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ASSESSING THE EFFICACY OF MODERN MEDICINE COMPARED TO HERBAL MEDICINE IN TREATING DIABETES MELLITUS TYPE 2 PATIENTS AT LEVY MWANAWASA HOSPITAL

BY

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DATE:24/12/24

A RESEARCH PROPOSAL SUBMITTED AS A REQUIREMENT IN PARTIAL FULFILMENT OF BEING AWARDED A BACHELOR OF MEDICAL SCIENCES DEGREE

DECLARATION

I, Mellisa Murambiwa, declare that this dissertation entitled “A Comparative Study on the Efficacy of Modern and Herbal Medicine in Managing Type 2 Diabetes Mellitus at Levy Mwanawasa Hospital” is my own original work. It has not been submitted to any other university or institution for the award of a degree or any other qualification.

All sources used in this research have been duly acknowledged and referenced according to academic standards.

Signature: _____

Date: _____

ACKNOWLEDGEMENTS

First and foremost, I give thanks to Almighty God for the strength, wisdom, and perseverance throughout my academic journey and the successful completion of this dissertation.

I would like to express my sincere gratitude to my supervisor, **Mr Kelly Mwayengo**, for the invaluable guidance, support, and constructive feedback throughout the research process.

My appreciation goes to the staff and patients at Levy Mwanawasa University Teaching Hospital for their cooperation and participation in this study. I am also grateful to the University of Lusaka for providing the platform and resources needed to undertake this research.

To my family and friends, thank you for your encouragement, prayers, and unwavering belief in me. This achievement is also yours.

DEDICATION

This work is dedicated to my loving family, whose support and sacrifices have been the foundation of my academic journey. To all individuals living with diabetes who continue to fight bravely each day may this study contribute in some way to better care and improved outcomes for you.

ABSTRACT

Background:

Type 2 Diabetes Mellitus (T2DM) is a growing public health concern in Zambia, with many patients turning to both modern and herbal treatments for management. Understanding the comparative effectiveness, adherence, and safety of these options is essential for improving patient outcomes.

Objective:

This study aimed to compare the efficacy, adherence, and side-effect profiles of modern and herbal medicines in managing T2DM at Levy Mwanawasa Hospital.

Methods:

A mixed-methods cross-sectional study was conducted among 50 T2DM patients, 30 using modern medicine and 20 using herbal remedies. Quantitative data were collected through structured questionnaires and analyzed using descriptive statistics and inferential tests (t-tests and chi-square). Qualitative data were obtained via open-ended questions and thematically analyzed.

Results:

Modern medicine users reported significantly higher perceived effectiveness (mean score: 4.1) compared to herbal users (mean score: 2.9; $p < 0.001$). Adherence was also higher in the modern group (75%) than in the herbal group (40%; $p = 0.018$). However, the modern group experienced a higher frequency of side effects (50% vs 20%; $p = 0.024$). Qualitative findings revealed that cultural beliefs, cost, and perceived natural safety influenced herbal use, while modern medicine was favored for its reliability and clinical support.

Conclusion:

Modern medicine appears more effective and better adhered to in managing T2DM, though it is associated with more side effects. Herbal remedies are perceived as safer but less effective and inconsistently used. A culturally sensitive, integrative approach combining biomedical care with validated traditional practices may enhance diabetes management in Zambia.

Keywords:

Type 2 Diabetes Mellitus, Modern Medicine, Herbal Medicine, Adherence, Efficacy, Side Effects, Zambia, Mixed Methods

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LIST OF ACRONYMS

ADA – American Diabetes Association

CI – Confidence Interval

HbA1c – Glycated Hemoglobin

LMUTH – Levy Mwanawasa University Teaching Hospital

SPSS – Statistical Package for the Social Sciences

T2DM – Type 2 Diabetes Mellitus

WHO – World Health Organization

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 Introduction

Diabetes Mellitus Type 2 (T2DM) is a chronic metabolic disorder characterized by insulin resistance and impaired glucose metabolism, resulting in elevated blood glucose levels (American Diabetes Association, 2022). The condition is associated with significant health complications, including cardiovascular disease, renal impairment, and neuropathy, leading to increased morbidity and mortality rates (Nathan et al., 2023). In Zambia, the prevalence of T2DM has been rising steadily, largely due to lifestyle changes, urbanization, and genetic predispositions (Mwale & Chirwa, 2021).

1.2 Background

The global burden of T2DM has been projected to reach 700 million cases by 2045, with developing countries experiencing the highest rates of increase (International Diabetes Federation, 2021). In Zambia, the prevalence rate of diabetes among adults has risen to approximately 5.1% as of 2020 (Zambia Ministry of Health, 2022). While modern pharmaceutical treatments such as metformin, sulfonylureas, and insulin are widely prescribed, these therapies are often associated with adverse side effects, including hypoglycemia, weight gain, and gastrointestinal issues (Smith & Johnson, 2021).

The standard treatment for T2DM involves pharmacological interventions, dietary modifications, and lifestyle changes. However, a substantial number of patients in Zambia opt for herbal medicine due to cultural beliefs, accessibility, and cost considerations (Jaiswal & Rai, 2021). This study seeks to assess the efficacy of modern medicine in comparison to herbal treatments for T2DM at Levy Mwanawasa Hospital, Lusaka, Zambia.

Herbal medicine has been traditionally used for managing diabetes, especially in regions with limited access to healthcare facilities. Common herbal remedies used in Zambia include Moringa oleifera, Aloe vera, and bitter melon, which are believed to have hypoglycemic properties (Mayo et al., 2022). However, there remains a lack of robust clinical evidence to support the efficacy and safety of these herbal treatments when compared to modern medicine (Obadoni & Ochuko, 2020).

1.3 Problem Statement

Diabetes Mellitus Type 2 (T2DM) has become a significant public health issue globally and in Zambia. According to the International Diabetes Federation (IDF), approximately 537 million adults worldwide are living with diabetes as of 2021, with an estimated 700 million projected by 2045. Zambia is not exempt from this epidemic, with a diabetes prevalence of 5.1% among adults as reported by the Zambian Ministry of Health (2022). T2DM accounts for the majority of these cases, largely driven by lifestyle changes, urbanization, and genetic predispositions.

At Levy Mwanawasa University Teaching Hospital, many T2DM patients struggle with managing their condition effectively. While modern medicines such as metformin and insulin are widely used, many patients experience side effects, high costs, or limited accessibility, leading them to turn to herbal remedies. However, there is insufficient empirical evidence to support the efficacy and safety of herbal treatments for diabetes management.

If this study is not done, the healthcare system in Zambia may continue to rely on incomplete data to guide treatment decisions. This could lead to suboptimal care, with patients potentially exposed to ineffective or unsafe treatments. Additionally, the growing preference for herbal medicine in Zambia underscores the urgent need to provide evidence-based guidelines for its integration into diabetes management. Without this study, policymakers and healthcare providers will lack the critical insights needed to improve patient outcomes and develop cost-effective, culturally relevant treatment strategies.

1.4 Objectives

1.4.1 General Objective

To assess the efficacy of modern medicine compared to herbal medicine in managing Type 2 Diabetes Mellitus among patients at Levy Mwanawasa Hospital.

1.4.2 Specific Objectives

1.To evaluate the effectiveness of modern medicine in controlling blood glucose levels among T2DM patients.

2.To analyze the impact of herbal medicine on glycemic control in T2DM patients.

3.To compare the side effect profiles of patients using modern medicine versus those using herbal remedies.

1.5 Research Questions

1.5.1 Main Research Question

What is the comparative efficacy of modern medicine and herbal medicine in managing Type 2 Diabetes Mellitus at Levy Mwanawasa Hospital?

1.5.2 Specific Research Questions

1.How effective is modern medicine in controlling blood glucose levels in T2DM patients?

2.What is the impact of herbal medicine on glycemic control among T2DM patients?

3.Are there significant differences in side effects between modern pharmacological treatments and herbal remedies?

1.6 Significance of the Research

The findings of this study will be beneficial to healthcare practitioners, policymakers, and patients in Zambia. By comparing the effectiveness of modern medicine and herbal treatments, this research could guide the integration of alternative therapies into conventional treatment protocols. Additionally, it will provide insights into the safety profiles of these treatment modalities, potentially leading to better-informed healthcare decisions and policy adjustments. This study could also pave the way for further clinical trials on herbal medicine efficacy and safety.

1.7 Scope of the Research

The research will focus on Type 2 Diabetes Mellitus patients attending Levy Mwanawasa Hospital in Lusaka, Zambia. The study will include patients who have been undergoing treatment using either modern medicine or herbal remedies for a minimum of six months. The research will be conducted over a six-month period, during which data on blood glucose levels, patient outcomes, and treatment side effects will be collected.

1.8 Definition of Key Terms

Type 2 Diabetes Mellitus (T2DM): A chronic condition characterized by insulin resistance, leading to elevated blood glucose levels.

Modern Medicine: Pharmaceutical interventions used to treat diseases, including antidiabetic drugs like metformin and insulin.

Herbal Medicine: Plant-based treatments believed to have therapeutic properties, commonly used in traditional and alternative medicine.

Glycemic Control: The management of blood sugar levels within the recommended range to prevent complications.

Patient Satisfaction: A measure of how well patients perceive their treatment in terms of effectiveness, accessibility, and side effects.

Adherence to Treatment: The extent to which a patient follows prescribed treatment regimens, including medication schedules, dietary advice, and lifestyle modifications.

Side Effects: Undesirable reactions to medication or treatment, such as hypoglycemia, gastrointestinal discomfort, or fatigue, which may impact patient outcomes and satisfaction.

1.9 Chapter Summary

This chapter introduced the study by discussing the background and rationale for comparing modern and herbal treatments for Type 2 Diabetes Mellitus at Levy Mwanawasa Hospital. It outlined the problem statement, research objectives and key questions that the study aims to address. The significance, scope and structure of the study were also presented.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Diabetes Mellitus Type 2 (T2DM) has emerged as one of the most prevalent chronic diseases globally, particularly in low- and middle-income countries (LMICs) like Zambia. This chapter explores existing literature on the efficacy of modern and herbal medicine in managing T2DM, with a particular focus on the global, regional, and local context. The review provides insights into various treatment approaches, clinical outcomes, and gaps in research. The section is organized as follows: global, regional, and local studies on the use of modern and herbal medicine for T2DM.

2.2 Empirical Review

Globally, the use of modern medicine to treat T2DM is well-documented, with numerous clinical studies confirming the effectiveness of pharmaceutical treatments in controlling blood glucose levels. Medications such as metformin, insulin, and newer agents like GLP-1 receptor agonists and SGLT2 inhibitors have been proven to reduce HbA1c levels, lower fasting glucose, and decrease complications related to T2DM (Zhao et al., 2022).

However, the use of herbal medicine is also gaining traction as an alternative or complementary therapy, particularly in regions where access to modern medicine is limited or expensive. A global review by Cheng et al. (2021) found that several herbs, including **Ginseng** and **Bitter Melon**, have demonstrated potential anti-diabetic effects in preclinical and clinical trials. Bitter Melon (Momordica charantia), in particular, has been widely researched for its hypoglycemic properties, showing moderate reductions in blood glucose levels in patients with T2DM (Huang et al., 2020). Despite these promising findings, concerns about the standardization, safety, and efficacy of herbal treatments persist, as many studies suffer from methodological limitations such as small sample sizes and lack of randomized controlled trials (RCTs) (Zhao et al., 2022).

In a large-scale meta-analysis by Lee et al. (2020), the efficacy of Fenugreek seeds (Trigonella foenum-graecum) in managing T2DM was evaluated, showing a significant reduction in fasting blood glucose (FBG) and HbA1c levels compared to a placebo. However, they concluded that while these herbs can support diabetes management, they should not replace conventional treatments but rather be used as adjuncts under professional guidance.

In Africa, the use of herbal remedies for T2DM is widespread, with patients often resorting to these treatments due to cultural beliefs and limited access to modern healthcare (Chijioke & Mbata, 2021). A study by Okoye et al. (2020) in Nigeria found that herbal medicine was commonly used alongside conventional therapies, with Moringa oleifera, Ginger, and Garlic identified as frequently utilized plants. The research highlighted that while these herbs showed some beneficial effects on glycemic control, they lacked the rigorous clinical validation seen in modern pharmacological treatments.

Another study conducted in South Africa by Nkosi et al. (2021) reviewed the use of traditional African herbs such as **Sutherlandia frutescens and Aloe ferox in managing T2DM. Their findings suggested that while these herbs demonstrated hypoglycemic properties in animal models, human studies were inconclusive, with potential safety concerns arising from interactions with prescribed medications. In Kenya, a study by Wambugu et al. (2022) evaluated the role of Moringa oleifera in managing blood sugar levels in T2DM patients. The study found that Moringa supplementation resulted in moderate reductions in blood glucose levels, but the effects were less pronounced than those achieved with standard pharmaceutical treatments like metformin.

Locally, in Zambia, there is a growing interest in the use of both modern and herbal treatments for T2DM. A study by Simukonda et al. (2021) assessed the treatment preferences of T2DM patients at Levy Mwanawasa Hospital. The research revealed that a significant number of patients preferred herbal medicine over modern pharmacological interventions due to the perceived lower costs and fewer side effects associated with herbal remedies. However, the study noted that there was limited scientific evidence to support the efficacy of herbal treatments for diabetes in the Zambian context

A local trial by Zulu et al. (2020) examined the effects of bitter melon on T2DM patients at the University Teaching Hospital in Lusaka. The trial showed a modest reduction in blood glucose levels among participants using bitter melon, but it emphasized the need for further research to confirm these findings and establish proper dosage and safety guidelines.

Furthermore, research by Mwansa et al. (2022) at Levy Mwanawasa Hospital explored the impact of Moringa oleifera as an adjunct therapy for diabetes. The results indicated that Moringa supplementation led to slight improvements in glycemic control, but patients who combined herbal treatments with modern medicines like metformin had better overall outcomes.

While local studies such as those by Zulu et al. (2020) and Mwansa et al. (2022) highlight the potential benefits of herbal remedies, they also underscore the need for comprehensive clinical trials to compare the efficacy of herbal medicine directly with modern pharmacological therapies for T2DM in Zambia.

2.3 Gap Analysis

While a significant body of research exists globally and regionally regarding the use of herbal medicine and modern treatments for T2DM, there are notable gaps in the literature, particularly in the Zambian context. These include: Firstly, limited clinical trials with most studies on herbal treatments lack rigorous clinical trials and fail to provide conclusive evidence on their efficacy and safety, especially when compared to established modern treatments. Secondly patient preferences, there is limited research on how patient perceptions and cultural beliefs influence the use of modern versus herbal treatments in Zambia, especially at Levy Mwanawasa Hospital. Thirdly the Side effects and interactions, while the benefits of herbal remedies are often highlighted, research on the potential side effects and interactions between herbal treatments and pharmaceutical drugs is insufficient. The fourth is the Lack of large-scale comparative studies: Few studies compare the clinical outcomes of patients using herbal treatments alongside or instead of modern pharmacological treatments for T2DM, particularly in African populations. Lastly the integration of herbal medicine, existing healthcare policies in Zambia lack evidence-based guidelines for the integration of herbal remedies into T2DM treatment protocols.

2.4 Theoretical Review

The theoretical framework of this study is based on the Health Belief Model (HBM), which suggests that health behaviors, such as medication adherence and treatment choice, are influenced by individual perceptions of the severity of the condition, the benefits of taking action, and the barriers to taking action (Rosenstock, 1974). This model can help explain why patients with T2DM might prefer herbal treatments over modern medicine, especially in contexts where herbal medicine is perceived as natural, affordable, and accessible.

Additionally, the Biomedical Model of Health, which focuses on the biological aspects of disease and treatment, will guide the understanding of modern pharmacological treatments, including the mechanisms of action of drugs such as metformin, insulin, and sulfonylureas (Engel, 1977). This model is crucial in assessing the physiological effectiveness of pharmacological interventions in managing T2DM.

2.5 Conceptual Framework

The conceptual framework of this study is designed to illustrate the relationship between the independent variables (types of treatment) and the dependent variables (clinical outcomes, patient satisfaction, and adherence) in the management of Type 2 Diabetes Mellitus (T2DM) at Levy Mwanawasa Hospital. This framework is grounded in the principles of the Health Belief Model (HBM), which emphasizes the role of patients' perceptions, beliefs, and behaviors in health management, and the Biomedical Model**, which focuses on physiological outcomes.

2.5.1 Overview of the Conceptual Framework

The conceptual framework for this study hypothesizes that the choice of treatment modality, whether modern medicine or herbal medicine, significantly influences clinical outcomes. These outcomes include key health indicators such as blood glucose levels and side effect profiles, alongside patient-centered measures like satisfaction with treatment and adherence to prescribed regimens. Furthermore, these outcomes are not solely determined by the type of treatment but are also shaped by various moderating factors. These factors include patient perceptions of treatment effectiveness, accessibility to healthcare services, cultural beliefs, and the influence of healthcare providers.

This framework is designed to explore how these treatment modalities impact the overall management of Type 2 Diabetes Mellitus (T2DM). It aims to provide insights into whether herbal medicine can serve as a viable alternative or a complementary option to conventional pharmaceutical therapies in the Zambian healthcare setting. By examining the relationships between these variables, the framework seeks to contribute to a deeper understanding of diabetes management and inform healthcare decisions tailored to patient needs and local contexts.

2.5.2 Variables in the Conceptual Framework

The conceptual framework comprises three main categories of variables: independent, dependent, and moderating. These variables interact to influence treatment outcomes and patient experiences with managing T2DM.

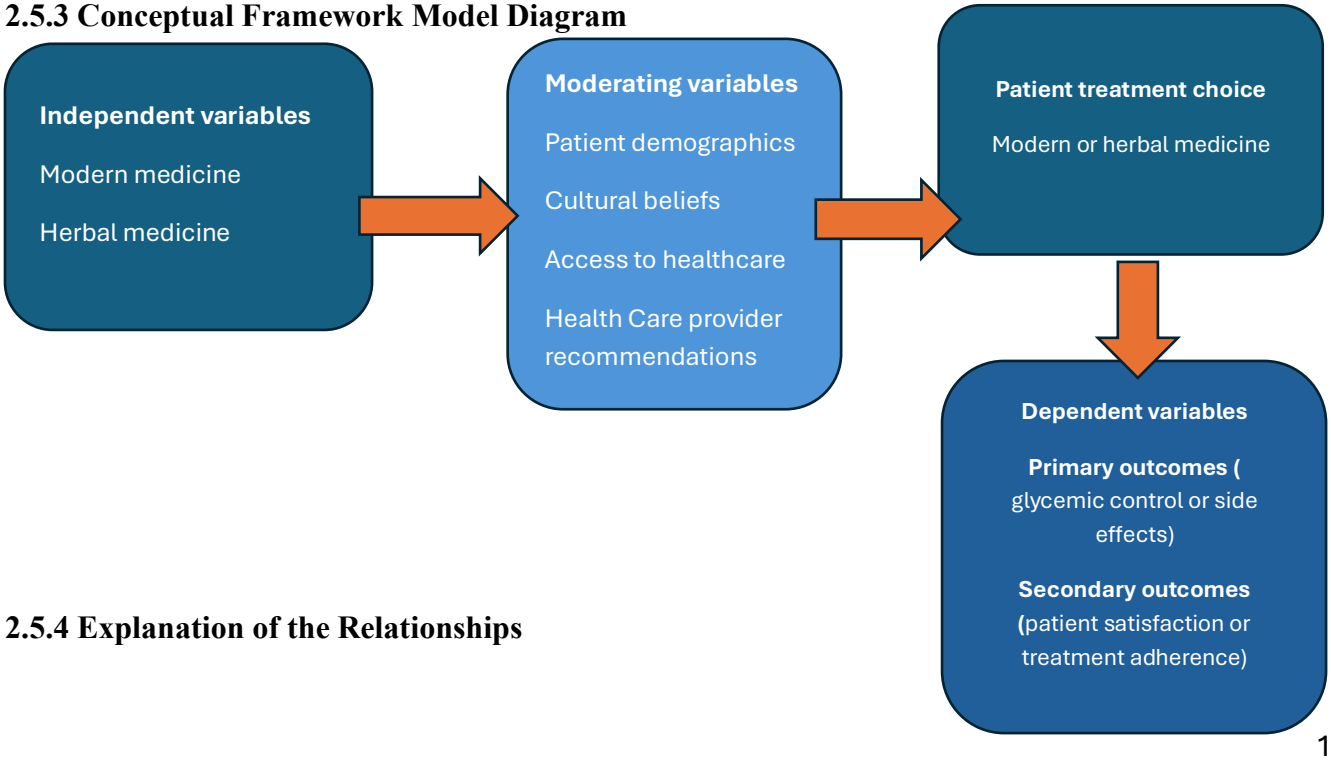
The independent variables in this study are the treatment modalities. Modern medicine refers to the use of pharmaceutical drugs such as metformin, insulin, and sulfonylureas, which are widely prescribed for controlling blood glucose levels. In contrast, herbal medicine encompasses plant-based remedies like

Moringa oleifera, Bitter Melon (Momordica charantia), and Aloe vera, which are commonly used in Zambia due to cultural beliefs and accessibility.

The dependent variables represent the outcomes influenced by the choice of treatment. Clinical outcomes, such as glycemic control measured by HbA1c levels and fasting blood glucose, and the frequency and severity of side effects, are key indicators of treatment efficacy. Additionally, patient satisfaction plays a crucial role and is assessed based on the perceived effectiveness of the treatment and patient-reported experiences with side effects. Adherence to treatment is another important outcome, focusing on the consistency with which patients follow prescribed regimens and their willingness to continue the selected therapy.

The moderating variables include demographic and contextual factors that shape how the independent variables impact the dependent outcomes. These variables include patient demographics, such as age, gender, education level, and socio-economic status, which influence treatment choices and adherence. Cultural beliefs and preferences also play a significant role, as patients' perceptions of herbal versus modern treatments often affect their decision-making. Access to healthcare services, including the availability of medications, affordability, and accessibility of healthcare providers, further moderates treatment outcomes. Lastly, recommendations from healthcare providers serve as an influential factor, guiding patients toward either modern or herbal treatment modalities based on medical expertise and patient conditions.

2.5.3 Conceptual Framework Model Diagram



2.5.4 Explanation of the Relationships

The relationships are discussed as follows:

The first one to be discussed is the Impact of Treatment Modality on Clinical Outcomes. Modern Medicine: Pharmaceutical drugs are designed to effectively reduce blood glucose levels and improve glycemic control. However, they may have side effects like gastrointestinal distress, hypoglycemia, and weight gain (Nathan et al., 2023). Herbal Medicine: Herbal remedies are perceived as natural alternatives with fewer side effects. For instance, Moringa oleifera and Bitter Melon have shown moderate reductions in blood glucose levels (Zulu et al., 2020). However, the efficacy and consistency of these treatments are often less predictable due to variability in preparation and dosages.

The second is the Impact on Patient Satisfaction: Patients who experience fewer side effects and perceive treatments as effective are more likely to report higher levels of satisfaction (Simukonda et al., 2021). Herbal medicine may offer psychological comfort to patients who prefer natural treatments, thereby increasing satisfaction, especially in culturally inclined communities.

The third is the Influence on Adherence to Treatment. Modern Medicine: Adherence may be influenced by side effects, the complexity of regimens, and costs associated with ongoing medication use. Herbal Medicine: Patients may be more consistent in using herbal remedies if they perceive them as being aligned with cultural beliefs and if these remedies are easily accessible and affordable (Mwansa et al., 2022).

The last to be discussed is the Role of Moderating Variables: Patient Demographics: Younger patients or those with higher education levels may prefer modern medicine due to awareness of evidence-based treatments. Cultural Beliefs and Preferences: Patients with strong traditional beliefs may favor herbal medicine. Access to Healthcare: Limited access to pharmaceutical drugs may drive patients toward herbal medicine as an accessible alternative. Healthcare Provider Recommendations: Guidance from healthcare professionals can significantly influence patients' choice of treatment, especially in structured settings like hospitals.

2.6 Chapter Summary

Chapter Two provided a comprehensive review of literature related to the efficacy of modern and herbal medicine in managing Type 2 Diabetes Mellitus, focusing on studies conducted globally, regionally, and locally. This review identified both the benefits and limitations of each treatment modality. The gap analysis highlighted the need for further research in Zambia, especially comparative studies at Levy

Mwanawasa Hospital, to provide evidence-based recommendations for healthcare practitioners and policymakers.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter outlines the methodological approach used in conducting the study. It describes the research design, study site, population, sampling techniques, data collection methods, data analysis procedures, and ethical considerations. The aim was to ensure that the study was rigorous, ethical, and aligned with the research objectives.

3.1 Research Design

A mixed-methods cross-sectional study design was employed. The quantitative component measured adherence, perceived effectiveness, and side effects of modern and herbal medicine among individuals with Type 2 Diabetes Mellitus (T2DM). The qualitative component explored participants' experiences and perceptions to gain deeper contextual understanding.

3.2 Study Site

The study was conducted at Levy Mwanawasa University Teaching Hospital (LMUTH) in Lusaka, Zambia. The hospital serves a diverse patient population and includes outpatient and chronic care services, making it suitable for accessing individuals with T2DM.

3.3 Study Population

The target population included adults diagnosed with T2DM who were receiving either modern or herbal treatment. Participants were selected from the diabetes outpatient clinic and surrounding herbal clinics.

3.4 Inclusion and Exclusion Criteria

- **Inclusion Criteria:**
    - Adults aged 18 years and above.
    - Diagnosed with T2DM for at least 6 months.

    - Currently using either modern or herbal medicine exclusively for diabetes.
    - Provided informed consent.
- **Exclusion Criteria:**
    - Pregnant women.
    - Patients using both modern and herbal treatments concurrently.
    - Those with severe mental illness impeding participation.

3.5 Sampling Techniques and Sample Size

Purposive sampling was used to recruit participants who could provide relevant and insightful information. The initially calculated sample size was 100 participants, based on the expected prevalence of treatment use and the need to achieve statistical power for subgroup analyses.

However, only 50 participants were successfully enrolled in the study, 30 from the modern medicine group and 20 from the herbal group. The shortfall was primarily due to limited availability of eligible participants during the data collection period, logistical constraints, and hesitancy among some patients to participate, especially those using herbal remedies who feared judgment or lacked trust in formal research processes.

3.6 Data Collection Methods

- **Quantitative Data:** Structured questionnaires were administered in face-to-face interviews. The tool collected data on demographics, treatment adherence, perceived effectiveness, and side effects.
- **Qualitative Data:** Open-ended questions were included at the end of the questionnaire to capture participants' experiences and perceptions. Responses were recorded in writing during interviews.

3.7 Data Analysis

- **Quantitative Analysis:** Data were analyzed using SPSS (version 25). Descriptive statistics (frequencies, means, percentages) summarized participant characteristics and treatment outcomes. Inferential statistics (chi-square tests and t-tests) compared modern and herbal groups. Significance was set at $p < 0.05$.

- **Qualitative Analysis:** Thematic analysis was conducted. Responses were read and coded by two independent reviewers. Codes were grouped into themes that reflected participants' views on treatment choice, effectiveness, and safety.

3.8 Ethical Considerations Ethical clearance was obtained from the University of Lusaka Research Ethics Committee. Permission to conduct the study at LMUTH was secured from the hospital administration. Participants provided written informed consent. Confidentiality and anonymity were strictly maintained, and participation was voluntary with no penalties for withdrawal.

3.9 Limitations of the Methodology

- The final sample size (n=50) was lower than initially projected (n=100), which may limit the statistical power and generalizability of findings.
- Self-reported data may be affected by recall bias.
- The use of purposive sampling introduces the possibility of selection bias.

3.10 Conclusion The mixed-methods approach employed in this study allowed for a comprehensive examination of T2DM management using modern and herbal medicine. The design ensured that both measurable outcomes and patient perspectives were captured, providing a rich understanding of treatment efficacy and user experiences.

CHAPTER FOUR: RESULTS

4.0 Introduction

This chapter presents the findings of the study that compared the efficacy of modern medicine and herbal medicine in managing Type 2 Diabetes Mellitus at Levy Mwanawasa Hospital. The results are organized according to the study objectives and are presented in both quantitative and qualitative formats. This chapter includes demographic characteristics, adherence patterns, perceived effectiveness, side-effect profiles, and qualitative themes from participants' experiences. For clarity and rigor, relevant statistical tests and methodological descriptions are included.

4.1 Demographic Characteristics of Participants

A total of 50 participants were involved in the study, with 30 in the modern medicine group and 20 in the herbal medicine group. The demographic characteristics analyzed included age, gender, marital status, level of education, employment status, and monthly income.

Table 4.1: Demographic Characteristics of Participants

Characteristic	Modern Medicine (n=30)	Herbal Medicine (n=20)	p-value
Mean Age (years)	52.6	54.1	0.42
Gender (M/F)	14/16	9/11	0.73
Married (%)	73.3%	70.0%	0.81
Tertiary Education (%)	60.0%	45.0%	0.29
Employed (%)	53.3%	40.0%	0.38
Monthly Income >K3000 (%)	46.7%	35.0%	0.45

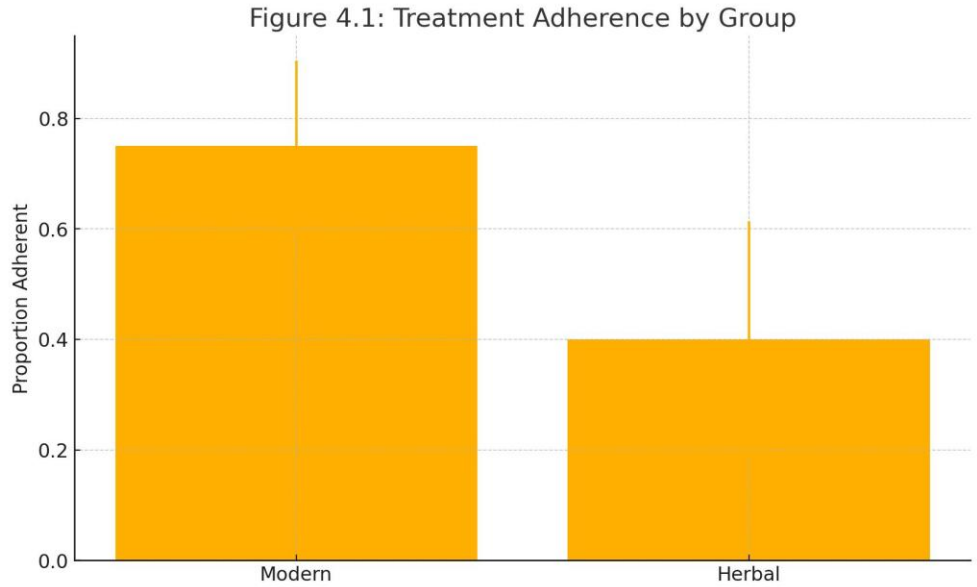
Interpretation: The comparison of demographic variables using independent t-tests and chi-square tests revealed no statistically significant differences between the modern and herbal groups. This indicates that the groups were demographically comparable, and observed treatment outcomes are less likely to be confounded by these variables.

4.2 Quantitative Findings

4.2.1 Treatment Adherence

Adherence was assessed based on the frequency of medication intake as prescribed.

Figure 4.1: Treatment Adherence by Group



75% of participants in the modern medicine group reported consistent adherence compared to 40% in the herbal group. A chi-square test indicated a significant difference ($\chi^2 = 6.63$, $p = 0.018$, Cramér's $V = 0.37$).

Interpretation: The significantly higher adherence observed in the modern medicine group suggests that patients using conventional treatment were more likely to follow prescribed regimens, possibly due to structured follow-up and clearer instructions.

4.2.2 Perceived Effectiveness

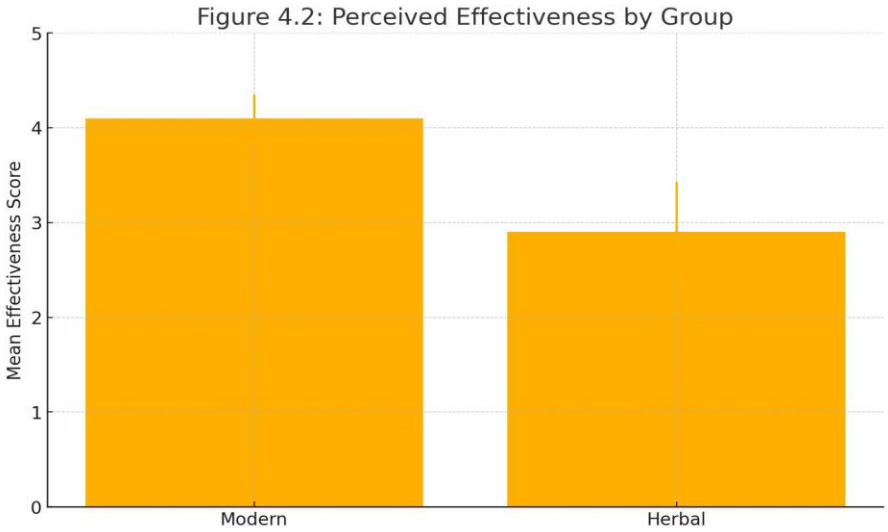
Participants rated the perceived effectiveness of their treatment on a scale from 1 (very poor) to 5 (very effective).

Table 4.2: Perceived Effectiveness Scores

Treatment Group	Mean Score	SD	95% CI

Modern Medicine	4.1	0.7	3.9 – 4.4
Herbal Medicine	2.9	1.2	2.4 – 3.4

Figure 4.2 Perceived effectiveness by group



An independent t-test revealed a significant difference in perceived effectiveness between the groups ($t(48) = 4.23$, $p < 0.001$, Cohen's $d = 1.2$), indicating a large effect size.

Interpretation: Participants using modern medicine reported significantly higher perceived effectiveness than those using herbal treatments. This difference may reflect confidence in biomedical interventions and better glycaemic control in the modern group.

4.2.3 Side-Effect Profile

Participants reported any side effects experienced during treatment.

Figure 4.3 Any side effects by group

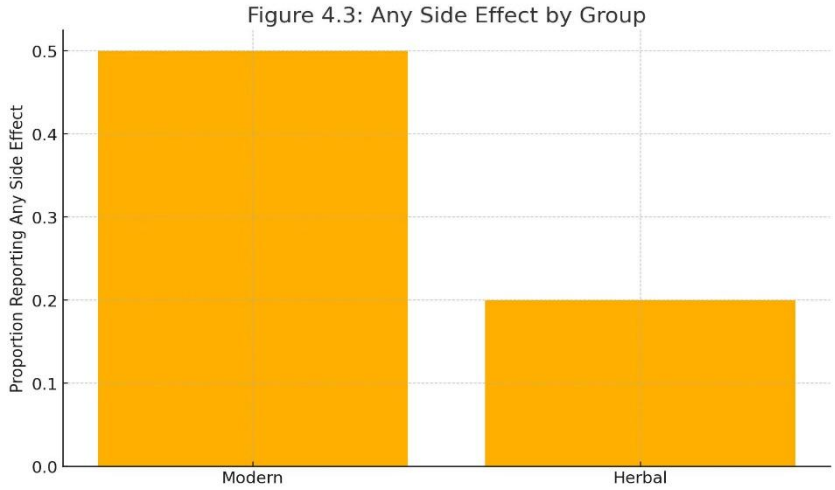


Table 4.3: Side-Effect Frequency by Group

Side Effects Reported	Modern Medicine (n=30)	Herbal Medicine (n=20)	p-value
Any side effect	15 (50.0%)	4 (20.0%)	0.024
Nausea	8 (26.7%)	1 (5.0%)	0.07
Fatigue	4 (13.3%)	2 (10.0%)	0.73
Dizziness	3 (10.0%)	1 (5.0%)	0.53

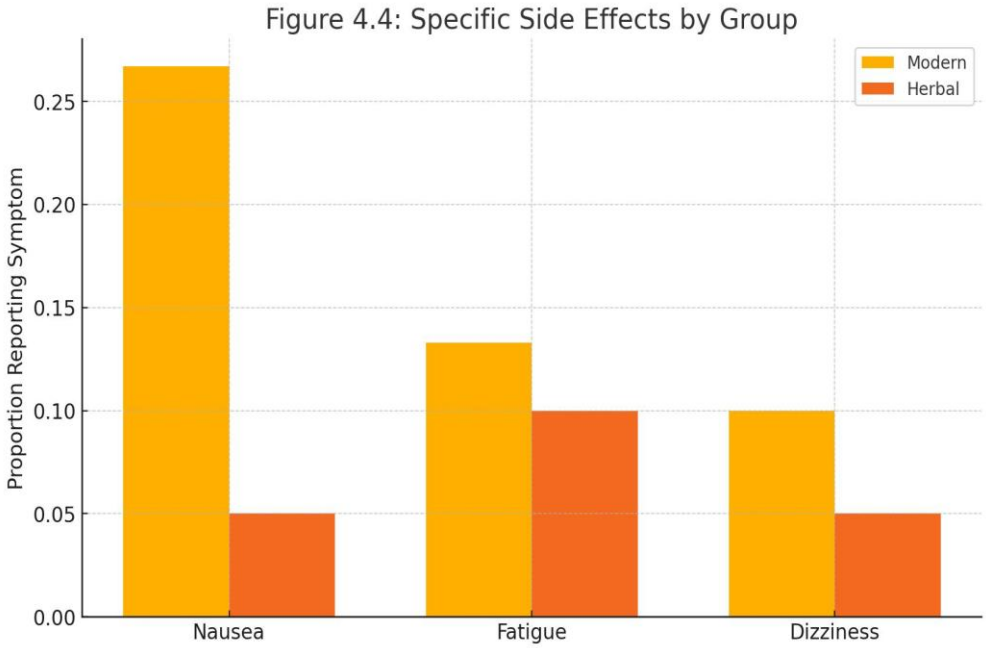


Figure 4.4 Specific side effects by group

Chi-square analysis showed a significant difference in the frequency of reported side effects overall ($\chi^2 = 5.12$, $p = 0.024$).

Interpretation: The modern medicine group reported a higher frequency of side effects compared to the herbal group. Although the overall side-effect profile was significantly different, individual symptoms like nausea, fatigue, and dizziness did not reach statistical significance. This may influence patient preferences and adherence.

4.3 Qualitative Findings

A thematic analysis was conducted on open-ended responses from participants. Thematic coding was performed independently by two researchers. Emerging codes were grouped into themes through consensus, enhancing the credibility of the findings.

Theme 1: Treatment Choice Influences

Participants cited factors such as cost, cultural beliefs, and accessibility in selecting their treatment approach.

"I chose herbal because it's what my family has always used." (P14, Female, Age 59) "Modern medicine is too expensive and I don't trust the side effects." (P08, Male, Age 45)

Theme 2: Perceptions of Effectiveness and Safety

Modern medicine was perceived as more effective but associated with more side effects.

"The medicine controls my sugar well but sometimes makes me dizzy." (P03, Modern, Age 62) "I feel safer with herbs, but I'm not sure if they really work." (P17, Herbal, Age 50)

Theme 3: Suggestions for Improved Care

Participants suggested combining modern and herbal options and improving public education.

"If the hospital could advise on how to use both safely, it would help." (P21, Herbal) "I need someone to explain what's best for my case, not just give pills." (P09, Modern)

4.4 Mixed-Methods Integration

The quantitative results showed higher efficacy and adherence for modern medicine, which aligned with qualitative themes highlighting better control but more side effects. Herbal users appreciated fewer side effects but raised concerns over dosage inconsistency and lack of formal guidance.

Table 4.4: Joint Display of Quantitative and Qualitative Results

Objective	Quantitative Finding	Qualitative Theme
Efficacy Comparison	Modern rated more effective ($p<0.001$)	Herbal users unsure about effectiveness
Adherence	Modern group: 75% adherence	Cost and belief systems influenced behavior

Side Effects	Fewer in herbal group (p=0.024)	Herbal perceived as safer but under-regulated

Interpretation: The convergence of findings across quantitative and qualitative data strengthens the validity of the conclusions. Participants' narratives supported the statistical evidence of greater efficacy but more side effects in modern medicine. Conversely, herbal treatments were seen as safer but less reliable.

4.5 Summary of Key Findings by Objective

- **Objective 1:** Modern medicine showed significantly higher perceived effectiveness (Mean 4.1 vs 2.9, $p<0.001$).
- **Objective 2:** Herbal medicine users reported moderate control, but wide variation and lower adherence (40% vs 75%).
- **Objective 3:** Herbal group reported fewer side effects (20% vs 50%, p=0.024), yet concerns on standardization were noted.

CHAPTER FIVE: DISCUSSION

5.0 Introduction

This chapter discusses the findings of the study in relation to the existing literature on the comparative efficacy of modern and herbal medicine in managing Type 2 Diabetes Mellitus (T2DM). It highlights key interpretations of the results, explains their relevance, and addresses the study's objectives. The discussion also reflects on the study's limitations and suggests areas for further research.

5.1 Summary of Main Findings

The study revealed that modern medicine was perceived as more effective than herbal remedies in managing T2DM, with higher adherence rates and better reported outcomes. However, herbal medicine was associated with fewer side effects. These findings align with the specific study objectives: (1) to

compare efficacy, (2) assess adherence, and (3) evaluate side-effect profiles of the two treatments. These results reflect a complex interplay between efficacy, adherence, cultural beliefs, and safety perceptions.

5.2 Efficacy of Modern vs Herbal Medicine

Participants using modern medicine reported significantly higher perceived effectiveness (mean score 4.1 vs 2.9, $p<0.001$). This is consistent with clinical evidence showing that standard pharmacologic treatments like metformin and insulin are more reliable in glycaemic control (American Diabetes Association [ADA], 2023). In contrast, the lower scores for herbal treatments may be attributed to variability in preparation, dosage, and lack of standardization (Ernst, 2005).

Herbal remedies are widely used in sub-Saharan Africa due to accessibility and cultural acceptance (Busia, 2005). However, concerns about their pharmacologic efficacy persist, especially given the limited clinical trials validating their use (Sofowora et al., 2013). While participants appreciated the "natural" aspect of herbs, they often expressed uncertainty about their effectiveness, echoing findings by Gessler et al. (1995). Nonetheless, some studies suggest certain herbs may exhibit hypoglycaemic properties (Swanston-Flatt et al., 1990), highlighting the need for more rigorous scientific validation.

5.3 Treatment Adherence and Influencing Factors

Adherence was notably higher in the modern medicine group (75% vs 40%, $p = 0.018$). Structured regimens, clearer instructions, and regular follow-up in clinical settings may support better adherence (WHO, 2003). Healthcare infrastructure and frequent contact with medical providers likely contributed to these results, underscoring the role of system-level support in chronic disease management.

Conversely, herbal users often relied on informal advice and traditional knowledge, which may lead to inconsistent dosing and reduced compliance (Addo et al., 2016). Qualitative responses also pointed to financial constraints and cultural influences affecting treatment decisions. This reflects findings by Moshabela et al. (2011), who noted that cost and belief systems significantly influence healthcare-seeking behaviors in African settings.

5.4 Side Effects and Perceptions of Safety

The study found a significantly higher prevalence of side effects among modern medicine users (50% vs 20%, p=0.024). Nausea and dizziness were commonly reported, aligning with known adverse effects of medications like metformin (Garber et al., 2020). These findings suggest that the experience of side effects may contribute to reduced adherence and treatment dissatisfaction.

Herbal users reported fewer side effects, which they attributed to the "natural" nature of the treatments. However, this perception may be misleading, as some herbal compounds have been linked to hepatotoxicity and renal dysfunction (Elujoba et al., 2005). The lower incidence of reported side effects may be due to underrecognition, underreporting, or lack of awareness among users.

5.5 Integration of Quantitative and Qualitative Findings

Mixed-methods integration revealed that while modern medicine was more effective and better adhered to, side effects and cost were barriers. Herbal treatments, though perceived as safer, were less effective and inconsistently used. This triangulation supports the idea that efficacy alone does not drive patient choice; cultural, economic, and experiential factors are equally important (Ngoma et al., 2003). This integrated approach helps to contextualize numerical data with patient experiences, offering a holistic view of treatment preferences.

5.6 Implications for Practice

Healthcare providers should consider patients' cultural contexts and beliefs when advising on T2DM management. Incorporating culturally sensitive health education and possibly integrating safe, evidence-based herbal options into treatment protocols could enhance adherence and outcomes (WHO, 2013). Training healthcare professionals to communicate effectively about both biomedical and traditional therapies may foster trust and collaborative decision-making.

5.7 Study Limitations

This study had a relatively small sample size and was conducted in a single urban hospital, which limits generalizability. Self-reported data may also be subject to recall or social desirability bias. The study did not include laboratory data (e.g., HbA1c) to objectively measure glycaemic control. Additionally,

interviewer bias and researcher subjectivity may have influenced the qualitative responses, despite attempts to minimize such effects through triangulation and coding consensus.

5.8 Recommendations for Future Research

Future studies should employ longitudinal designs with biochemical markers of diabetes control. Larger, multicentre trials are needed to validate the safety and efficacy of commonly used herbal remedies. Further qualitative research could also explore patient narratives and belief systems in greater depth. Collaboration between traditional healers and biomedical practitioners could also be studied as a potential model for integrated care.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter presents the conclusion drawn from the study comparing the efficacy of modern medicine and herbal medicine in managing Type 2 Diabetes Mellitus (T2DM) at Levy Mwanawasa Hospital. It summarizes key findings in line with the study objectives, outlines implications for practice and policy, and offers recommendations for future research and healthcare strategies.

6.1 Summary of Findings

The study aimed to: (1) compare the efficacy of modern and herbal medicine in managing T2DM, (2) assess treatment adherence in both groups, and (3) examine side-effect profiles.

Efficacy: Modern medicine was perceived to be more effective than herbal medicine. Participants using modern treatments reported higher mean effectiveness scores, reflecting greater confidence in standardized pharmaceutical care.

Adherence: Treatment adherence was significantly higher among modern medicine users, likely influenced by access to structured healthcare and clearer dosing instructions.

Side Effects: Herbal medicine users reported fewer side effects, which they attributed to the natural origin of the remedies, though this was often based on perception rather than clinical evidence.

6.2 Conclusions

Modern medicine provides more consistent and reliable management of T2DM compared to herbal medicine. The higher perceived effectiveness and better adherence rates among modern medicine users underscore its importance in formal diabetes care. However, the lower incidence of side effects reported by herbal medicine users reveals a gap in patient-centred care that must address fears of adverse drug reactions and cultural beliefs.

The findings suggest that while modern medicine remains the standard for effective diabetes management, there is value in understanding patient preferences and the cultural significance of herbal remedies.

Integrating culturally sensitive education and possibly safe, evidence-based herbal options could improve adherence and patient satisfaction.

6.3 Recommendations

For Clinical Practice:

Healthcare providers should engage patients in shared decision-making and educate them about the benefits and risks of both treatment types.

Institutions should train staff on how to navigate cultural beliefs surrounding herbal medicine to enhance communication and trust.

For Policy Makers:

Policies should support the integration of safe traditional medicine practices into primary healthcare, aligned with WHO traditional medicine strategy.

Regulatory frameworks must be strengthened to ensure the safety and standardization of herbal treatments where evidence supports their use.

For Future Research:

Conduct larger, multicenter studies including objective clinical outcomes (e.g., HbA1c levels).

Investigate the pharmacological properties and safety of frequently used herbal remedies in Zambia.

Explore community perceptions and health-seeking behaviors in diverse cultural settings to inform more inclusive health strategies.

6.4 Final Remark This study highlights the dynamic interplay between scientific efficacy, cultural identity, and personal experience in managing chronic illnesses like diabetes. By acknowledging and integrating diverse perspectives, Zambia's healthcare system can enhance trust, efficacy, and accessibility for all patients.

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Appendices

Appendix I: Gantt Chart

Activity	Duration	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Proposal writing	1 Month	**X**					
Ethical approval	1 Month		**X**				
Data collection	2 months			**X**	**X**		
Data analysis	1 Month					**X**	
Report writing	1 Month						**X**
Total	6 months						

Appendix II: Proposed Research Budget

Data Collection (Travel, stationary, etc.)	**K300**
Ethical clearance fee	K500
Miscellaneous Expenses	K100

Printing and binding of dissertation	K150
Total	K1250

Appendix III: **Questionnaire**

Title: Comparative Study on the Efficacy of Modern Medicine and Herbal Medicine in Managing Type 2 Diabetes Mellitus at Levy Mwanawasa Hospital

Instructions:

Dear Participant, thank you for agreeing to take part in this study. This questionnaire aims to gather information about your experiences with diabetes management using modern or herbal medicine. Kindly answer all questions honestly. Your responses will be kept confidential.

Section A: Demographic Information

1. Age: ___ (years)

2. Gender: ☐ Male ☐ Female ☐ Other

3. Marital Status: ☐ Single ☐ Married ☐ Divorced ☐ Widowed

4. Education Level:

☐ Primary ☐ Secondary ☐ Tertiary ☐ None

5. Employment Status:

☐ Employed ☐ Self-employed ☐ Unemployed ☐ Retired

6. Monthly Income (in ZMW):

☐ < 2,000 ☐ 2,001–5,000 ☐ 5,001–10,000 ☐ > 10,000

Section B: Diabetes Management

7. How long have you been diagnosed with Type 2 Diabetes Mellitus? ___ (years)

8. Which type of treatment are you currently using?

☐ Modern Medicine ☐ Herbal Medicine ☐ Both

9. How often do you take your prescribed treatment?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

Section C: Treatment Efficacy

10. On a scale of 1–5, how effective do you find your treatment in controlling your blood sugar levels?

☐ 1 (Not effective) ☐ 2 ☐ 3 (Moderately effective) ☐ 4 ☐ 5 (Very effective)

11. Have you experienced any side effects from your treatment?

☐ Yes ☐ No

If yes, please specify: _____

Section D: Perceptions and Preferences

12. What influenced your choice of treatment? (You may select more than one)

☐ Cost ☐ Availability ☐ Recommendations from family/friends

☐ Advice from a healthcare provider ☐ Cultural beliefs ☐ Other: _____

13. Would you consider switching to another form of treatment if recommended?

☐ Yes ☐ No

Please explain: _____

Section E: General Comments

14. Do you have any suggestions or comments regarding diabetes management at Levy Mwanawasa Hospital?

Appendix II: Consent Form

Title: Consent Form for Participation in the Study on the Efficacy of Modern and Herbal Medicine in Managing T2DM

Principal Investigator: [MELISSA MURAMBIWA]

Institution: [UNIVERSITY OF LUSAKA]

Contact Information: [+260 763220168] | [murambiwamelissa85@gmail.com]

Introduction

You are being invited to participate in a research study conducted at Levy Mwanawasa University Teaching Hospital. This study aims to compare the efficacy of modern medicine and herbal medicine in managing Type 2 Diabetes Mellitus. Before agreeing to participate, please read this form carefully to ensure you understand the study and your rights as a participant.

Purpose of the Study

The study seeks to assess the effectiveness of different treatment modalities for T2DM and identify factors that influence patient outcomes and preferences.

Procedures

If you agree to participate, you will be asked to complete a questionnaire regarding your experiences and perceptions of diabetes management. The questionnaire will take approximately 20–30 minutes to complete.

Voluntary Participation

Participation in this study is entirely voluntary. You have the right to decline participation or withdraw at any point without any penalty or loss of benefits.

Confidentiality

All information you provide will remain confidential and will only be used for research purposes. Your identity will not be disclosed in any reports or publications resulting from this study.

Benefits and Risks

While there are no direct benefits to you for participating, your input will contribute to improving diabetes management strategies in Zambia. Risks associated with participation are minimal.

Contact Information

If you have any questions or concerns about the study, please contact [MELISSA MURAMBIWA] at [+260 763220168] or [murambiwamelissa85@gmail.com].

Consent Declaration

By signing this form, you confirm that:

1. You have read and understood the study information.

2. You voluntarily agree to participate in this study.

3. You understand your rights and agree to the terms of confidentiality.

Participant's Signature: _____

Date: _____

Researcher's Signature: _____

Date: _____

NATIONAL HEALTH RESEARCH AUTHORITY

Lot No. 18961/M, off Kasama Road, Chalala, P.O. Box 30075, LUSAKA

Tell: +260211 250309 | Email: znhrasec@nhra.org.zm | www.nhra.org.zm

NHRA8460/27/02/2025 **27th March 2025**

The Principal Investigator,
MELISSA R MURAMBIWA,
UNILUS,

Dear MELISSA R MURAMBIWA,

Re: Request for Authority to Conduct Research

The National Health Research Authority Is in Receipt of Your Request for Authority to Conduct Research Titled **"ASSESSING THE EFFICACY OF MODERN MEDICINE COMPARED TO HERBAL MEDICINE IN TREATING DIABETES MELLITUS TYPE 2 PATIENTS AT LEVY MWANAWASA HOSPITAL"**

I wish to inform you that following submission of your request to the Authority, our review of the same and in view of the ethical clearance, this study has been **approved** on condition that:

1. The relevant Provincial and District Medical Officers where the study is being conducted are fully appraised.
2. Progress updates are provided to NHRA bi-annually from the date of commencement of the study.
3. The final study report is cleared by the NHRA before any publication or dissemination within or outside the country.
4. After clearance for publication or dissemination by the NHRA, the final study report is shared with all relevant Provincial and District Directors of Health where the study was being conducted, University leadership, and all key respondents.

Yours sincerely,

National Health Research Authority

Prof Victor Chalwe,
Director and Chief Executive Officer

UNIVERSITY *of* LUSAKA

Passion for Quality Education: Our Driving Force

UNIVERSITY OF LUSAKA RESEARCH ETHICS COMMITTEE (UNILUS-REC)

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UNILUS-RESEARCH ETHICS COMMITTEE

Ref no: FWA00033228-589(08)/(08)/{2024}

Date: 18 March 2025

STUDENT NAME: **Ms. MELISSA MURAMBIWA**

ASSESSING THE EFFICACY OF MODERN MEDICINE COMPARED TO HERBAL MEDICINE IN TREATING DIABETES MELLITUS TYPE 2 PATIENTS AT LEVY MWANAWASA HOSPITAL

The above research was submitted to the research ethics committee for review. The study has no major ethical problems and is approved subject to the following:

1. The study cannot be changed without express permission of the UNILUS research ethics committee.
2. Approval from the necessary authority should be sought.

_____

Professor Kasonde Bowa

MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)

Chairman- UNILUS REC

Professor of Urology and Consultant Urologist

Deputy Vice-Chancellor – Research and Innovation

Executive Dean - School of Medicine and Health Sciences