.6
<b>88</b>	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	21	77.8
<b>89</b>	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	0	18	66.7
<b>90</b>	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	0	18	66.7
<b>Good</b>	95.56	68.89	63.33	47.78	44.44	68.89	71.11	18.89	2.22	1.11	14.44	12.22	13.33	16.67	22.22	88.89	91.11	41.11	41.11	95.56	68.89	68.89	55.56	17.78	85.56	44.44	25.56	3.33		
<b>Poor</b>	4.44	31.11	36.67	52.22	55.56	31.11	28.89	81.11	97.78	98.89	85.56	87.78	86.67	83.33	77.78	11.11	8.89	58.89	58.89	4.44	31.11	31.11	44.44	82.22	14.44	55.56	74.44	96.67		

### Appendix 7 Performance on individual Knowledge Questions

Knowledge Question	Bad Knowledge		Good Knowledge	
	(n)	(%)	(n)	(%)
Which of the following statements best describes the meaning of Lifestyle Modifications in managing Hypertension?	4	4.4	86	95.6
Which of the following are considered Lifestyle Modifications in managing Hypertension	28	31.1	62	68.9
Which of the following do you believe are the benefits of implementing Lifestyle Modifications for managing hypertension?	34	37.8	56	62.2
What foods are considered DASH (dietary approaches to stop hypertension), and Mediterranean diet in Hypertension management	47	52.2	43	47.8
Which of the following are the benefits of DASH diet in managing Hypertension	50	55.6	40	44.4
Which of the following are considered the consequences of adding raw salt to die	28	31.1	62	68.9
What are the benefits of decreasing salt intake in managing Hypertension?	26	28.9	64	71.1
Which ones are the most recommended type of physical exercises in managing Hypertension?	73	81.1	17	18.9
How often should exercise be done to achieve blood pressure control?	88	97.8	2	2.2

How many minutes are recommended for an exercise to be considered effective in managing Hypertension?	89	98.9	1	1.1
What are the benefits of physical exercise in managing Hypertension?	77	85.6	13	14.4
What are the dangers of smoking among Hypertensive patients	79	87.8	11	12.2
What are the benefits of smoking cessation in Hypertension management?	78	86.7	12	13.3
What are the effects of Alcohol intake in Managing Hypertension?	75	83.3	15	16.7
What are the benefits of limiting Alcohol in managing Hypertension?	70	77.8	20	22.2
What are some of the stress management strategies in managing Hypertension?	10	11.1	80	88.9
What are the benefits of implementing proper stress management strategies?	8	8.9	82	91.1
What measures are effective in controlling and maintaining weight in Hypertension Management?	53	58.9	37	41.1
Which of the following are the benefits of weight control in managing Hypertension	53	58.9	37	41.1
Are you aware that you can be at risk of developing hypertension complications?	4	4.4	86	95.6
If yes to above, which major complications do you think Hypertension may have?	28	31.1	62	68.9
Do you find it difficult to alter your way of life to control hypertension	28	31.1	62	68.9
How challenging do you find it to alter your way of life in order to control your hypertension?	40	44.4	50	55.6
do you have the ability to make and maintain life style modifications	74	82.2	16	17.8

Have you ever received any information about Lifestyle Modification?	13	14.4	77	85.6
If yes, what was the source of Information?	50	55.6	40	44.4
Which kind of information did you receive?	67	74.4	23	25.6
Do you receive reminders or support to follow Lifestyle Modifications?	87	96.7	3	3.3

**Appendix 8 Individual Participants performance on each Practice Question**

No	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Individual Total	Mean
1	4	5	5	1	1	1	3	1	1	1	23.00	2.30
2	5	5	5	1	1	1	1	1	1	1	22.00	2.20
3	5	5	5	1	1	1	1	1	1	1	22.00	2.20
4	3	5	3	1	1	1	3	1	1	1	20.00	2.00
5	5	5	5	1	3	3	4	3	1	1	31.00	3.10
6	2	5	5	1	1	1	3	1	1	1	21.00	2.10
7	5	5	5	1	1	1	5	1	1	1	26.00	2.60
8	5	5	5	1	1	1	3	1	1	1	24.00	2.40
9	5	5	1	3	3	3	4	1	1	1	27.00	2.70
10	5	5	5	1	1	1	4	1	1	1	25.00	2.50
11	1	5	1	1	1	1	3	1	1	1	16.00	1.60
12	5	5	5	1	1	1	2	1	1	1	23.00	2.30
13	4	3	3	2	2	1	1	4	1	1	22.00	2.20

<b>14</b>	4	4	1	1	1	1	1	1	1	1	1	16.00	1.60
<b>15</b>	4	4	3	1	1	1	2	2	1	1		20.00	2.00
<b>16</b>	4	3	1	3	3	3	4	1	1	1		24.00	2.40
<b>17</b>	5	5	4	3	2	2	4	1	1	1		28.00	2.80
<b>18</b>	5	5	5	3	2	2	3	1	1	1		28.00	2.80
<b>19</b>	4	4	5	1	1	1	1	1	1	1		20.00	2.00
<b>20</b>	4	5	5	1	1	1	1	1	1	1		21.00	2.10
<b>21</b>	1	5	5	1	1	1	3	1	1	1		20.00	2.00
<b>22</b>	1	5	5	1	1	1	3	1	1	1		20.00	2.00
<b>23</b>	5	5	5	1	1	1	3	1	1	1		24.00	2.40
<b>24</b>	5	5	5	1	1	1	2	1	1	1		23.00	2.30
<b>25</b>	5	5	5	1	5	1	5	4	1	1		33.00	3.30
<b>26</b>	5	5	1	1	4	4	1	1	1	1		24.00	2.40
<b>27</b>	5	4	4	3	3	3	4	1	1	1		29.00	2.90
<b>28</b>	5	5	4	1	1	1	3	1	1	1		23.00	2.30
<b>29</b>	1	5	3	1	1	1	3	1	1	1		18.00	1.80

<b>30</b>	5	5	5	1	1	1	3	1	1	1	24.00	2.40
<b>31</b>	5	5	2	1	1	1	2	1	1	1	20.00	2.00
<b>32</b>	5	5	5	1	2	2	3	1	1	1	26.00	2.60
<b>33</b>	2	5	5	1	1	1	3	1	1	1	21.00	2.10
<b>34</b>	2	5	5	1	2	2	2	2	2	1	24.00	2.40
<b>35</b>	5	5	5	5	4	4	3	4	3	3	41.00	4.10
<b>36</b>	5	5	5	1	3	3	3	1	1	1	28.00	2.80
<b>37</b>	3	5	5	1	1	1	2	1	1	1	21.00	2.10
<b>38</b>	5	5	5	1	1	1	3	3	1	1	26.00	2.60
<b>39</b>	2	5	5	1	1	1	1	1	1	1	19.00	1.90
<b>40</b>	2	5	5	1	1	1	2	1	1	1	20.00	2.00
<b>41</b>	2	5	5	1	1	1	2	1	1	1	20.00	2.00
<b>42</b>	2	5	5	1	1	1	3	1	1	1	21.00	2.10
<b>43</b>	5	5	5	1	1	1	2	1	1	1	23.00	2.30
<b>44</b>	5	5	5	1	1	1	4	2	1	1	26.00	2.60
<b>45</b>	2	5	5	1	1	1	2	1	1	1	20.00	2.00

<b>46</b>	5	5	3	2	2	2	2	1	1	1	24.00	2.40
<b>47</b>	5	5	5	1	1	1	3	1	1	1	24.00	2.40
<b>48</b>	5	5	5	1	2	1	2	1	1	1	24.00	2.40
<b>49</b>	5	5	5	1	1	1	3	1	1	1	24.00	2.40
<b>50</b>	2	5	5	1	1	1	1	1	1	1	19.00	1.90
<b>51</b>	2	5	5	1	1	1	1	1	1	1	19.00	1.90
<b>52</b>	5	5	3	1	1	1	2	1	1	1	21.00	2.10
<b>53</b>	5	5	2	2	1	1	2	1	1	1	21.00	2.10
<b>55</b>	5	5	1	1	1	1	3	1	1	1	20.00	2.00
<b>55</b>	2	5	2	1	1	1	2	1	1	1	17.00	1.70
<b>56</b>	2	5	5	1	1	1	3	1	1	1	21.00	2.10
<b>57</b>	1	5	5	1	1	1	3	1	1	1	20.00	2.00
<b>58</b>	5	5	5	1	1	1	2	1	1	1	23.00	2.30
<b>59</b>	5	5	1	1	1	1	2	1	1	1	19.00	1.90
<b>60</b>	5	5	5	1	1	1	3	2	1	1	25.00	2.50
<b>61</b>	5	5	1	1	1	1	4	1	1	1	21.00	2.10

<b>62</b>	2	5	2	1	1	1	4	1	1	1	19.00	1.90
<b>63</b>	3	5	5	1	1	1	2	1	1	1	21.00	2.10
<b>64</b>	3	5	3	1	1	1	4	1	1	1	21.00	2.10
<b>65</b>	2	5	2	1	1	1	2	1	1	1	17.00	1.70
<b>66</b>	2	5	3	1	1	1	4	1	1	1	20.00	2.00
<b>67</b>	3	5	5	1	1	1	2	1	1	1	21.00	2.10
<b>68</b>	5	5	2	1	1	1	3	3	1	1	23.00	2.30
<b>69</b>	2	5	2	1	1	1	3	3	1	1	20.00	2.00
<b>70</b>	5	5	2	3	3	2	2	3	2	1	28.00	2.80
<b>71</b>	2	5	2	1	1	1	3	2	2	1	20.00	2.00
<b>72</b>	2	5	3	1	1	1	4	2	1	1	21.00	2.10
<b>73</b>	2	5	2	1	1	1	3	2	2	1	20.00	2.00
<b>74</b>	3	5	5	1	1	1	3	1	1	1	22.00	2.20
<b>75</b>	3	5	2	1	1	1	2	1	1	1	18.00	1.80
<b>76</b>	5	5	5	1	1	1	2	2	1	1	24.00	2.40
<b>77</b>	2	5	3	1	1	1	3	2	1	1	20.00	2.00

<b>78</b>	2	5	5	1	1	1	2	1	1	1	20.00	2.00
<b>79</b>	5	5	5	1	1	4	4	2	1	1	29.00	2.90
<b>80</b>	2	5	2	1	1	1	2	1	1	1	17.00	1.70
<b>81</b>	3	5	2	3	1	1	2	1	1	1	20.00	2.00
<b>82</b>	2	5	2	1	1	1	4	1	1	1	19.00	1.90
<b>83</b>	5	5	3	1	1	1	3	1	1	1	22.00	2.20
<b>84</b>	2	5	5	1	1	1	2	1	1	1	20.00	2.00
<b>85</b>	3	5	2	1	1	1	3	2	1	1	20.00	2.00
<b>86</b>	5	5	2	3	1	1	2	1	1	1	22.00	2.20
<b>87</b>	5	5	5	3	4	4	3	3	2	1	35.00	3.50
<b>88</b>	5	5	5	1	1	1	2	1	1	1	23.00	2.30
<b>89</b>	5	5	5	3	4	4	2	2	1	1	32.00	3.20
<b>90</b>	5	5	5	1	1	1	2	1	1	1	23.00	2.30
<b>Total</b>	333	442	34 5	117	125	121	237	123	97	92		

<b>Mean</b>	0.74	0.98	0. 77	0.26	0.28	0.27	0.53	0.27	0.22	0.20		
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Appendix 9 Approval letter



UG-REC-026 Approval Version 4.126th September, 2024

26<sup>th</sup> September, 2024

BETH NAKUSI  
Uganda Christian University  
0704906371,  
Email: [nakusibeth@gmail.com](mailto:nakusibeth@gmail.com)

UG-REC-026 APPROVAL NOTICE

To: Beth Nakusi, Principal Investigator

Re: UCU-REC Application titled: *Knowledge and practice of lifestyle Modifications among Hypertensive Patients at Muyembe Health Centre IV in Bulambuli District*

Application Number: UCUREC-2024-1024

Version: 4.1

- Type: [ ] INITIAL REVIEW  
 [ ] Protocol Amendment  
 [ ] Letter of Amendment (LOA)  
 [ ] Continuing Review  
 [ ] Material Transfer Agreement  
 [ ] Other, Specify:



I am pleased to inform you that the UG-REC-026; UCUREC approved the above referenced application.

Approval of the research is for the period from 26<sup>th</sup> September, 2024, to 26<sup>th</sup> September, 2025  
 This research is considered minimal risk category.  
 As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and additions to the protocol or the consent form must be submitted to the REC for re-review and approval prior to the activation of the changes. The REC application number assigned to the research should be cited in any correspondence.
3. Reports of unanticipated problems involving risks to participants or other must be submitted to the REC. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for REC review.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits

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5. Regulations require review of an approved study not less than once per 12-month period. Therefore, a continuing review application must be submitted to the REC eight weeks prior to the above expiration date of 26<sup>th</sup> September, 2025 in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. Your research details have been shared with the Executive secretary of Uganda National Council for Science and Technology (UNCST) and you are not required to get clearance since you are a Master's Degree research. Refer to UNCST Research registration and clearance Policy and guidelines (July 2016) in Uganda section 6(e).

The following is the list of all documents approved in this application by UG-REC \_026:

Document Title	Language	Version	Version Date
1. Protocol	English	1.0	2024-08-26
2. Data collection Tools	English	1.0	2024-08-26
3. Informed consent Form	English	1.0	2024-08-26

Signed and Stamped

Prof. Peter Waliswa,  
 UCUREC Chairperson,  
[pwalswa@musph.ac.ug](mailto:pwalswa@musph.ac.ug)



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### Appendix 10 Administrative Clearance from Bulambuli District

MULAGO SCHOOL OF NURSING & MIDWIFERY, P.O. BOX 7051, KAMPALA.

2<sup>nd</sup> October 2024

The Chief Administrative Officer, Bulambuli District Local Government, P. O Box 2298, Mbale

*No objection*  
*3/10/2024*  
*3/10/2024*

**RE: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH STUDY**

I am Nakusi Monye Beth a Masters of Science Nursing student of Uganda Christian University, conducting a study titled "Knowledge and Practice of Life Style Modifications among Hypertensive Patients at Muyembe HCIV in Bulambuli District.

This is to request for permission to conduct a pretest of the questionnaire at Buyaga HCIII for the study.

Attached is the approval letter of Research Ethics Committee of Uganda Christian University.

I shall be most grateful for the positive response.

Thank you.

*[Signature]*

NAKUSI MONYE BETH

Principal Health Tutor,

Mulago school of nursing & Midwifery,

*02 OCT 24*  
*3/10/2024*

*Allowed for pretest activity*  
*3/10/24*

MULAGO SCHOOL OF NURSING & MIDWIFERY, P.O. BOX 7051, KAMPALA.

2<sup>nd</sup> October 2024

The Chief Administrative Officer, Bulambuli District Local Government, P. O Box 2298, Mbale.

*No objection*  
*3/10/2024*

**RE: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH STUDY**

I am Nakusi Monye Beth a Masters of Science Nursing student of Uganda Christian University, conducting a study titled "Knowledge and Practice of Life Style Modifications among Hypertensive Patients at Muyembe HCIV in Bulambuli District.

This is to request for permission to conduct a study at Muyembe HCIV for the study.

Attached is the approval letter of Research Ethics Committee of Uganda Christian University.

I shall be most grateful for the positive response.

Thank you.

*[Signature]*

NAKUSI MONYE BETH

Principal Health Tutor,

Mulago School of Nursing & Midwifery.

*02 OCT 2024*

*Allowed, the NCH chair give approval*  
*3/10/24*

*02 OCT 2024*  
*3/10/24*