

**FACTORS INFLUENCING ADHERENCE TO RECOMMENDED SELF-CARE  
PRACTICES IN THE MANAGEMENT OF TYPE II DIABETES MELLITUS AMONG  
PATIENTS ATTENDING KAKAMEGA COUNTY REFERRAL HOSPITAL, KENYA**

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(HEALTH PROMOTION AND INTERNATIONAL HEALTH)**

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**DECLARATION**

This thesis is my original work and has not been presented to any other institution for any award.

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## **DEDICATION**

In honor of all the T2DM patients who, against the odds, have held on to hope.

## ABSTRACT

Type II Diabetes Mellitus is estimated to be 3.3% prevalent in Kenya. Adherence to recommended self-care practices is essential for the prevention of complications and premature deaths associated with Type II Diabetes Mellitus. However, unsatisfactory adherence to self-care practice has been reported even with health education programs at the Kakamega County Referral Hospital. The primary objective of this research was to establish the factors influencing adherence to recommended self-care behaviors. The specific aims were to establish the patient-related, hospital-related, and disease-related factors that impacts adherence to recommended self-care behaviors in Type II Diabetes Mellitus patients visiting Kakamega County Referral Hospital. A cross-sectional study was prioritized where a simple random selection was utilized to choose 145 patients out of a total of 198. 4 Key informants were selected from a pool of 30 medical staff using purposive sampling. The link between the independent factors and their dependent variables was examined using two methods: chi-square and multiple logistic regressions. Content analysis was used to assess qualitative data. The variables: patient related factors, hospital related factors and disease related factors were mostly associated with adherence to the recommended self-care practices at ( $p = 0.000$ ), ( $p = 0.004$ ) and ( $p = 0.000$ ) respectively. The study found age and marital status as the patient related factors influencing adherence to self-care practices. Hospital related factors influencing adherence included quality of healthcare services, physician patient relationship and delivery of key information. Disease-related factors influencing adherence to self-care included duration and co-morbidity. For the purpose of reducing the complications and deaths associated with T2DM, policies should be made towards scaling up adherence in those subgroups of diabetics found to be at risk of low adherence as informed by the findings of this study i.e. the elderly and single. Awareness among newly diagnosed cases is critical in management of T2DM to ensure improved adherence.

## TABLE OF CONTENTS

DECLARATION .....	ii
ACKNOWLEDGEMENT .....	iii
DEDICATION .....	iv
TABLE OF CONTENTS.....	vi
LIST OF ABBREVIATIONS AND ACRONYMS .....	x
DEFINITION OF TERMS .....	xi
LIST OF TABLES.....	xii
LIST OF FIGURES .....	xiii
<b>CHAPTER ONE: INTRODUCTION.....</b>	<b>1</b>
1.1 Background of the Study .....	1
1.2 Statement of the Problem.....	2
1.3 General Objective .....	2
1.4 Specific Objectives .....	3
1.5 Research Questions.....	3
1.6 Justification of the Study .....	3
1.7 Scope of the Study .....	4
1.8 Limitations of the Study.....	4
1.9 Assumptions of the Study.....	4
<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>5</b>
2.1 Introduction.....	5
2.2 Global Burden of Type II Diabetes Mellitus.....	5
2.3 Factors Associated with Adherence to Type II Diabetes Mellitus Self-care Practices.....	6
2.4 Patient-Related Factors .....	6
2.4.1 Age.....	7
2.4.2 Gender.....	7
2.4.3 Level of Education.....	8
2.4.4 Marital Status.....	8
2.4.5 Level of Income .....	9
2.5 Hospital-Related Factors.....	9
2.5.1 Distance to Access Health Service .....	10

2.5.2 Quality of Health Care Service to Diabetes Mellitus Patients .....	10
2.5.3 Physician Patient Relationship.....	10
2.5.4 Communication of Critical Information .....	11
2.6 Disease-Related Factors.....	11
2.7 Type II Diabetes Mellitus Self-care.....	12
2.8 Gaps in Adherence to Self-care Practices.....	14
2.9 Social Cognitive Theory .....	14
2.10 Conceptual Framework.....	14
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>17</b>
3.1 Study Area .....	17
3.2 Study Design.....	17
3.3 Target Population.....	18
3.4 Sample Size Determination.....	18
3.5 Sampling Technique .....	19
3.5.1 Sampling of Participants .....	19
3.5.2 Sampling of Key Informants.....	19
3.6 Inclusion and Exclusion Criteria.....	19
3.6.1 Inclusion Criteria .....	19
3.6.2 Exclusion Criteria .....	20
3.7 Data Collection Tools .....	20
3.7.1 Questionnaires.....	20
3.7.2 Key Informant Interview Guides .....	20
3.8 Pre-Testing of the Tools.....	20
3.8.1 Reliability Testing.....	20
3.8.2 Validity .....	21
3.9 Data Collection Procedure .....	21
3.9.1 Administering the Questionnaires.....	21
3.9.2 Conducting Key Interview Guides.....	21
3.10 Measurement of Variables .....	21
3.10.1 Dependent Variable .....	21
3.11 Independent Variables .....	22

3.11.1 Patient-related Factors .....	22
3.11.2 Hospital-related factors .....	22
3.11.3 Disease-related factors .....	23
3.12 Data Analysis .....	23
3.13 Ethical Considerations .....	23
<b>CHAPTERFOUR: RESULTS.....</b>	<b>25</b>
4.1 Introduction.....	25
4.2 Patient-related Factors Attributed with Adherence to Self-care Routines.....	25
4.2.1 Patient Related Factors .....	25
4.2.2 Association of Patient Related Factors and Adherence to Recommended T2DM Self-Care Practice .....	28
4.2.3 Multivariable logistic regression analysis of Patients Related Factors for Adherence to T2DM Self-Care Practice .....	29
4.3 Hospital-related Factors Associated with Adherence to Self-care Practices .....	31
4.3.1 Hospital Related Factors .....	31
4.3.2 Association of Hospital Related Factors and Adherence toT2DM Self-Care Practice .....	33
4.3.3 Multivariable Logistic Regression Analysis of Hospital Related factors for Adherence to T2DM Self-Care Practice .....	34
4.4 Disease-related factors associated with adherence to self-care routines .....	35
4.4.1 Disease Related Factors .....	36
4.4.2 Association of Disease Related Factors and Adherence to T2DM Self-Care Practice.....	37
4.4.3 Multivariable logistic regression analysis of Disease Related factors for Adherence to T2DM Self-Care Practice .....	38
<b>CHAPTER FIVE: DISCUSSION.....</b>	<b>40</b>
5.1 Introduction.....	40
5.2 Patient-related Factors Associated with Adherence to Self-care Practices .....	40
5.2.1 Patient-Related Factors .....	40
5.2.2 Association of Patient-Related Factors and Observance toT2DM Self-Care Practice .....	41
5.2.3 Patient-Related Factors for Adherence toT2DM Self-Care Practice .....	42
5.3 Hospital-related Variables Associated with Adherence to Self-Care Routines.....	43
5.3.1 Hospital Related Factors .....	43



5.3.2 Association of Hospital Related Factors and Adherence toT2DM Self-Care Practice .....	44
5.3.3 Hospital Related factors for Adherence to T2DM Self-Care Practice.....	44
5.4 Disease-relatedFactorsAssociatedwithAdherencetoSelf-CarePractices .....	46
5.4.1 Disease Related Factors .....	46
5.4.2 Association of Disease Related Factors and Adherence toT2DM Self-Care Practice.....	46
5.4.3 Disease Related factors for Adherence toT2DM Self-Care Practice.....	47
<b>CHAPTER SIX: CONCLUSIONANDRECOMMENDATION.....</b>	<b>48</b>
6.1 Introduction.....	48
6.2 Conclusions.....	48
6.3 Recommendations.....	48
6.4 Suggestions for future research.....	49
<b>REFERENCES.....</b>	<b>50</b>
<b>APPENDICES .....</b>	<b>61</b>

## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>IDF</b>	International Diabetes Federation
<b>KNH</b>	Kenyatta National Hospital
<b>KCRH</b>	Kakamega County Referral Hospital
<b>MOH</b>	Ministry of Health
<b>SPSS</b>	Statistical Program for Social Sciences
<b>SSA</b>	Sub-Saharan Africa
<b>T2DM</b>	Type II Diabetes Mellitus
<b>WHO</b>	World Health Organization
<b>MoPHS</b>	Ministry of Public Health and Sanitation

## DEFINITION OF TERMS

**Adherence** -The extent to which an individual's behavior (adherence to medicine, food, and/or lifestyle modifications) complies with agreed-upon advice from a health professional or ministry of health.

**Co-morbidity** - Refers to a situation in which a person has two or more additional medical problems in addition to the ailment for which they were first diagnosed.

**Disease related factors** - are influences/factors that are associated with medical condition in this case Type II Diabetes Mellitus.

**Hospital related factors** - These are existing conditions /factors within hospital environment making it easy or hard for diabetics to maintain self-care behaviors.

**Patient related factors**-are personal factors/barriers to adhering to prescribed self-care methods in Type II Diabetes Mellitus management.

**Self-care practices**- health-related actions undertaken by individuals, social units, and communities to improve health, avert illness, minimize sickness, and restore health.

**Self-medication** – This is the practice of ingesting medications, plants, or home cures without consulting a medical professional.

**Type II Diabetes Mellitus**- a medical condition that is both chronic and incurable and is characterized by both excessive or in correct production of the hormones glucagon and insulin.

## LIST OF TABLES

Table 3.1: Number of Clients who attended Type II Diabetic Clinic in Kakamega County Referral Hospital.....	18
Table 3.2: Number of Healthcare Providers who attend to T2DM Patients attending Clinic in Kakamega County Referral Hospital .....	18
Table 4.1: Descriptive Statistics-Patient Related Factors .....	26
Table 4.2: Patient Related Factors and Adherence to T2DM Self-Care Practice using Pearson Chi-square test.....	28
Table 4.3: Logistics Model table for Patient Related Factors.....	30
Table 4.4: Descriptive Statistics of Hospital Related Factors.....	32
Table 4.5: Hospital Related Factors and Adherence to T2DM Self-Care Practice using Pearson Chi-square test.....	33
Table 4.6: Logistics Model table for Hospital Related Factors .....	35
Table 4.7: Descriptive Statistics-Disease Related Factors.....	36
Table 4.8: Disease Related Factors and Adherence to T2DM Self-Care Practice using Pearson Chi-square test .....	37
Table 4.9: Logistics Model table for Disease Related Factors .....	39

**LIST OF FIGURES**

Figure 2.1: Conceptual Framework.....16

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

Type II Diabetes Mellitus (T2DM) is a chronic and incurable disease. It occurs when the body's insulin is ineffectively used (WHO, 2020). The disease needs patients to indulge in lifelong self-care routines (Nejaddadgar et al., 2017). Self-care is crucial for Type II Diabetes Mellitus management; it includes routines like balanced eating, regular physical activity, foot care, medication adherence and self-monitoring of blood glucose (American Diabetes Association, 2016). However, when diabetics are urged to adopt particular lifestyle changes, many find the self-care regimen confusing, challenging and demanding, most notably regarding food intake and physical exercise in addition to their prescriptions (Choo et al., 2015). These obstacles may arise due to the numerous personal, hospital and condition related circumstances that influence adherence to self-care behaviors.

It is estimated that at least 460 million adults have Type II Diabetes Mellitus globally (International Diabetes Federation (IDF),2019).Africa is estimated to have 15.9 million adults living with Diabetes Mellitus which is a regional prevalence of 3.1%. Kenya is one of the 48 countries of the IDF African region. The prevalence of Diabetes Mellitus in Kenya is at 3.3%. and the age adjusted death rate is 30.43 per 100,000 of population (WHO,2020).Diabetes mellitus was the 10<sup>th</sup>leading cause of mortality in 2019 in Kenya(MoH,2020).In western region, Kakamega was the 8<sup>th</sup>leadingCounty in diabetes mellitus morbidity in Kenya in 2019 (MoH,2021).It is therefore significant to assess the factors that influence adherence to suggested self-care behaviors for monitoring and treating T2DM.

The World Health Organization has identified five distinct groups of variables that influence patient adherence to therapy: socioeconomic, medical team and system, medical condition, treatment, and patient-specific variables (WHO, 2020). Type II Diabetes Mellitus self-care behaviors are poorly adhered to in Sub-Saharan Africa, posing a danger to obtaining better health outcomes (Stephani et al., 2018). In Kenya, investigations on conformity to recommended self-care activities among T2DM patients have focused on medication adherence and diabetes self-care knowledge (Mbutiti *et al.*, 2016; Waari *et al.*, 2018; Ndirangu, 2019; Wamucii *et al.*, 2020). Numerous studies on patient-related variables have demonstrated that age influences self-care

adherence for diabetics (Waari, 2019). Education level is a significant influencer of non-adherence to diabetic self-care (Gesare, 2016), while some research contradicts the findings (Mogre *et al.*, 2017). While patient-related variables have received considerable attention, less emphasis has been paid to disease- and hospital-related factors as possible determinants of diabetic self-care adherence.

At Kakamega County Referral Hospital (KCRH) revealed that, even though T2DM patients attending monthly clinic at the facility have a high degree of awareness of the condition, they exhibited suboptimal degree of self-care (Mutunga *et al.*, 2017). This study assessed patient-related variables, hospital-related factors, and disease-related factors to try and address the risk identified by the first study done by Mutunga. Social Cognitive Theory served as the basis for this research, since it offers a valuable framework for comprehending the variety of variables that affect health and well-being. This research is critical for encouraging measures to enhance diabetic self-care habits among diabetics, especially those from low-resource areas, such as those who attend public hospitals.

## **1.2 Statement of the Problem**

Adherence to recommended self-care practices is essential for the prevention of complications and premature deaths associated with Type II Diabetes Mellitus. However, unsatisfactory adherence to self-care practice in T2DM patients has been reported even with health education programs. In Kakamega County General and Referral Hospital, 62.03% of T2DM patients who attended monthly clinics scored 0% in performance of basic self-care practices over a period of 14 days (Mutunga *et al.*, 2017). This is even though T2DM patients attending monthly clinics at the facility have a high degree of awareness of the condition. The cause of this sub-optimal adherence to self-care practice has not yet been established. Identification of factors influencing adherence to the self-care recommendations may be important for interventions required to achieve optimal adherence to self-care in T2DM management. It was specifically for patients attending clinic in KCRH.

## **1.3 General Objective**

The purpose of this thesis was to ascertain the factors influencing adherence to recommended self-care practices in the management of type II diabetes mellitus among patients attending

Kakamega County Referral Hospital, Kenya.

#### **1.4 Specific Objectives**

- i. To identify patient-related factors that influence adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya.
- ii. To identify hospital-related factors that influence adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya.
- iii. To identify disease-related factors that influence adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya.

#### **1.5 Research Questions**

- i. What are the patient-related factors that influence adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya?
- ii. What are the hospital-related factors that influence adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya?
- iii. What are the disease-related factors that influence adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya?

#### **1.6 Justification of the Study**

Although optimal adherence to prescribed self-care measures has been found to enhance Type II Diabetes Mellitus treatment results, adherence to these practices continues to be poor. In 2015, a diabetes care unit was launched at Kakamega County Referral Hospital (KCRH) with the aim of offering quality treatment and training diabetes patients in self-management. However, a study carried out in this facility in 2016 reported sub-optimal self-care practice in T2DM patients. Diabetes Mellitus patients at KCRH were surveyed to determine their awareness of self-care methods and their understanding of their condition, and it was discovered that their level of self-care practice was suboptimal (Mutunga *et al.*, 2017). This begged several questions among them;



why is it that though the population was well informed they still achieved sub-optimal results? And which factors could be influencing patients' willingness and ability to follow self-care guidelines? This research therefore investigated what could be the influencing factors in Mutunga`s research. On the other hand, KCRH is also the county's primary referral hospital, having a large catchment area that includes Bungoma, Vihiga, and Busia counties. Kakamega was the 8<sup>th</sup> leading County in Diabetes Mellitus morbidity in Kenya in 2019 (MoH,2021).Understanding the factors that influence compliance with suggested self-care activities inT2DM is crucial for scaling up the interventions required to treat this chronic condition.

### **1.7 Scope of the Study**

The Kakamega County Referral Hospital in Western Kenya was the site of this study. This is Kakamega County's primary referral hospital. Adult out-patients with Type II Diabetes Mellitus who attended clinics at the facility were included in the study.

### **1.8 Limitations of the Study**

Hospital characteristics related with self-care habits are likely to be tainted by prejudice on the part of healthcare staff. The research used the assumption that respondents provided responses that accurately reflected what occurs on the ground. For example, the research has no method of determining whether a responder follows the suggested self-care routines. To overcome these limits, the research used a triangulation strategy that enabled the verification of information from important informants.

### **1.9 Assumptions of the Study**

T2DM management self-care practices were believed to be understood by the participants in this research.

## CHAPTER TWO

### LITERATURE REVIEW

#### **2.1 Introduction**

Type II Diabetes Mellitus self-care strategies are discussed in depth in this chapter. A brief overview of the Social Cognitive Theory (SCT) on which the study is based was used to highlight the study's gaps.

#### **2.2 Global Burden of Type II Diabetes Mellitus**

Type II Diabetes Mellitus affects over 90% of people with diabetes globally (Kassahun *et al.*, 2016). Deficiencies in insulin synthesis, action, or both induce chronic hyperglycemia and alteration of carbohydrate, lipid, and protein metabolism (WHO, 2016). Diabetes affects 463 million people globally, as per the International Diabetes Federation (IDF), and diabetes and its complication skilled nearly 4 million people aged 20 to 79 in 2019. Its rising prevalence, combined with high death and morbidity rates, places a tremendous strain on the nursing field and lowers people's quality of life (Raj *et al.*, 2018). Understanding the characteristics that influence self-care practice adherence in the management of T2DM is crucial to scaling up the therapies needed to control this chronic disease.

In 2017, 15.5 million adults in Sub-Saharan Africa (SSA) were diagnosed with diabetes, resulting in a regional incidence of 6% and healthcare costs of \$3.3 billion (IDF, 2017). This figure is expected to increase by 162.5 percent by 2045, when about 40.7 million individuals would have Type 2 Diabetes, resulting in a USD 6 billion expenditure (IDF, 2017). SSA is predicted to exceed all other global areas in terms of diabetes prevalence growth (Agyemang *et al.*, 2016). There are little resources for health and social care, as well as the continuing expenses of diseases are among the issues that SSA nations confront in combating the rising diabetes burden. Diabetic adults in Kenya account up 4.56 percent of the country's total, according to the IDF, resulting in about 750,000 people and 20,000 fatalities each year. There is a difference in distribution, with urban inhabitants accounting for 10.7% and rural dwellers for 2.7 percent (Saeedi *et al.*, 2019) Patients in Kenya diagnosed with diabetes commonly arrive to a healthcare facility with unrelated conditions, therefore this number is likely to be underestimated by more than 60 percent. In Kenya, roughly 14% of the population is thought to have glucose problems. Problems with the feet, cardiovascular system, eyes, nerves and kidneys that develop over time

as a result of diabetes are becoming more common as the prevalence of diabetes mellitus rises (MoH, 2020). Most patients are referred for specialized treatment at national reference hospitals or outside the country because of their poor glycemic control.

The goal of Type II Diabetes Mellitus treatment is to achieve optimal glucose control while avoiding complications (Radwan *et al.*, 2018). Glycemic control, complication reduction, and improved quality of life have all been linked to diabetes self-care activities (Shrivastava,2013).In terms of health promotion, self-care is a crucial notion. Various factors that might impact a person's self-care habits such as a person's gender, age, educational standards, social support, existence of complications and co morbidities, and economic situation (Amente *et al.*, 2014). These characteristics have been grouped to patient-related factors, hospital-related factors, and/or disease-related factors. Despite rigorous therapy at KCRH, most of these patients are unable to attain appropriate glycemic control; this is according to the patient's medical records. At KCRH, self-care was observed to be unsatisfactory in Type II Diabetes Mellitus patients (Mutunga *et al.*, 2017). This generated questions about whether patient-related, hospital-related, and/or disease-related factors could influence the outcome. However, no published study on the variables influencing patient adherence to self-care routines in the treatment of Type II Diabetes Mellitus has been conducted in Kakamega. The purpose of this dissertation was to determine the variables that impact Type II Diabetes Mellitus patients at KCRH in Kenya to adhere to self-care regimens.

### **2.3 Factors Associated with Adherence to Type II Diabetes Mellitus Self-care Practices**

Identifying hurdles to self-care compliance for Type II Diabetes Mellitus is a critical topic that continues to be a concern. There are several variables associated with self-care practice adherence, but this research concentrated on patient-related, hospital-related, and disease-related aspects, which address the study's primary gaps, as outlined in chapter one.

### **2.4 Patient-Related Factors**

Individual-related variables are influences/barriers to adhering to suggested self-care procedures in Type II Diabetes Mellitus (Adu *et al.*,2019). These features comprise age, gender, degree of education, marital status, and income level.

### **2.4.1 Age**

Adherence to Type II Diabetes Mellitus self-care routines is significantly predicted by age. Age seems to have a mixed influence on devotion to self-care routines in T2DM patients. Certain studies found the elderly devoted better to suggested diabetic self-care measures (Mogre *et al.*, 2017), whereas others found that younger patients adhered better (Gesare, 2016; Wamucii *et al.*, 2020). Diabetes mellitus prevalence grows with age, as does most of associated health disorders (Stephens *et al.*, 2013). Age is not a significant predictor of non-adherence to diabetes self-care in diabetic patients at KNH (Waari, 2019), As a result of this study's participants being mostly beyond the age of fifty-five, no analysis of the impact of ages less than 55 years was possible. Participants of all ages over the age of 18 were recruited for the present research. Due to the age factor, elderly patients face specific age-related barriers to self-care practices such as psychosocial changes like the loss of loved ones and friends, concerns of death, solitude and retirement, as well as physical handicap such as poor eyesight or limited manual skills (Waari, 2019) and dementia (forgetfulness). Due to the inconsistent results from the preceding investigations, the present research was necessary to ascertain the true effect of age on self-care practice adherence.

### **2.4.2 Gender**

Gender is a characteristic that might make a person less likely to follow self-care methods for Type II Diabetes Mellitus treatment. Consequently, it is critical to consider the role of gender in adherence to T2DM self-care. Females are more likely to stick to pharmaceutical regimens, according to studies (Aga *et al.*, 2019; Kirkman *et al.*, 2015). While some studies conducted in Kenya found no significant correlation between sex and adherence to self-care routines in the treatment of Type II Diabetes Mellitus (Waari, 2019; Wamucii *et al.*, 2020), Others were unable to show a correlation between clinic attendance and adherence because of the small number of male patients (Mutunga *et al.*, 2017). In research conducted by Mutunga *et al.*, (2017) to measure knowledge about self-care habits among Diabetes Mellitus patients at Kakamega Hospital, gender was unequally represented, with female respondents accounting for the majority, 55.95 percent (94) of respondents. While most of the previous research focused only on medication adherence, the present investigation examined the connection between gender and adherence to advised self-care activities among T2DM patients at KCRH, Kenya.

### **2.4.3 Level of Education**

Diabetes Mellitus education may have a beneficial effect on the result (Marina, 2017). Self-monitoring of blood glucose levels, as well as avoiding and managing problems, may enhance metabolic control for patients, and even develop a more positive attitude about the condition, via education (Steinsbekk *et al.*, 2012). Patients' literacy level has a considerable impact on the quality of diabetes care (Gesare, 2016).

Individuals with inadequate literacy abilities have difficulties following medical instructions, reading, and adhering to recommended drugs (Gesare, 2016). These patients lacked understanding about self-management of diabetes, placing them at risk for poor health outcomes. According to the same study, those who cannot read or write were 3.6 times more probable to participate in insufficient self-care than those in Grade 12 and above. All medical professionals are critical in determining the degree of knowledge of their patients in order to assist them in teaching and advising patients with Diabetes mellitus. While the effects of education on self-care practices have been extensively studied, this study assessed the effect of education level on self-care practice adherence in Type II Diabetes Mellitus patients at KCRH, Kenya.

### **2.4.4 Marital Status**

A person's marital status is typically seen as a protective factor throughout the course of therapy for illness (Sperber *et al.*, 2013). Diabetes Mellitus Type II patients' ultimate self-care requires a high level of involvement from their social support system, since the patient's lifestyle changes dramatically (Reisi *et al.*, 2016). Thus, self-care entails more than just carrying out patient care activities; it also entails considering the connections between patients and their social environment and making suitable changes in the patient's daily life cycle (Reisi *et al.*, 2016). In a cross-sectional research of Diabetes Mellitus patients at Kakamega KCRH, it was discovered there is a substantial connection between sufficient Diabetes Mellitus self-care behaviors and patient demographic features in general (Mutunga *et al.*, 2017). Most participants (58.3 percent) were married, where as 30% were widowed. The previous research did not examine variables affecting adherence; however, this study examined how marital status may affect adherence to self-care activities in Diabetes Mellitus patients at KCRH, Kenya.

#### **2.4.5 Level of Income**

The term "income" refers to the total of wages, salaries, and other earnings during a certain time period (Khullar & Chokshi, 2018). Low-income individuals have higher rates of behavioral risk factors (substance abuse, insufficient physical exercise, and poor nutrition), which are strongly impacted by their more difficult family and community contexts (Khullar *et al.*, 2018). Patients' socioeconomic status influences their desire to practice excellent self-care in illness management (Atun *et al.*, 2017). According to the United Nations Children's Fund (UNICEF) in Kenya, nearly 50% of Kenyans live below the poverty line, with most people earning less than \$1 US each day (De Neubourg *et al.*, 2014). Examining the relationship between income and diabetes self-care is critical, considering Kenya's ongoing economic decline as a result of the COVID-19 epidemic.

A meta-analysis of diabetes in Sub-Saharan Africa showed that poor glycemic control related to inaccessibility to and high cost of diabetic therapy (Atun *et al.*, 2017). Similarly, to treatment levels, none of the lowest families' diabetic patients attained glycemic control (Atun *et al.*, 2017). This is congruent with Mohamed's *et al.* (2018) findings about the prevalence of pre-diabetes and diabetes mellitus and the risk factors associated with them. In comparison to the other wealth quintiles, the lowest family did not have any members receiving therapy. The preceding research did not examine how income affects adherence to self-care activities in Type 2 Diabetes, but rather relied on wealth index data. The present research examined the effect of income on self-care adherence in Diabetes Mellitus patients treated at KCRH, Kenya.

#### **2.5 Hospital-Related Factors**

The precise assistance provided to patients with Diabetes Mellitus about their adherence behavior is reliant on the accessibility of medicines and the fundamentals of giving supporting evidence for prescribed therapies and self-care behaviors (Bonger, 2018). Effective diabetes treatment requires a comprehensive approach to care coupled with health education. Hospital-related variables that affect diabetes treatment include access to distance from health care, the quality of healthcare services, the physician-patient relationship, and transmission of crucial information.

### **2.5.1 Distance to Access Health Service**

Distance influences the frequency with which patients visit clinics and on the overall management and treatment of diabetes (Oyelami *et al.*, 2017). The distance to health services is measured by the greater travel time required to reach a health center. In accessibility to health services may result in decreased health care usage, which influences self-care practice adherence. Mwaura *et al.*, (2017) discovered that the distance between a person's house and a health facility consistently impacts the routines of clinic attendance, method of travel, and cost of transit for people with diabetes. The study examined the impact of distance to diabetic health services on self-care behaviors in Kakamega.

### **2.5.2 Quality of Health Care Service to Diabetes Mellitus Patients**

The quality of health care delivery must be enhanced, and this involves delivering equitable, timely, integrated, and efficient care that is safe, effective, and person centered (Ondieki, 2017). Clients and patients' compliance behaviors are influenced by the efficacy of the health care structure. For instance, creating a quality record-keeping system for patients is critical in determining non-compliance with clinic attendance requirements (those who fail to keep appointments or clinic check-ups). Consistent follow-ups, the patient's present state, and the frequency of medicine refills are critical for tracking a patient's adherence and thereby preventing problems via the implementation of appropriate measures for those discovered to be non-compliant (Atinga *et al.*, 2018). A substantial correlation between health records management and service delivery was discovered in across-sectional research conducted at KCRH. The study was to ascertain the impact of health records maintenance on service delivery (Ondieki, 2017). The preceding studies were not explicit in their examination of how health care quality affects conformity to self-care routines in persons with Diabetes Mellitus, highlighting the need for more research.

### **2.5.3 Physician Patient Relationship**

It has been shown that the strength of a diabetic connection with his or her health care practitioner has a significant impact on patient self-care practice adherence (Lee *et al.*, 2016). Patients who are happy with their healthcare professional stick to their treatment regimens more closely (Waari, 2019). It has been shown that the availability of assistance from healthcare practitioners is associated with patients attaining sufficient glycemic control (Powers *et al.*,

2015). Physicians and patients must work together to provide effective diabetes treatment. Patients were happy with the treatment they got, according to research conducted to analyze treatment non-adherence and related variables among Type II Diabetes Mellitus patients visiting the diabetic clinic at KNH (Waari, 2019).

Patient satisfaction with healthcare offered at the diabetes clinic was measured using a variety of parameters, including the whole clinic experience and satisfaction with the attending physician (Jalil *et al.*, 2017). Satisfaction with the attending physician and the other members of the health care team was quantified using a 5-point Likert scale. The majority (52.6 percent) of participants reported having a very pleasant connection with their attending physician. Satisfaction with health care professionals at the clinic followed a similar pattern. The majority (51.2 percent) of participants expressed extreme satisfaction with their treatment. Because the impact of physician-patient relationships and self-care habits on Diabetes Mellitus patients is unclear from prior research, this study attempted to evaluate it among T2DM patients visiting KCRH, Kenya.

#### **2.5.4 Communication of Critical Information**

Information dissemination may range from just informing someone of what they need to do to discussing the logic behind the advice and even investigating the patient's objectives and preferences before making treatment suggestions (Shiyanbola *et al.*, 2018). Numerous studies have shown that up to 50% of people leave medical appointments unable to comprehend what their physician instructed them to do (Shiyanbola *et al.*, 2018). Patients who comprehend their diagnosis/condition are more likely to recognize their health concerns, comprehend the therapy required, and adjust their behavior (Travaline *et al.*, 2015). Additionally, physicians tend to overestimate patient comprehension and communication abilities during treatment explanations (Block *et al.*, 2013). Effective communication is critical for patient comprehension and compliance. In patients with diabetes, little is known about the link between physician communication and patient compliance with self-care behaviors; this is what this research sought to determine among T2DM patients at KCRH, Kenya.

#### **2.6 Disease-Related Factors**

These factors include diabetes mellitus duration, co-morbidity, disease-related complications, and hospitalizations. Diabetics who have a co-morbid illness such as depression or obesity and/or



diabetes complications such as hypertension or dyslipidemia may need extra drugs to manage these disorders (Pati & Schellevis, 2017; Jehan *et al.*, 2018). An individual may develop insulin resistance or secretary depletion over time demanding additional self-care actions even as they acquire experience in doing so (Ofori & Unachukwu, 2014). People with Diabetes Mellitus living with the disease for a longer period have a better knowledge of the ailment and are thus more likely to engage in self-care activities that help prevent complications (Odili *et al.*, 2011). Research was conducted to determine diabetic patients' knowledge of self-care and clinical outcomes by Ndirangu (2019). The survey discovered that most respondents have been diabetic for at least five years and had acquired diabetes-related comorbidities such as neuropathy, few responders died as a result of complications associated with diabetes. These results corroborated research conducted in Kakamega in which most respondents had diabetes for more than five years and 62% had acquired diabetes-related problems (Lugaya *et al.*, 2016). The presence of these issues may indicate inadequate diabetes management, which may reflect poor self-care behaviors in elderly diabetic patients. These studies focused only on the duration of diabetes mellitus. To completely understand self-care practices adherence among T2DM patients, the study must also measure other disease-related variables that contribute to their failure to adhere effectively; consequently, the present research will examine the effects of these aspects.

## **2.7 Type II Diabetes Mellitus Self-care**

Self-care is defined by the World Health Organization as "activities taken by individuals, families, and communities with the purpose of promoting health, preventing illness, reducing sickness, and re-defining health." This is a critical notion in preventative health care. Self-care activities are critical for diabetes management, with patients or their families often providing up to 95% of self-care. Adherence to diabetic self-care activities is critical for patients' overall quality of life improvement. Stephani *et al.*, (2018) found that diabetic self-care behaviors are poorly adhered to in Sub-Saharan Africa, posing a danger to obtaining better health outcomes. Diabetes patients' poor habits are significant determinants of the evolution of diabetes and related consequences, the majority of which are avoidable (Hailu *et al.*, 2012). Effective diabetes treatment will be difficult without a detailed understanding of the present condition of diabetic self-care practice.

In Kenya, health care providers follow the National Clinical Guidelines for Diabetes Mellitus Management. The recommendations specify self-care tasks for which patients in health institutions get counselling. Specifically, maintain moderate caloric restriction, avoid animal fats, avoid simple carbs, and keep salt consumption to a minimum while eating a healthy, well-balanced diet that includes three regular meals a day and modest, countable or measured food portions. Exercise: aerobic activities such as walking, and jogging are advised; patients are urged to include exercise into their daily routines; 20-30 minutes of continuous moderate activity at least three times a week is recommended. Patients are urged to adhere to food and exercise instructions in order to acquire and maintain a healthy body weight as determined by the Basal Mass Index. Foot Care: Patients should maintain proper foot hygiene, always wear shoes, always use shoes that are acceptable, comfortable, and suitable, examine shoes before to using them, and inspect feet routinely for any sores. Regular medical check-ups are suggested, as is regular blood glucose testing, blood pressure monitoring, and screening for eye, nerve (sensation), and renal concerns.

Tobacco and alcohol use are strictly discouraged, and alcohol use is to be avoided. (Mogre *et al.*, 2019; Wamucii *et al.*, 2020; Letta *et al.*, 2021). Local studies undertaken among Kenyans with diabetes mellitus have shown a deficiency in self-care (Maina *et al.*, 2010; Lugaya *et al.*, 2017; & Ndirangu, 2019). According to research performed by Maina *et al.*, (2010), only 41% of respondents displayed positive self-care behaviors. This survey was conducted in just four regions of Kenya and addressed the general population (diabetics and non-diabetics). They measured lifestyle variables such as nutrition, physical exercise, and health seeking behavior, but the present research included additional aspects prioritized with adherence to these self-care behaviors, including disease- and hospital-related factors.

This study found that 62.03% of participants on average could not conduct fundamental self-care activities throughout a 14-day period, whereas just 21.42% of individuals could complete the most basic self-care tasks. The researcher evaluated appropriate self-care activities and discovered that they were unsatisfactory. Studying Type II Diabetes Mellitus patients at Kakamega Referral Hospital in Kenya's Kakamega region was the primary goal of this study.

## **2.8 Gaps in Adherence to Self-care Practices**

Adherence to diabetic self-care activities is critical for patients' overall quality of life improvement. Noncompliance with diabetes self-care practices relates to low glycemic control, the development of diabetes complications and their related expenses, and a decreased quality of life (Hailu *et al.*, 2012). Self-care knowledge is a major predictor of self-care practice adherence. While patients at KCRH are educated of self-care techniques, their adherence to these behaviors is suboptimal (Lugaya *et al.*, 2017). There is still a lack of knowledge on what causes patients who visit referral hospitals to have poor self-care practices. The purpose of this research was to determine the variables affecting self-care practices compliance among Type II Diabetes Mellitus patients admitted to KCRH that may contribute to adequate self-care practices.

## **2.9 Social Cognitive Theory**

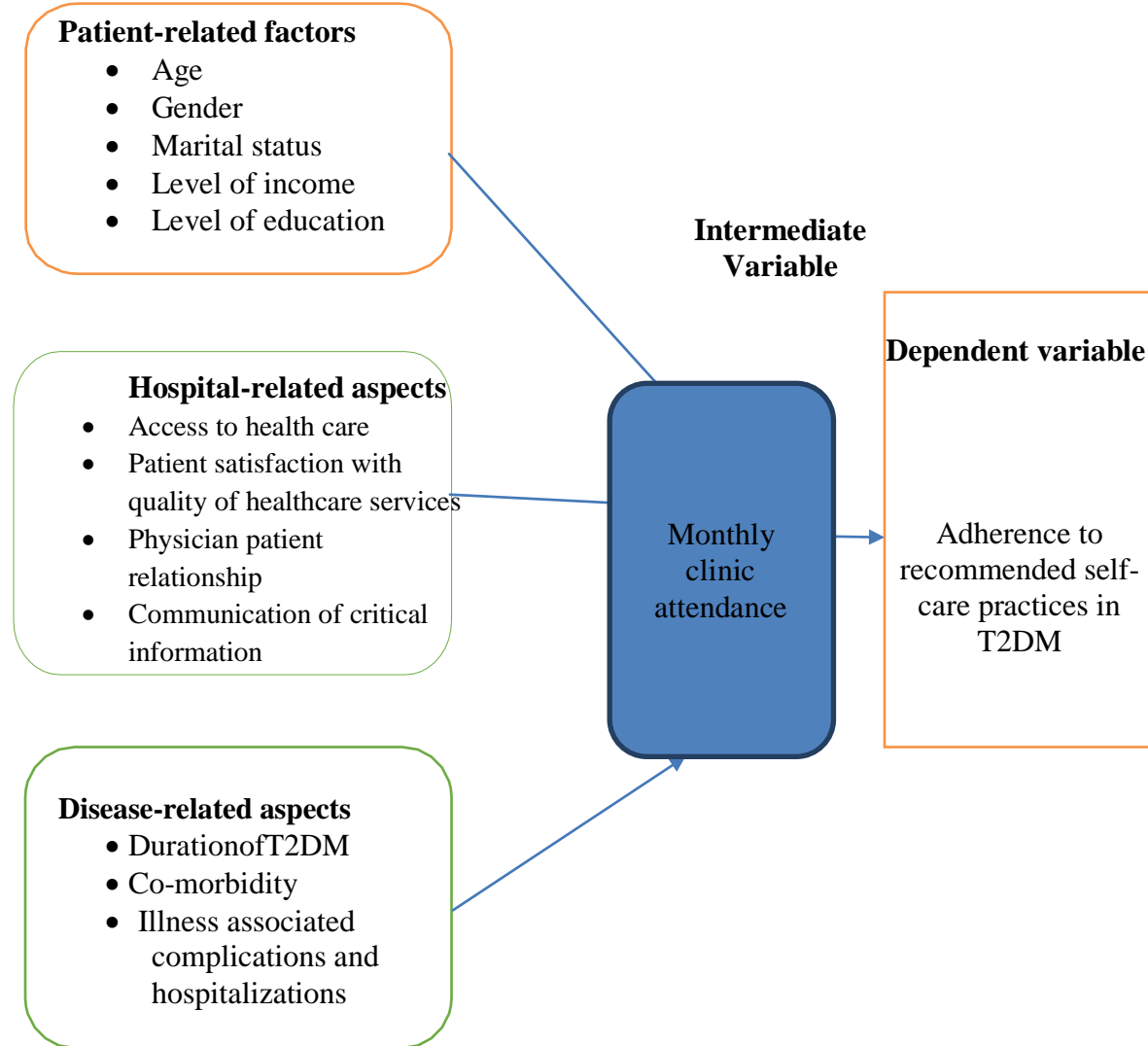
According to this theory, a diabetic patient's belief that he can adhere to the prescribed self-care practice (*self-efficacy*) remains a key concept and mediator, influencing other concepts that affect adherence (Myers *et al.*, 2020). A diabetic patient's self-efficacy influences his expectation of outcomes from adhering to the prescribed self-care practice (*outcome expectations*), which then influences adherence. For example, with self-efficacy, a diabetic patient expects adherence to self-care practice to improve his condition (*physical outcomes*), expects to be supported by society (*social reactions*), and expects adherence to self-care practice to be self-satisfying (*self-evaluative reactions*). Outcome expectations can also be seen to play a mediating role in adherence to prescribed self-care practice, because, with these positive expectations, a diabetic patient will likely adhere to a self-care programme. A diabetic patient also considers his environment (*socio-structural factors*): a positive belief in his capability to adhere (*self-efficacy*) enables him to identify *facilitators* of adherence in his environment and to overcome various *impediments* (Nafradi *et al.*, 2017). SCT proposes that positive perceptions of self-efficacy, outcome expectations, and socio-structural factors influence short-term *goal* setting; positive perceptions are reflected in higher attainable goals toward adherence (Shorey & Lopez, 2021).

## **2.10 Conceptual Framework**

This study hypothesizes that adherence to recommended self-care practices in T2DM are influenced by specific factors in individual respondents. Specific factors include patient related,

hospital related and disease related characteristics (Independent variables) and adherence to self-care practices (Dependent/Outcome variables). It is assumed that the specific related factors are likely to influence adherence. It is further assumed that with monthly clinic attendance (the intermediate variable) there will be improved adherence to the recommended self-care practices. The framework was adopted and modified from Waari et al. (2018) on assessing of medication non-adherence and associated factors among Type II Diabetes Mellitus patients attending the diabetic clinic at Kenyatta National Hospital. In their study, four factors were investigated regarding non-adherence; treatment related factors, patients related factors, diseases related factors and health system factors. The dependent variable was non-adherence to medication. Some of the modifications required for the conceptual framework were borrowed from Physiother Can (2009) in line with the study theoretical framework. This was not limited to introduction of intermediate variable (Monthly clinic attendance) and dependent variable (Adherence to recommended self-care practices in T2DM). Further modification was borrowed from literature review in order to come up with measurable constructs. This is summarized in Figure 2.1.

## Independent variables



**Figure 2.1:** Conceptual framework of adherence to T2DM self-care practices and related factors

**Source:** Adapted and Modified from Physiother Can. (2009) and Waari *et al* (2018).

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Study Area**

The research was done at Kakamega County Referral Hospital. Kakamega County is in Western Kenya at 0° 17' 0" North, 34° 45' 0" East (appendix III). It is Western Kenya's primary referral hospital, offering both inpatient and outpatient care. The hospital has a total capacity of 448 beds and 80 cribs (Kakamega County Hospital, 2020).

#### **3.2 Study Design**

The cross-sectional design of the research was facility-based. The researcher was able to acquire both qualitative and quantitative data via the use of this method. This design is useful in collecting data at one point in time from a sample selected to represent a larger population (Lopez & Whitehead, 2013). This design was chosen because the researcher was seeking information from a large population within a short period of time. Secondly, the researcher had limited resources to her disposal, dictating that the time, materials and research assistants be quite minimal. The researcher studied the variables under consideration, which included patient-related variables, hospital-related aspects, disease-related factors, and self-care habits in Type II Diabetes Mellitus patients. These characteristics were then quantified via a questionnaire provided by the researcher, which permitted the statistical analysis of numerical data.

Previously, studies on health promotion have used this research design, for instance, Kamau (2017) while examining the attitudes and practice of health promotion for non-communicable diseases among healthcare workers at Kenyatta National Hospital, Okube, Kimani and Waithira (2020) while assessing association of dietary patterns and practices on metabolic syndrome in adults with central obesity attending a mission hospital in Kenya and Ndungu (2019) while investigating health promotion interventions, monitoring and evaluation process, policy guidelines and performance of HIV prevention projects for adolescents in Kisumu County, Kenya.

### 3.3 Target Population

T2DM patients who attended out-patient diabetes clinics at KCRH were included in the study population. The hospital's diabetes registration indicates that the facility diagnoses an average of 198 type 2 diabetics per month.

**Table 3.1: Number of Clients who attended Type II Diabetic Clinic in Kakamega**

#### County Referral Hospital

Month	Number
January	216
February	192
March	204
April	176
May	200
Average	198

*Source: Kakamega County Hospital Report (2021)*

**Table 3.2: Number of Health care Providers who attend to T2DM Patients attending Clinic in KCRH**

Type of Respondent	Number(n)
Medical officers	3
Nurses	15
Nutritionist	4
Clinical Officers	8
<b>Total</b>	<b>30</b>

*Source: Kakamega County Hospital Report (2021)*

### 3.4 Sample Size Determination

This research included 145 respondents, 11 of whom opted out due to not providing informed consent or providing insufficient information. Yamane's (1967) formula was used to get this sample size. The study adopted Taro Yamane's formula since it was working with a finite population and the population size was known. The investigation was conducted using a 95 percent confidence level and prevalence assumption,  $p=0.5$ . The formula is given by:

$$n = \frac{N}{1 + N(\epsilon)^2}$$

Where n is the sample size,

N is the population size, e is the level of precision

=

$$\frac{198}{1+198(0.05)^2}$$

n=132

An allowance of 10% was set for non-response at (13). Therefore, the sample size was 145 respondents.

### **3.5 Sampling Technique**

#### **3.5.1 Sampling of Participants**

A simple random selection option was prioritized to recruit 145 T2DM patients for the study. A list of all patients' outpatient numbers was retrieved from the data, and patients were allocated random numbers. The numerals were scribbled and folded on little pieces of paper. The numbers were combined, and the research assistants selected an article at random from the pool. Their search included patients whose names appeared on the chosen publication.

#### **3.5.2 Sampling of Key Informants**

The key informant interviews were conducted using a purposive sampling approach. Because no hypothesis is being tested and there is no related degree of confidence in any of the interview data, the number of key informants was not pre-defined. The objective was to contact as many informants as possible within a certain time frame. The key informants were chosen via personal contacts based on their availability, subject matter expertise, and representation of a diverse range of stakeholders. This sampling approach enabled the identification of representative and informative informants. With this context in mind, the researcher purposefully chose four key informants from a pool of thirty healthcare practitioners. They comprised the diabetes clinic's head medical officer, one nurse, one nutritionist, and one clinical officer.

### **3.6 Inclusion and Exclusion Criteria**

#### **3.6.1 Inclusion Criteria**

Type II Diabetes Mellitus patients aged 18 years and older attending clinic who consented to engage in the study voluntarily.



### **3.6.2 Exclusion Criteria**

- i. Critically ill patients and thus unable to communicate were excluded
- ii. Patients who declined the study's invitation to join.

## **3.7 Data Collection Tools**

### **3.7.1 Questionnaires**

The data collection instrument was a researcher-administered questionnaire that is included as Appendix V. The questionnaire was divided into four sections: patient-related variables, hospital-related variables, disease-related variables, and self-care practices. The questionnaire was provided in English however, presence of research assistants ensured that other languages such as Kiswahili and local dialects were put into consideration through interpretation. Two research assistants who were well-trained in conducting research utilizing questionnaires supported the Principal Investigator.

### **3.7.2 Key Informant Interview Guides**

To acquire data from the selected key informants, a key informant interview guide (Appendix VI) was employed. This guide was used to elicit extra data on the study's target variables, but from the view point of health care employees.

## **3.8 Pre-Testing of the Tools**

A pilot study was conducted to determine the study's feasibility, cost, timeliness, and statistical inconsistency, with the goal of improving the instrument and research design. The research instrument was trialed at Butere Sub-County Hospital to see if the patients comprehended it. Participants included 10% of the sample size (15 patients) and three (3) key informants, including a physician, a nutritionist, and a nurse who worked in a diabetic care clinic. This was performed prior to data collection to ensure that the instrument collected what it was intended to record and that any discrepancies were corrected. The institution was chosen because it is a public hospital with responders of comparable ethnic rig into those in the research region.

### **3.8.1 Reliability Testing**

This was validated by employing the test and retest procedure. 15 T2DM patients were randomly chosen and questioned at Butere Sub-County Hospital. After two weeks, the researcher repeated the process (re-test) on the same group in order to determine the connection between the tests

and the re-test. Cronbach's alpha coefficient was used to determine dependability, and a value of 0.824 was approved for the tool. Consistency and relevance of the research instruments were verified.

### **3.8.2 Validity**

Validity was achieved using content validity where expert judgment and opinion was sought. The questionnaires were checked by professionals at the Diabetes clinics, and conversations with the investigator were held to determine the questionnaire's validity and accuracy of factors to be measured, as well as the questionnaire's content's value. The research instrument was found to be valid regarding relevance, clarity, simplicity and objective.

## **3.9 Data Collection Procedure**

### **3.9.1 Administering the Questionnaires**

A structured questionnaire was used for this study. T2DM patients were randomly sampled and interviewed using the questionnaire at KCRH. Each interview was taped and transcribed in order to guarantee that no crucial information was omitted. Each interview session lasted around 15–30 minutes.

### **3.9.2 Conducting Key Interview Guides**

Key informant interviews were done with chosen healthcare personnel at KCRH who care for diabetic patients. A note taker was utilized to capture and transcribe the session. The tape was transcribed in order to guarantee that no crucial information was omitted. The KII session topic was "Factors Influencing Adherence to Recommended Self-Care Practices in the Management of Type II Diabetes Mellitus among Patients Attending Kakamega County Referral Hospital, Kenya," which was the subject of the research. Each KII session lasted around 15–30 minutes.

## **3.10 Measurement of Variables**

### **3.10.1 Dependent Variable**

Adherence to self-care practices regarding blood sugar levels monitoring, a low-sodium diet, regular exercise, weight monitoring, foot hygiene, medication and appointment keeping were measured using the "Diabetes Self-Management Questionnaire-Revised Scale" (Appendix V: section D). This has been successfully used to measure adherence in T2DM patients and

establish adequate reliability (Schmitt *et al.*, 2013). The tool comprised twenty statements with a 4-point scale (applies to me very much =3, applies to me much =2, applies to me somewhat =1 and does not relate to me =0 point) The participants were asked to specify their adherence status in the past two weeks (Drugs, diet, foot care and exercise), in the past month (Blood sugar levels and weight checking) and for the last 2 months (Appointment keeping). For each statement that applies to me very much [3], applies to me much [2], or applies to me somewhat [1], responses were combined and coded "1," but responses that do not relate to me [0] were coded "0." Each "1" earned one point, whereas "0" earned none. From previous studies conducted (Oluma *et al.*, 2020), the cutoff point was used. The percentages were obtained by dividing the number of questions successfully answered by the total number of items in this parameter and multiplying by 100. Patients who scored 50% or more were classed as adherent, whereas those who scored less than 50% were classified as non-adherent to self-care methods.

### **3.11 Independent Variables**

#### **3.11.1 Patient-related Factors**

These characteristics included gender, age, marital status, income level, and degree of education.

**Gender:** This was established by secondary sexual traits detected in either male or female sex.

**Age:** This was calculated to the closest year as the period beginning with the stated or confirmed date of birth.

**Marital status:** Participants were categorized as; never married, married, divorced/separated or widowed.

**Level of income:** This was calculated as the monthly aggregate household income from all sources, before taxes, and was classified as follows: up to Ksh 10,000, Ksh 10,001-30, 000, Ksh 30,001-50,000, and Ksh over 50,000.

**Level of education:** This was established based on the patient's description of the highest grade attained; no official education, elementary, secondary, or post-secondary levels.

#### **3.11.2 Hospital-related factors**

These are existing factors in the hospital environment that make it easier or problematic for diabetics to undertake self-care. These included healthcare access, service quality, physician-patient relationships, and a failure to transmit crucial information. Five yes/no answer questions were asked in line with these variables to evaluate this (Appendix V: section B).

### **3.11.3 Disease-related factors**

These are disease-related variables that may impact self-care habits in the treatment of Type 2 diabetes. The duration of T2DM, co-morbidity, disease-related complications, and hospitalizations were also considered. The respondents' time on treatment for T2DM, other chronic illnesses, hospitalizations for T2DM-related negative outcomes in the preceding year and the kind of complication incurred were all examined. This section had five questions to test this (Appendix V: section C).

### **3.12 Data Analysis**

Data was analyzed both qualitatively and quantitatively. Quantitatively, the study applied descriptive and inferential statistics. Descriptive statistics included percentages and frequencies. Inferential statistics such as chi-square and logistic regression tests were employed to determine the relationship between the independent and dependent variables. The independent variables comprised patient-related, hospital-related, and disease-related variables, all of which were quantified on a discrete or continuous scale. The dependent variable was coded as "1" for self-care practice adherence or "0" for non-adherence. The responses to the Diabetes Self-Management Questionnaire scored 1 to 3, that is, Extremely applicable to me [3], Applies to me to a considerable extent [2], and applies to me to some extent [1], were merged and coded "1" to represent adherence, whereas those scored 0, that is, Does not apply to me [0], were coded "0" to represent non-adherence for logistic regression analysis in SPSS version 23.

Qualitative data that was collected through interviews was transcribed, and the output organized into various categories that was theme based. Content analysis was used to assess qualitative data. Qualitative research elicits and analyses observations and knowledge. An in-depth analysis was carried out and a finding was presented in form of narrations and verbatim quotations. Qualitative data was mostly applied in triangulation of the quantitative data as presented by the respondents to improve validity and reliability of the findings.

### **3.13 Ethical Considerations**

This study was approved by the National Commission for Science, Technology and Innovation, Kenya in 2021 on license number NACOSTI/P/21/10406. Clearance from Maseno University Ethics Review was obtained on approval MUERC/00777/19 and authorization was granted from

hospital administration on approval-125-06/2021. An informed written consent was further obtained from the study respondents before interviewing them. The researcher assured responders that the study was conducted only for academic objectives. All participants were told of the study's objectives, as well as the study's advantages and dangers. They were advised that, although participation in the research provided no immediate advantage to them, the study's results would benefit society. Additionally, they were advised of their freedom to resign from the research at anytime without incurring any commitments. To maintain anonymity, the study's data were saved on a password-protected computer that was accessible only to the chief investigator. Additionally, no personally identifiable information such as names was recorded to maintain anonymity. Given the non-invasive methods employed to gather data, it was believed that the research would pose little hazards. The research's results were distributed to appropriate authorities and stakeholders in diabetes treatment through a soft-copy of the study and publication in a peer-reviewed journal.

## **CHAPTERFOUR**

### **RESULTS**

#### **4.1 Introduction**

This chapter discusses the variables that influence adherence to recommended self-care practices in the treatment of Type 2 Diabetes at KCRH, Kenya. The research surveyed 145 respondents. 134 respondents completed the interview in its entirety and 11 opted out making a response rate of 92%; nonetheless, this was still within the predicted sample size of 132 participants, omitting the anticipated non-response of 13 participants. This research was done in July 2021 at the KCHR's diabetes outpatient clinic. The study's findings include the following: patient-related, hospital-related, and disease-related aspects associated with self-care practices compliance among Type II Diabetes Mellitus patients at Kakamega County Referral Hospital in Kenya.

#### **4.2 Patient-related Factors Attributed with Adherence to Self-care Routines**

A patient's age, marital status, gross monthly income, and educational attainment were all taken into consideration while analyzing these data points.

##### **4.2.1 Patient Related Factors**

The descriptive data for patient-associated variables are shown in Table 4.1. Frequencies and percentages are used to present data.

**Table 4.1: Descriptive Statistics-Patient Related Factors of Diabetic Patients Attending KCRH**

<b>Characteristic</b>	<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>	Male	69	51.5%
	Female	65	48.5%
	<b>Total</b>	<b>134</b>	<b>100.0%</b>
<b>Age</b>	21-40	17	12.8%
	41-60	72	54.1%
	61-80	31	23.2%
	81andAbove	14	9.5%
	<b>Total</b>	<b>134</b>	<b>100.0%</b>
<b>Marital Status</b>	Never married	7	5.5%
	Married	97	72.2%
	Divorced/separated	10	7.6%
	Widowed	20	14.7%
	<b>Total</b>	<b>134</b>	<b>100.0%</b>
<b>Total Monthly Income(Ksh)</b>	Ksh0-10,000	76	56.7%
	Ksh10,001-30,000	45	33.5%
	Ksh30,001-50,000	5	4.0%
	Kshabove50,001	8	5.8%
	<b>Total</b>	<b>134</b>	<b>100.0%</b>
<i>1USD= 109.6667 KSh.</i>			
<b>Highest Level of Education</b>	No Formal Education	28	21%
	Primary	51	38%
	Secondary	39	29%
	Post-Secondary	16	12%
	<b>Total</b>	<b>134</b>	<b>100.0%</b>

Males made up most research participants (51.5 percent of all participants), while females made up 48.5 percent. Most participants were aged between 41-60 years, accounting for 54.10 percent of all respondents, while those aged 81and beyond accounted for 9.50 percent.23.20 percent of participants were between the ages of 61 and 80, while 12.80 percent were between the ages of 21 and 40. Most participants (72.2 percent) reported that they were married, followed by widowed (14.7 percent), divorced/separated (7.6 percent), and those who had never married (5.5 percent). When questioned about the amount of money they made every month, 56.57 percent of respondents reported earning less than Ksh.10,000, 33.6 percent reported earning between Ksh.10,000 and 30,000, 5.8 percent reported making more than Ksh.50,000, and the remaining 4% reported earning between Ksh.30,000 and 50,000. Concerning the greatest level of education, 38% of respondents reported having a primary education, while 29% reported having a secondary education. Without a formal education, 21% of respondents were unemployed, while

12% had completed post-secondary school education.

The chief medical officer hinted at the following about health care professionals as a source of information on adherence to self-care practices:

*"Patients who are married have a greater likelihood of sticking to self-care measures owing to material and emotional support in managing Type II Diabetes Mellitus, compared to their counterparts who are not married."*(Chief Medical Officer, working duration 10 years,).

Several of the reasons include social support from their family and the need to remain healthy in order to care for their family. Another key informant said that:

*"The patients' low socioeconomic status makes self-care routines difficult to adhere to. Majority of them spent their days rushing from dawn to twilight outside their homes. They lack the time necessary to exercise self-care since eking out an existence is their primary objective."*(Nurse, working duration 5years).

From the above statement, it is obvious that poor income influences adherence to self-care methods for Type II Diabetes Mellitus treatment. With most respondents earning less than Ksh. 30,000 per month, they are unable to meet their basic needs while still adhering to self-care measures for Type II Diabetes Mellitus treatment.



#### 4.2.2 Association of Patient Related Factors and Adherence to Recommended T2DM Self-Care Practice

The results are summarized in Table 4.2.

**Table 4.2: Patient Related Factors and Adherence to T2DM Self-Care Practice using Pearson Chi-square test**

Variable	Adherence (%)	Non-Adherence (%)	X <sup>2</sup>	Df	p-value
<b>Gender</b>					
Male	27(52.9)	42(50.6)	1.396	1	.237
Female	24(47.1)	41(49.4)			
<b>Age</b>					
21-40	7(13.7)	10(12)	17.337	3	.001
41-60	28(54.9)	44(53)			
61-80	11(21.6)	20(24.1)			
81andAbove	5(9.8)	9(10.8)			
<b>Marital Status</b>					
Never married	4(7.8)	3(3.6)	2.928	3	0.403
Married	30(58.8)	67(80.7)			
Divorced/separated	6(11.8)	4(4.8)			
Widowed	11(21.6)	9(10.8)			
<b>Total Monthly Income (Ksh)</b>					
Ksh0-10,000	17(33.3)	59(71.1)	15.667	3	0.001
Ksh10,001-30,000	29(56.9)	16(19.3)			
Ksh30,001-50,000	2(3.9)	3(3.6)			
Kshabove50,001	3(5.9)	5(6)			
<b>Highest Level of Education</b>					
No Formal Education	6(11.8)	22(26.5)	16.116	3	0.001
Primary	23(45.1)	28(33.7)			
Secondary	10(19.6)	29(34.9)			
Post-Secondary	12(23.5)	4(4.8)			

**KEY:** **f** is Frequency; (%) is percentage, **X<sup>2</sup>** is Pearson Chi-square; **df** is the degrees of Freedom and **p** is the Probability

By utilizing the Pearson Chi-square test of association, the study was able to determine any associations between conformity to T2DM self-care practice and patient associated characteristics. As seen in Table 4.2, There were 24 (47.1%) female respondents who were adherents, compared to 41 (49.5%) who were non-adherents. However, just 27 (51.9%) of the men adhered, compared to 42(50.6%) who did not adhere. According to the findings, there was no connection between gender and adherence ((X<sup>2</sup>(1)=1.396,p=0.237). The results also revealed

that 7 (13.7%) of the respondents who adhered to self-care were between the ages of 21 and 40, 28 (54.9%) of the respondents who adhered to self-care were between the ages of 41 and 60, 11 (21.6%) of the respondents who adhered to self-care were between the ages of 61 and 80, and 5 (9.8%) of the respondents who adhered to self-care were over the age of 81. An association between adherence and age was found to be statistically significant. ( $X^2(3) = 17.337, p = .001$ ), according to the data. The findings also revealed that 4 (7.8%) of the respondents who adhered to self-care were never married, 30 (58.8%) of the respondents who adhered to self-care were married, 6 (11.8%) of the respondents who adhered to self-care were divorced and separated, and 11 (21.6%) of the respondents who adhered to self-care were widowed. Additionally, the data indicated that no statistically significant association existed between adherence and marital status ( $X^2(3) = 2.928, p = 0.403$ ).

Additionally, the findings revealed that 17 (33.3%) of the respondents who adhered to self-care earned between Ksh0-10,000, 29 (56.9%) of the respondents who adhered to self-care earned between Ksh10,001-30,000, 2 (3.9%) of the respondents who adhered to self-care earned between Ksh30,001-50,000, and 3 (5.9%) of the respondents who adhered to self-care earned above Ksh50,001. The studies also demonstrated a statistically significant association between adherence and income ( $X^2(3) = 15.667, p = .001$ ). At conclusion of the study, the findings revealed that 6 (11.8%) of those who adhered to self-care had no formal education, 23 (45.1%) of those who adhered to self-care had primary education, 10 (19.6%) of those who adhered to self-care had secondary education, and 12 (23.5%) of those who adhered to self-care had post-secondary education. The data revealed that there was a statistically significant connection between adherence and educational attainment ( $X^2(3) = 16.116, p = .001$ ).

#### **4.2.3 Multivariable logistic regression analysis of Patients Related Factors for Adherence to T2DM Self-Care Practice**

Patients visiting Kakamega County Referral Hospital in Kenya were subjected to a logistic regression equation to determine how effectively patient-related characteristics predict the probability of adherence to self-care techniques in the treatment of type 2 diabetes. The model takes the form of binary regression and appears in the following manner.

$$Y(0,1)=f(G,A,MS,MI,EL)$$

Y= Binary function for adherence where “0” is the log of odds against adherence to self-care practices. 1 is the log of odd in the favor of adherence to self-care routines.

G=Gender

A=Age

MS = Marital Status

MI = Monthly Income

EL=Education Level

An output from a log it model gives a *chi*-square of 67.154, with df=11 and  $p =0.000$  for the model's Omnibus test. Patients-related variables were well-defined in this test, which indicates that the model's significance level is lower than 0.05.

**Table 4.3: Logistics Model table for Patient Related Variables**

Variables in the Equation	B	S.E.	Wald	Df	Sig.	Exp(B)	
						Lower	Upper
<b>Gender(male)</b>	-.650	.628	1.071	1	.301	.522	1.788
<b>Marital status</b>			14.396	3	.002		
Never married	4.360	1.930	5.101	1	.024	78.261	3441.403
Married	2.743	.781	12.346	1	.000	15.539	71.785
Divorce/separated	4.795	1.463	10.740	1	.001	120.963	2129.168
<b>Monthly income</b>			1.380	3	.710		
Up to10000	-.840	1.662	.255	1	.613	.432	11.226
10,0001-30,000	.749	1.706	.193	1	.661	2.116	59.946
30,001-50,000	.250	1.809	.019	1	.890	1.284	44.466
<b>Education</b>			1.986	3	.575		
No formal education	1.078	1.189	.822	1	.364	2.939	30.208
Primary	2.030	1.495	1.844	1	.174	7.611	142.454
Secondary	2.065	1.533	1.816	1	.178	7.889	159.046
<b>Age</b>			21.126	3	.000		
21-40	-1.839	.802	5.264	1	.022	.159	.765
41-60	-2.301	.863	7.112	1	.008	.100	.543
61-80	.339	.864	.154	1	.695	1.404	7.626
Constant	2.149	1.827	1.383	1	.240	8.573	

a. Variable (s) entered on step1: gender, marital status, monthly income, education, age.

Table 4.3 shows that individuals who practiced self-care were older, more educated, married, had a higher monthly income, and were female. When it came to self-care, men were 47.8% less

likely than women to engage in it ([OR=0.522, 95 percent CI (1.52, 1.788),  $p = 0.301$ ]. Self-care behaviors were 78 times more probable for those who had never been married, 16 times more likely for those who had been married and 121 times more likely for those who had been divorced/separated than for those who had been widowed. [OR=78.261, 95 percent CI [1.780, 3441.4],  $p = 0.024$ ].

A same a sure of monthly income, those who earn less than Ksh.10,000 are 56% less likely than those who earn over Ksh.50,000 to adhere to self-care practices(OR=0.432), those who earn between Ksh.10,001 and 30,000 are 2 times more likely than those who earn over Ksh.50,000 to adhere to self-care practices (OR=2.116), and those who earn between Ksh.30,001 and 50,000 are 1 time more likely than those who earn over Ksh.50,000 to consider self-care actions. Considering educational attainment, participants lacking formal education were three times more likely to practice self-care than those with post-secondary education (OR=2.939), those with primary level education were eight times more probable to engage in self-care routines compared to those with post-secondary education (OR=7.611), and those with secondary education were eight times more probable to adopt self-care compared with those with post-secondary education (OR=7.611).

Those patients between the ages of 21 and 40 were 84.1 percent less likely to adhere to self-care than those beyond the age of 81 years. Similarly, patients between the ages of 41 and 60 were 90% less likely to adhere to self-care than those beyond the age of 81 (OR=0.100). However=0.695, which is larger than 0.05, indicates that there is no significant difference between those respondents who are between the ages of 61 and 80 and those above the age of 80.

### **4.3 Hospital-related Factors Associated with Adherence to Self-care Practices**

The research looked at the hospital characteristics that related to Type II Diabetes Mellitus patients' adherence to self-care measures. Health care access, quality, patient-doctor interactions and delivery of crucial information were among the characteristics evaluated in this study.

#### **4.3.1 Hospital Related Factors**

Patients with Type II Diabetes Mellitus who adhered to self-care methods in the hospital were studied as a result of the study. There was a focus on factors such as patient-doctor interactions and information delivery in this research.

**Table 4.4: Descriptive Statistics of Hospital Related Factors of Diabetic Patients Attending KCRH**

<b>Characteristic</b>	<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
Distance in km from the respondents' home to the health facility	0-5km	76	56.7%
	5-10km	45	33.6%
	Beyond10km	13	9.7%
	<b>Total</b>	<b>134</b>	<b>100.0</b>
Quality of Health Services	Satisfied	78	58%
	Dissatisfied	56	42%
	<b>Total</b>	<b>134</b>	<b>100.0</b>
Physician patient relationship	Satisfied	119	88.5%
	Dissatisfied	15	11.5%
	<b>Total</b>	<b>134</b>	<b>100.0</b>
Type II Diabetes Mellitus Health Education on Self-Care Practice	Ever attended	127	94.8%
	Never attended	7	5.2%
	<b>Total</b>	<b>134</b>	<b>100.0</b>
Communication of Critical Information	Yes	105	78%
	No	29	22%
	<b>Total</b>	<b>134</b>	<b>100.0</b>

According to the survey, 56.7% of respondents were within a 5-kilometer radius of the health facility, 33.6% were within a 5-kilometer radius, and 9.7% were within a 10-kilometer radius. Most respondents (58 percent) said that the services they received were of excellent quality, while 42 percent stated that they were dissatisfied. This was assessed by the participants' responses to whether they were happy with the health care providers' services. Diabetes mellitus health education sessions were attended by 94.8 percent of study participants after diagnosis. Nearly 80 percent of the participants in this study reported they have been educated about the value of self-care routines in the treatment of Type II Diabetes Mellitus. An interview with a key source yielded the following information:

*"The hospital is responsible for poor adherence, particularly in public hospitals, which lack laboratory consumables, written patient health education material, and other critical resources."We have instances when individuals are turned away or told to seek care elsewhere because we are unable to provide all of their services."*(Nurse, working duration 9 years).

Another respondent during interview said that:

*"Communication of critical information and offering of quality service to patients is good when there are adequate staff."*(Nutritionist, working duration 6 years).

### 4.3.2 Association of Hospital Related Factors and Adherence to T2DM Self-Care Practice

**Table 4.5: Hospital Related Factors and Adherence to T2DM Self-Care Practice using Pearson Chi-square test**

Variable	Adherence (%)	Non-Adherence (%)	X <sup>2</sup>	Df	P-value
<i>Are You Able to Access health care providers whenever you need them(Distance)</i>					
Yes	45(88.2)	37(44.6)	7.910	1	.005
No	6(11.8)	46(55.4)			
<i>Is the quality of services offered good</i>					
Yes	40(78.4)	38(45.8)	10.061	1	.002
No	11(21.6)	45(54.2)			
<i>Is the physician patient relationship good</i>					
Yes	43(84.3)	33(39.8)	10.157	1	.001
No	8(15.7)	50(60.2)			
<i>Does the hospital communicate to you critical information</i>					
Yes	36(70.6)	34(41)	7.286	1	.007
No	15(29.4)	49(59)			
<i>Have you been informed by your health provider the importance of self-care practice</i>					
Yes	40(78.4)	65(78.3)	10.061	1	.002
No	11(21.6)	18(21.7)			

**KEY:** **f** is Frequency; (%) is percentage, **X<sup>2</sup>** is Pearson Chi-square; **df** is the degrees of Freedom and **p** is the Probability.

The Pearson Chi-square test of association showed connections between adherence to T2DM self-care routines and hospital-related characteristics. According to the data in Table 4.5, 45(88.2%) respondents who have access to healthcare professionals whenever they need them practice self-care, compared to 6 (11.8%) respondents who lack access to healthcare personnel. The data indicated a strong correlation between adherence and healthcare provider accessibility ( $X^2(1) = 7.910, p = .005$ ). Additionally, the findings showed that 40 (78.4%) respondents who thought that the quality of services provided was satisfactory adhered to self-care practices, compared to 11 (21.6%) respondents who indicated that the quality of services provided was inadequate. The data indicated a significant relationship between adherence and service quality ( $(X^2(1) = 10.061, p = .002)$ ). Additionally, the findings showed that 43 (84.3 percent) respondents who reported having a positive connection with their healthcare providers practiced self-care, compared to 8 (15.7%) respondents who reported having a negative relationship with their healthcare providers. There was a substantial correlation between adherence and a positive

physician-patient connection ( $\chi^2(1) = 10.157, p=.001$ ). Additionally, the results indicated that 30(70.6%) respondents who indicated that the hospital provided critical information regarding self-care practices adhered to self-care practices, compared to 15(29.4%) respondents who indicated that the hospital did not provide critical information regarding self-care practices. The data indicated a strong relationship between adherence and delivery of key information about self-care practices ( $\chi^2(1) = 7.286, p=.007$ ). Finally, the results indicated that 40 (78.4%) respondents who indicated they had been advised by their health provider about the significance of self-care practice adhered to it, compared to 11(21.6%) respondents who indicated they had not been advised by their health provider about the importance of self-care practice. The data indicated a significant relationship between adherence and health provider knowledge on the value of self-care practice ( $\chi^2(1)=10.061, p=.002$ ).

#### **4.3.3 Multivariable Logistic Regression Analysis of Hospital Related factors for Adherence to T2DM Self-Care Practice**

A logistic regression equation was used to establish the degree to which hospital-related characteristics predict the probability of patients adhering to self-care techniques for T2DM treatment at Kakamega County Referral Hospital in Kenya. The model takes on the form of binary regression, as seen below.

$$Y(0,1)=f(A,C, T,W,I)$$

Y= Binary function for adherence, where "0" represents the log of the chances against self-care practice adherence.

1 is the log of the probabilities in favor of self-care practice adherence. A=Are you able to get health care at anytime you want it?

C=Is the service's quality acceptable to you?

T= Is the interaction between providers of health care and patients beneficial to you?

W=Does the hospital offer you with crucial information on T2DM self-care?

I = Have you been told by your healthcare practitioner about the critical nature of self-care behaviors in the treatment of type2 diabetes?

The Omnibus test was passed with a chi-square value of 17.495, df=5, and a p-value of 0.004. It's a model-validity test, and the significance level is less than 0.05 at 0.004, which indicates that

hospital-related variables are well described in the model.

**Table 4.6: Logistics Model table for Hospital Related Factors**

Variables in the Equation	B	S.E.	Wald	Df	Sig.	Exp(B)	95%C.I. for EXP(B)	
							Lower	Upper
Accessibility(yes)	.137	.505	.074	1	.786	1.147	.426	3.090
Quality(yes)	.512	.498	1.057	1	.014	1.668	.629	4.423
Relationship(yes)	.675	.443	2.316	1	.008	1.963	.823	4.682
Critical information (yes)	.189	.476	.157	1	.692	1.208	.475	3.069
Self-care importance (yes)	.678	.502	1.825	1	.002	1.971	.736	5.274
Constant	-.248	.281	.779	1	.377	.780		

a. Variable(s) entered on step 1: Accessibility, Quality, Satisfaction, Education, Information.

In Table 4.6, characteristics associated to the hospital were found to differentiate those who practiced self-care from those who did not. There was an 11.7-fold increase in self-care behaviors among those who were able to access health care professionals whenever they needed them (OR=1.147) compared to those who couldn't get the treatment they needed when they needed it. When asked "Is the quality of services supplied excellent," individuals who answered "yes" were twice as likely as those who answered "no" to maintain self-care habits (OR=1.668). Participants who had a good connection with their doctors were twice as likely to exercise self-care as those who did not (OR=1.963) in terms of "physician patient relationship."

Do you have critical insights on self-care practices in T2DM from the hospital? Participants who said yes to the question "Do you have critical data on self-care routines in T2DM from the hospital?" were 1 time more likely to adhere to self-care practices compared to those who said no to the question (OR=1.208). The odds ratio (OR=1.971) showed that participants who had been told by their doctor about the significance of self-care routines in T2DM therapy were twice as likely to adopt self-care as those who had not been told by their doctor (Have you been informed by your doctor about the importance of self-care practice in T2DM management)?

#### 4.4 Disease-related factors associated with adherence to self-care routines

In this study's third objective, the study sought to identify disease-related characteristics linked with adherence to self-care routines. T2DM treatment duration, other chronic illnesses, hospitalization due to T2DM-related problems in the previous year, and the kind of complication experienced by responders were all taken into consideration.



#### 4.4.1 Disease Related Factors

Disease-related variables are summarized in Table 4.7, which includes descriptive data. Frequencies and percentages are shown in the data.

**Table 4.7: Descriptive Statistics-Disease Related Factors of Diabetic Patients Attending KCRH**

Characteristic	Variable	Frequency	Percentage
Period the respondents had been on therapy for T2DM	0-5 years	73	54.4%
	6-10 years	40	29.70%
	11-15years	9	7.30%
	16-20years	5	3.70%
	Above20years	7	4.90%
	<b>Total</b>	<b>134</b>	<b>100.0</b>
Other Chronic Ailment(S) Suffered by the Respondents	Yes	59	44%
	No	75	56%
	<b>Total</b>	<b>134</b>	<b>100.0</b>
Hospitalization due to negative outcomes from T2DM in the last one year	Yes	40	30%
	No	94	70%
	<b>Total</b>	<b>134</b>	<b>100.0</b>
Form of Complication/ Chronic ailment Suffered by the Participants	High BP	50	84.7%
	Eye complications	4	6.8%
	Foot ulcers	3	5.1%
	Cardiac failure	2	3.4%
	<b>Total</b>	<b>59</b>	<b>100.0</b>

**\*59 respondents only (44%) who suffered from other chronic ailments**

54.4 percent of the respondents had been on T2DM therapy for 0-5 years, 29.7 percent for 6-10 years, 7.3 percent for 11-15 years, and 4.9 percent for 21 years, according to the figure above. The majority of T2DM patients were on therapy for a period of 0 to 5 years, according to these data. Study's findings affirmed that 56% of respondents did not have any additional chronic illness, while 44% had. That's why just 3% of those who were asked answered this question. Hypertension (high blood pressure), vision problems, and ulcers on the feet were all listed in this list of long-term ailments. Only 30 percent of those surveyed said they' decently been hospitalized because of T2DM and associated consequences, whereas 70 percent had not been hospitalized. High blood pressure (84.7%), eye problems (6.8%), foot ulcers (5.1%), and chronic heart failure (3.4%) were the most common reasons for hospitalization, according to the research. Interviews with key informants allowed researchers to uncover several health-related issues that are linked to adherence to self-care practices. According to many key informants, co-

morbidity is a factor that determines the amount of self-care practice. High blood pressure and hypertension patients are more likely to adhere to self-care methods, according to the study. According to one of the key informants interviewed, they advise patients with well-known chronic conditions to include self-care techniques in to their daily routines. In his words:

*“T2DM patients with other chronic illness are more likely to adhere to self-care practices. For instance, those with high blood pressure have been urged to keep an eye on their blood pressure levels and to take notice of any changes.”*(Clinical Officer,5 years working duration).

The researcher also found that three out of four of the key informants agreed that the length of therapy for Type II Diabetes reduced adherence to self-care practice. One of the key informants said that patients learn to stick to self-care practices over time to prevent T2DM problems and lower the frequency of hospitalization. For those with Type II Diabetes who have been on therapy for a long time, a rapport is frequently formed between patients and health care professionals. In order to maintain self-care habits, patients must be able to reach out at any moment to health care practitioners.

#### 4.4.2 Association of Disease Related Factors and Adherence to T2DM Self-Care Practice

**Table 4. 8: Disease Related Factors and Adherence to T2DM Self-Care Practice using Pearson Chi-square test**

Variable	Adherence (%)	Non-Adherence (%)	X <sup>2</sup>	Df	p-value
<b><i>DurationofT2DM</i></b>					
0-5	8(15.7)	65(78.3)			
6-10	28(54.9)	12(14.5)			
11-15	6(11.8)	3(3.6)	35.058	4	.000
16-20	4(7.8)	1(1.2)			
Above20	5(9.8)	2(2.4)			
<b><i>Co-morbidity</i></b>					
Yes	38(74.5)	21(25.3)	42.471	1	.000
No	13(25.5)	62(74.7)			
<b><i>Hospitalization</i></b>					
Yes	33(64.7)	7(8.4)	13.606	1	.000
No	18(35.3)	76(91.6)			

**KEY:** **f** is Frequency; (%) is percentage, **X<sup>2</sup>** is Pearson Chi-square; **df** is the degrees of Freedom and **p** is the Probability

Adherence to T2DM self-care practice was measured using Pearson Chi-square test of

association. A total of 8 (15.7%) of respondents who have been on a diabetes treatment regimen of less than five years adhered to self-care practice, 28 (54.9%) of those on a six- to ten-year regimen adhered, 6 (11.8%) of those on an eleven- to fifteen-year regimen adhered, and 4 (7.8%) of those on a sixteen to twenty-year regimen adhered to self-care practice. In this study, adherence and the length of time patients have had type 2 diabetes was shown to be significantly linked ( $(X^2(4) = 35.058, p=.000)$ ). While 38 (74.5%) participants said that they had previously suffered from any other chronic diseases, only 13(25.5%) participants stated that they had not previously suffered from any other chronic ailments adhered to self-care practice. A connection between co-morbidity and adherence was found ( $(X^2(1)=42.471, p =.000)$ ). Finally, the study found that 64.7% of respondents who had been hospitalized owing to complications from T2DM adhered to self-care practice, compared to 18.3% of respondents who had not been hospitalized due to complications from T2DM. There was a statistically significant link between hospitalization and adherence ( $(X^2(1) =13.606, p =.000)$ ).

#### **4.4.3 Multivariable logistic regression analysis of Disease Related factors for Adherence to T2DM Self-Care Practice**

Using a logistic regression equation, patients with T2DM visiting KCRH were assessed for their chance of adhering to self-care strategies. The model is a binary regression, as shown below.

$$Y(0, 1) = f(T, C, H)$$

Y= Binary function for adherence where “0” is the log of odds against adherence to self-care practices.

1 is the log of odd in the favor of adherences to self-care practices. T=How long have you been treated for Type II Diabetes?

C=Do you have any other chronic illness(s)?

H=Have you been hospitalized due to complications from Type II Diabetes Mellitus in the last one year

A log it model output shows result of Omnibus test for the model as chi-square 55.858, df =3 and  $p =0.000$ . This is a validity of model test indicating disease related factors defined the model well since significance level is lower than 0.05at 0.000.

**Table 4.9: Logistics Model table for Disease Associated Variables****Variables in the Equation**

	B	S.E.	Wald	Df	Sig.	Exp(B)	95%C.I. for EXP(B)	
							Lower	Upper
Duration	.051	.016	10.094	1	.001	1.052	1.020	1.085
co-morbidity(yes)	3.013	.537	31.520	1	.000	20.34	7.105	58.223
hospitalization(yes)	.068	.515	.017	1	.895	1.070	.390	2.937
Constant	-1.647	.454	13.169	1	.000	.193		

a. Variable(s) entered on step 1: duration, co-morbidity, and hospitalization.

Table 4.9 shows that those who practiced self-care were more likely to have disease-related variables. In terms of how many years have you been on treatment for Type II Diabetes Mellitus the chance of sticking to self-care practice increases by one unit (OR=1.052) for each additional year.

Participants who had previously suffered from any other chronic ailment(s) were 20 times more likely to adhere to self-care practices than those who had not previously suffered from any other chronic ailment(s) (OR=20.340), according to the results of the study. The odds ratio (OR=1.070) indicated that individuals who had been hospitalized for Type II Diabetes Mellitus negative outcomes in the preceding year were 1 time more likely to practice self-care than those who had not visited the hospital for Type II Diabetes Mellitus problems in the preceding year.

## CHAPTER FIVE

### DISCUSSION

#### 5.1 Introduction

This chapter discusses the outcomes of a research conducted at Kakamega County Referral Hospital in Kenya on the factors that impact Type II Diabetes Mellitus patients' adherence to self-care techniques. Self-care practice, patient and hospital variables, and disease-related factors are covered in this chapter.

#### 5.2 Patient-related Factors Associated with Adherence to Self-care Practices

##### 5.2.1 Patient-Related Factors

Males were found to be more numerous than females in the research. It might mean that more men than women sought Type II Diabetes Mellitus treatment at KCRH. Eldoret's Moi Teaching and Referral Hospital (MTRH), where Jepkemoi *et al.*, (2021) found comparable outcomes among patients with Type II Diabetes Mellitus (TDM). The number of female patients sampled was more than that of male patients as found out by Bongor, Shiferaw and Tariku (2018). It contradicts this finding.

Most participants were between the ages of 41 and 60, with a few beyond 80 years which agrees with Mwaloma (2016) who found out that most T2DM patients are above the age of 45 years old. Among diabetic patients at KNH, Waari (2019) discovered that the majority were between the ages of 45 and 70, confirming the findings of this research. Only a handful of the participants had never been married. Diabetes Mellitus patients at KCRH, where this study was conducted, were found to be married (Mutunga *et al.*, 2017). A substantial correlation exists between the marital status of the patients and their self-care behaviours (Berhe *et al.*, 2013). Only a tiny percentage of the participants earned more than Ksh 100,000. Most diabetics patients in Sub-Saharan Africa have an annual income of less than a dollar, according to a meta-analysis of diabetes in the region (Atun *et al.*, 2017). According to a survey conducted across four Kenyan districts, most participants spent less than Ksh, 5,000 per month on food (Misra *et al.*, 2019). Most responders had an elementary school level, while a handful had a post-secondary degree. In Kenya, a similar finding was made in terms of income level (Mohamed *et al.*, 2018). In Ethiopia, several research-backed up these findings (Bayisa & Bekele, 2017; Kassahun *et al.*, 2016; Abebaw, *et al.*, 2016).

### 5.2.2 Association of Patient-Related Factors and Observance to T2DM Self-Care Practice

The research found no connection between gender and adherence ( $p=.237, p>0.05$ ). According to the findings of this research, patients with Type II Diabetes Mellitus who adhere to self-care techniques are not affected by their gender. Several studies in Kenya have shown that sex does not significantly influence the adherence to self-care routines in the treatment of Type II Diabetes Mellitus (Waari, 2019; Wamucii *et al.*, 2020), while other studies were unable to demonstrate the association with adherence since males makeup a small percentage of those who visit the clinic (Mutunga *et al.*, 2017). The research found that male Type II Diabetes Mellitus patients were less likely to abide to self-care routines than females. According to these findings, when it comes to medication compliance, women outpace males by a wide margin (Kirkman *et al.*, 2015; Tusubira *et al.*, 2020).

The study found a connection between age and self-care practice ( $p=.001, p<0.05$ ) in the study results. Earlier research found that patients aged 44 to 64 had a considerably greater adherence rate than those aged 65 and older; this conclusion was consistent with our study (Pate *et al.*, 2010). According to research, adherence improves with age in nations such as Malaysia and France (Ishak *et al.*, 2017; Jannoo & Khan, 2019). However, patients' age did not affect their involvement in any self-care activity (Mogre *et al.*, 2017).

The results indicated that marital status did not affect adherence ( $p=0.403, p>0.05$ ). Relationship status had no effect on the frequency with which participants engaged in any self-care practices by Mogre *et al.*, (2017). Those results, however, are contradicted by Mutunga *et al.*, (2017), who found a strong link between patient demographics, including marital status and their ability to provide appropriate Diabetes Mellitus self-care practices. According to other research, such as Albikawi and Abuadas (2015) and Berhe *et al.*, (2013), patients' marital status substantially impacts their self-care behaviors.

There was a statistically significant correlation between the degree of income and the level of adherence to self-care ( $p=.001, p<0.05$ ). Conformity to diabetic self-care routines 'a recommendation was a significant predictor of income by Jepkemoi *et al.*, (2021). Diabetes patients are less likely to follow dietary requirements if they have a high income. According to the research results, high socio-economic status has been linked to non-adherence to dietary

adjustments. The data showed a statistically significant correlation between education level and self-care adherence ( $p=.001, p<0.05$ ). According to research conducted in Bahrain by Shamsi and colleagues (2013), there was no correlation between education level and food habits. However, prior research has shown that a lack of education may lead to a lack of diabetes understanding and thus, to poor self-care practices (Aggarwal *et al.*, 2010; Lassale *et al.*, 2013).

### **5.2.3 Patient-Related Factors for Adherence to T2DM Self-Care Practice**

However, the significance in association was lost when patient-related factors were placed in multivariable analysis. This could have been due to association of these factors with other factors associated with adherence that when controlled for were able to cater for their confounding effects.

It was found that people who earned less than Ksh.10,000 were 56.8% less likely to exercise self-care than those who made more than Ksh.50,000. Patients who adhered to self-care techniques had an estimated income level that was much higher than those who did not adhere to self-care activities. Self-care habits may be maintained by patients who have sufficient financial means. Consequently, the degree of income of the patients visiting Kakamega County Referral Hospital for Type II Diabetes Mellitus is a crucial driver of their adherence to self-care methods. Persons with diabetes are less likely to stick to their self-care regimens if therapy is difficult to get or expensive (Atun *et al.*, 2017). According to the study authors, self-care knowledge in Nigeria was linked to monthly income by Jackson *et al.*, (2014).

Those with no formal education were three times more likely to engage in self-care behaviors than those with post-secondary education. Consequently, the degree of knowledge of the patients visiting Kakamega County Referral Hospital is a crucial driver of their adherence to self-care measures. The degree of literacy of diabetic patients has a substantial impact on the quality of treatment provided to them (Gesare, 2016), Physician instructions, reading medicine labels, and following recommended drugs were complicated for patients within adequate literacy abilities. Participants aged 21 to 40 were much less likely to observe self-care than those in their 30s and 40s. According to the findings of this research, type II Diabetes Mellitus patients who are older are more likely to adhere to self-care methods. The older the patient, the more likely they will stick to their self-care regimens. Age is an essential factor in determining whether patients with Type II Diabetes Mellitus adhere to self-care measures at KCRH. In agreement with Mogre *et*

*al.*,(2017), these results show that older patients are more likely to adhere to treatment. According to Stephens and colleagues (2013), the prevalence of diabetes mellitus and the number of other chronic illnesses also rise with age. Age-related challenges for not following self-care routines were found by Waari (2019) for older patients.

### **5.3 Hospital-related Variables Associated with Adherence to Self-Care Routines**

#### **5.3.1 Hospital Related Factors**

According to the findings, the Kakamega County Referral Hospital is just a 5km distance for most participants, while only a small percentage live more than 10km away. According to research done in Kenya, most persons with Type II Diabetes Mellitus (T2DM) are within a 5-kilometer radius of a health care facility (Barwecho, 2015;Wangai,2013). In Burundi, Niyonsavye (2015) found the same findings. More participants were happy with the quality of the health care they received, according to the survey results. Fekadu *et al.*, (2020) found that patients with Type II Diabetes at Wollega University Referral Hospital, Ethiopia, were happy with their health care. There was some dissatisfaction among patients with Type II Diabetes in Kuwait, however, according to Shiju *et al.* (2019).

Participants were generally pleased with the physician-patient connection, according to the survey results. Patients' treatment adherence may be influenced by their physician-patient connection, according to these results (Schmidt, 2018). A better knowledge of which clinician characteristics influence treatment adherence may improve patient outcomes, minimize T2DM complications, enhance patient quality of life, and reduce healthcare costs. This has profound implications for societal change." Self-care routines were taught to many of the participants. Other investigations, such as Kong and Cho (2020) and Thapa (2018), confirmed this finding. Despite this, Rajasekharan *et al.*,(2015) found that many diabetic patients at a tertiary care hospital in Biratnagar, Nepal, did not attend instructional sessions. Most respondents said that the health care professional had given important information. Physicians were shown to interact with patients with diabetes mellitus in research by Smith *et al.* (2013). Many patients with lower levels of education may not be able to ask questions because they do not feel comfortable with the physician, or the physician does not communicate with them in an appropriate manner. Physician-patient communication is impaired by cultural differences (Keshavarzi et al., 2022).



### **5.3.2 Association of Hospital Related Factors and Adherence to T2DM Self-Care Practice**

There was a significant correlation between patient adherence and the availability of health care professionals ( $p < 0.05$ ). Access to a health care practitioner has been shown to enhance diabetic self-care habits, according to research (Gabay, 2015). With this partnership, patients are given the support and skills they need to achieve successful results in their battles with their illnesses (Freeman-Hildreth *et al.*, 2019). Adherence and service quality were shown to be linked ( $p = .002$ ,  $p < 0.05$ ) in the study results. Literature has shown that the quality of services and the adherence to diabetic mellitus self-care practices are linked positively (Capehorn *et al.*, 2017). There was a significant link ( $p = .001$ ,  $p < 0.05$ ) found between high levels of adherence and positive doctor-patient interactions. Patient-physician relationships have a considerable impact on self-care compliance in accordance with prior research (Bains & Egede, 2011; Pokhrel *et al.*, 2019). To enhance adherence to self-care behaviors, physicians may use patient-reported outcomes to encourage patients, respond to their preferences, give psychological support and understanding of the discomfort associated with diabetes, and define a treatment objective.

Adherence to self-care routines and the conveyance of crucial information were shown to be linked ( $p = .007$ ,  $p < 0.05$ ). It is necessary that health care practitioners play an important role in disseminating important information about self-care routines, which has a substantial impact on patient adherence to self-care activities (Shrivastava *et al.*, 2013).  $p = .002$ ,  $p < 0.05$  showed a statistically significant correlation between adherence and health professional knowledge on the value of self-care practice. Adherence to diabetic self-care and understanding of its relevance were shown to have a statistically significant relationship (Kassahun *et al.*, 2016).

### **5.3.3 Hospital Related factors for Adherence to T2DM Self-Care Practice**

Patients able to access health care professionals whenever they needed them were one times more probable to exercise self-care than those who couldn't. Patients with Type II Diabetes Mellitus visiting Kakamega County Referral Hospital who have access to health care professionals are more likely to adhere to self-care methods than those who cannot. Self-care habits were more common among individuals who had a privilege to visit medical centers, compared to the rest of the population. As a result, patients at Kakamega County Referral Hospital who have Type II Diabetes Mellitus are more likely to adhere to self-care practices if

they have access to health care services. Researchers found that the frequency of clinic visits, the method of transportation and the cost of transportation for people with diabetes are all affected by the distance from their homes to the health facility (Mwaura *et al.*,2017).

Self-care behaviors were two times more likely to be adhered to by participants who thought the quality of the services they received was excellent. Health care should be safe, effective, patient-centered, prompt, efficient, and equitable. Patients with Type II Diabetes Mellitus who visit Kakamega County Referral Hospital were shown to be more likely to stick to their own self-care routines if the quality of treatment they received was high. Patients with Type II Diabetes Mellitus visiting Kakamega County Referral Hospital who were happy with the quality of health care services were more likely to adhere to self-care behaviors than those who were dissatisfied. At Kisii Teaching and Referral Hospital and discovered that the efficacy of health care relates to the degree of adherence. Adherence may be improved if patients get safe, effective and individual-centered care that is timely, integrated, and efficient. Self-care plans were more likely to be adhered to by participants who had a positive connection with their health care providers. Patients with Type II Diabetes Mellitus who visit Kakamega County Referral Hospital have a better chance of adhering to self-care methods if they have a good connection with their doctors. Self-care behaviors were twice as likely to be adhered to by T2DM patients at Kakamega County Referral Hospital who were happy with their health care providers' services as those who were not. This suggests that patients who followed to self-care techniques are considerably different from those who did not. Patients are more likely to practice self-care if their healthcare practitioners spend enough time with them. Consequently, adherence to self-care behaviors among patients with Type II Diabetes Mellitus visiting Kakamega County Referral Hospital is strongly influenced by the quality of their relationships. Patients who were happy with their healthcare professional were more likely to stick with their treatment plan (Waari, 2019).

Self-care measures in T2DM were more likely to be adhered to by patients who had received written patient health education materials from the hospital. In T2DM management, self-care behaviors are twice as important as they were for participants who were educated by their health care professional of the value of self-care activities. The research also found that patients with Type II Diabetes Mellitus at Kakamega County Referral Hospital were more likely to adhere to

self-care practices if they received health education materials on self-care practices. Patients with Type II Diabetes Mellitus visiting KCRH who attended frequent counselling sessions and communicated key information were more likely to adhere to self-care methods than those who did not. Thus, patients who received health education materials were more likely to exercise self-care than patients who did not get them. Consequently, the availability of health education materials at KCRH has a considerable impact on the adherence of Type II Diabetes Mellitus patients to self-care practices. Patients are more likely to identify their health issues, grasp the therapy required, and change behaviors if they understand their diagnosis/condition (Travaline *et al.*, 2015).

#### **5.4 Disease-related Factors Associated with Adherence to Self-Care Practices**

##### **5.4.1 Disease Related Factors**

Study participants with T2DM were found to have been on therapy for fewer than 10 years. This study revealed that most diabetics had been diagnosed for at least five years, and that 62% had acquired diabetes-related problems. These findings are congruent with the study (Lugaya *et al.*, 2017). Most participants did not have any additional long-term health issues. For example, diabetes-related hypertension, dyslipidemia, and painful diabetic peripheral neuropathy (such as neuropathic pain and musculoskeletal disorders) can be treated with additional medications in T2DM patients who have co-morbid conditions (such as depression and musculoskeletal disorders). Most participants had not been hospitalized in the previous year as a result of complications related to T2DM. Lack of early warning signs and symptoms of hypoglycemia may put hospitalized patients at risk for severe, long-term hypoglycemia, which can lead to death (Sequist *et al.*, 2013). Their findings support our hypothesis.

##### **5.4.2 Association of Disease Related Factors and Adherence to T2DM Self-Care Practice**

There was a significant relationship between adherence to T2DM self-care and duration ( $p=.000$ ,  $p<0.05$ ). Newly diagnosed diabetics must learn to grasp fundamental skills and information, as well as gain more sophisticated knowledge, in order to be successful. Self-care behaviors such as avoidance or resignation may be used by persons diagnosed with diabetes after their diagnosis. Managerial directives may not get any traction with them. Those with diabetes for longer period are more likely to adhere to self-care recommendations (Abate *et al.*, 2021). A recent study,

however, found no connection between the length of diabetes and the frequency with which people engage in self-care behaviors (Mogre *et al.*,2017). Adherence and co-morbidity were shown to be linked ( $p=.000, p<0.05$ ) in the study results. Participant non-adherence to self-care routines was more common among patients who had one or more difficulties than those who did not have issues, as shown by Gebremichael *et al.*, (2019). Diabetes self-care adherence relates to co-morbidity as well, according to Yehualashet *et al.*, (2021). Hospitalization was shown to be a significant predictor for adherence ( $p=.000, p<0.05$ ). Similarly, Berhe *et al.*,(2012) found that diabetes self-care habits and the hospitalization of patients with Type II Diabetes at Tikur Anbessa Specialized Hospital were associated. According to Rezende *et al.*, (2015) and Tiruneh *et al.*, (2019), the findings are confirmed.

#### **5.4.3 Disease Related factors for Adherence to T2DM Self-Care Practice**

Type II Diabetes patients who have been treated for more years have a one-unit higher chance of sticking to their self-care regimen. For Type II Diabetes Mellitus patients at Kakamega County Referral Hospital, patients' duration of T2DM was shown to be a key factor of their adherence to self-care methods. More self-care activities are required as time goes on because a person's ability to respond to insulin is reduced or depleted, according to Bukhsh *et al.*,(2020), and they also get more expertise with self-care. Odili *et al.*,(2011) supported these claims.

Self-care routines were 20 times more likely to be adhered to by those who had previously suffered from any other chronic ailment(s). Co-morbidity is a key factor in the adherence to self-care measures among Type II Diabetes Mellitus patients at KCRH. Persons with comorbidity had a two-fold greater chance of poor self-care practice than those without comorbidity (Wolderufael & Deje, 2021; Jackson *et al.*, 2014). Type II Diabetes Mellitus patients who had been hospitalized in the last year mostly adhered to self-care behaviors than those who had not been hospitalized at all. Hospitalized patients were found to follow more closely to self-care recommendations than those who had not been hospitalized. Complications in Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital determines whether they adhere to self-care routines. This is in congruence with studies conducted by Kones (2016) and Khmour *et al.* (2020), which found that having T2DM complications had statistically significant associations with self-care practices.

## **CHAPTER SIX**

### **CONCLUSION AND RECOMMENDATION**

#### **6.1 Introduction**

This section summarizes the study's findings considering its stated goals. In a later section of the chapter, the results and suggestions from this study are discussed, as well as potential avenues for further research.

#### **6.2 Conclusions**

T2DM patients who adhere to suggested self-care methods were shown to have substantial patient-related variables. People who were between the ages of 41 and 60, earned between Ksh10,000 and Ksh30,000 and had just a basic education were more probable to follow the self-care behaviors advised by the study authors. Therefore, the study concluded that age and marital status are the patient-related factors that influence adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya.

Type II Diabetes Mellitus patients' conformity to self-care routines is strongly linked to hospital-related characteristics, according to the research. The study concluded that hospital factors such as quality of healthcare services, physician patient relationship, and delivery of key information on nature of self-care in the treatment of T2DM influenced adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya.

The study found out that disease-related factors influence adherence to self-care practices among Type II Diabetes Mellitus patients attending Kakamega County Referral Hospital, Kenya. These factors included duration receiving therapy for Type II Diabetes Mellitus and co-morbidity especially high blood pressure.

#### **6.3 Recommendations**

The prevention and decrease of T2DM-related morbidity and mortality are dependent on patients' adherence to self-care practices in managing and treating the disease. As a result of this research, the following are recommendation for increasing adherence regarding prominent findings.

- i. Patient related factors specifically marital status and age were identified as factors that influence adherence to self-care practices among T2DM patients. Therefore, there is need to enhance family and social support especially to the elderly and those patients who are single. Further, Hospital should develop interventions that are specific to their needs to scale up their compliance to self-care.
- ii. The study established that quality of health care services, physician patient relationship and delivery of key information influence adherence to self-care practices among T2DM patients. In this regard, health care providers should provide quality healthcare services and at the same time maintain good relationship with patients. This can be achieved by encouraging healthcare providers to ensure they have effective and positive communication with patients regarding importance of adherence to recommended self-care practices.
- iii. It was established that duration receiving therapy for Type II Diabetes Mellitus and co-morbidity are associated with adherence to recommended self-care practices. This study proposes development of policies that will create awareness among newly diagnosed patients with T2DM on the importance of adherence to recommended self-care practices.

#### **6.4 Suggestions for future research**

Those listed below should be investigated further.

- i. It is advised that more research be done about the effectiveness of interventions for sub groups advanced to be at risk of poor adherence to T2DM self-care such as elderly and single individuals.
- ii. Furthermore, more research is needed to establish other variables such as medication-related issues and cultural aspects that may predict adherence to the suggested self-care practices, which this study did not address.
- iii. This research should be conducted over extended time since the conditions under investigation may change over time.
- iv. Patients who went to private hospitals in Kakamega County were not included in this research Further research should investigate doing comparable studies in private hospitals to evaluate how hospital-related variables impact adherence to self-care routines in the management of T2DM.

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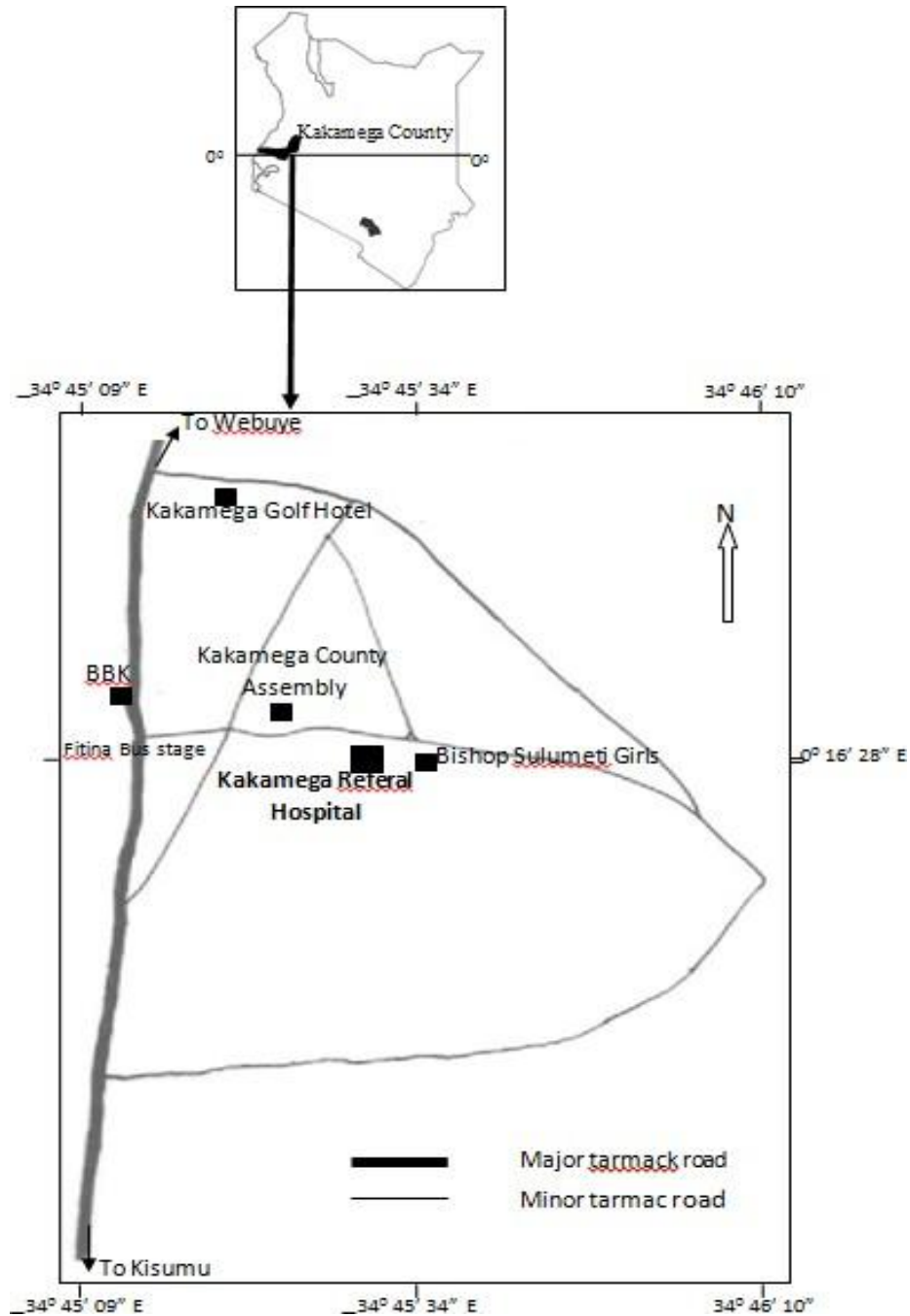


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## APPENDICES

### APPENDIX I: STUDY AREA MAP

#### Map of Kenya Showing Location of Kakamega County Referral Hospital



## **APPENDIXII:CONSENTFORM**

My name is Naomi Kerubo Mbunya; I am a Maseno University student undertaking a degree in Master of Public Health (Health Promotion and International Health). I am undertaking academic research on **‘Factors Influencing Adherence to Recommended Self-Care Practices in the Management of Type II Diabetes Mellitus among Patients Attending Kakamega County Referral Hospital, Kenya’**. The data gathered will assist various sectors, such as the ministry of health and medical services, in developing and/or evaluating the success of initiatives against this condition.

### **Procedural requirements**

Participation in this research will need you to answer many questions. Additionally, you should be remembering that participation in this study is fully voluntary, and that you are allowed to ask any question about the study at any point throughout the interview. You may also reject to react to or answer any question that you believe is inappropriate for you, and you may exit the interview at any moment.

### **Discomfort and Risks**

If any of the questions are insulting or make you feel uneasy, you may refuse to reply. The interview should last around 20 minutes.

### **Benefits**

By participating in this research, you will understand how many variables influence adherence to self-care methods for Type II Diabetes Mellitus.

### **Reward**

No incentives will be given to participate in this study, and it is entirely voluntarily.

### **Confidentiality**

The interview will be held at a location inside the facility that is convenient for you. Your name will be withheld from the surveys and samples. The surveys will be kept secure and will be used only for this study's purposes.

**Statement of a participant**

To my view, the above remark on my involvement in the research is self-evident. I have been afforded the chance to ask questions, and my inquiries satisfactorily addressed. This research is fully optional for me to participate in. I accept that my information will be kept confidential and that I may opt out of the research at any time. I acknowledge the study's advantages and that no incentives will be offered.

**Participant**

.....

.....

**Signature or thumb print**

**Date**

**Investigator’s Declaration**

I, the undersigned, have described the study's methods and associated risks and benefits to participants in a language they understand.

You may reach me at the following address if you have any queries about this research. E-mail:naomy.kerubo@yahoo.com, Phone no: 0714576288

ORE-mail: [muerc-secretariate@maseno.ac.ke](mailto:muerc-secretariate@maseno.ac.ke)

**Interviewer**

.....

.....

**Signature or thumb print**

**Date**

### **APPENDIXIII: MANAGEMENTOFTYPEIIDIABETESMELLITUS**

The following are the components of Type II Diabetes Mellitus management:

1. Management of high blood sugar
  - a. Non–pharmacological interventions (education, diet, and physical activity)
  - b. Pharmacological (Oral glucose lower in agents, Insulin and Combination Therapies)
2. Preventing and treating problems of the micro vascular system
3. Preventing and treating problems of the macro vascular system

*Source: (Ministry of Public Health and Sanitation, 2010). National clinical guidelines for management of diabetes mellitus*

**APPENDIXIV: RESEARCH QUESTIONNAIRE FOR TYPE II DIABETES MELLITUS PATIENTS**

**Research Title: Factors Influencing Adherence to Self-Care Practices in Management of Type II Diabetes Mellitus Among Patients Attending Kakamega County Referral Hospital, Kenya**

Interview Date/(dd/mm/year)

Questionnaire ID No. .... Name of interviewer .....

**PARTA. Patient Related Factors**

1. *Gender*      *Male*       *Female*

2. *How old are you? (Incomplete years)?* \_\_\_\_\_

3. *How is your marital status at the moment?* (1.Never married, 2. Married,3. Divorced/separated,4.Widowed)

4. *How much money do you earn on a monthly basis (in Kenyan shillings)?*

*(1.Up to Ksh10, 000, 2.Ksh10,001-30, 000, 3.Ksh30,001-50, 000,4. Kshabove50,000)*

5. *What is the greatest educational level you have achieved?*  
(1.No formal education,2.Primarylevel,3. Secondarylevel,4. Post-Secondary)

**Section B. Hospital Related Factors**

6. *How far is your home from the hospital?(1.0-5km,2. 5-10 km,3. beyond 10km)*

7. *Are you able to get health care anytime you need it?*

a) *Yes*

b) *No*

8. *Are you satisfied with the quality of health care services offered to you?*

a) *Yes*

b) No

9. Are your health care professionals able to devote sufficient attention to you?

a) Yes

b) No

10. Is the hospital providing you with published patient education materials on diabetes self-care?

a) Yes

b) No

11. Have you been told by your healthcare practitioner about the critical nature of self-care in the treatment of Type II Diabetes Mellitus?

a) Yes

b) No

### Section C. Disease Associated Variables

12. How long have you been receiving therapy for Type II Diabetes Mellitus (in years)?

\_\_\_\_\_

13. Do you have any other chronic illness? Yes  No

14. If yes which one(s)? \_\_\_\_\_

15. Have you been admitted to the hospital as a result of complications from Type II Diabetes Mellitus in the last one year?

Yes

No

16. If yes, what was the complication? \_\_\_\_\_

### Section D: The Diabetes Self-Management Questionnaire (DSMQ)

The following sentences explain diabetes-related self-care tasks. Please explain the degree to which each item pertains to you based on your self-care during the previous eight weeks. Utilize a 0 to 3-point scale where; [3]- Applies to me very much [2]- applies to me much [1]-applies to me somewhat [0] This is not applicable to me.

<b>Statement</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
I carefully monitor my blood sugar levels. My therapy does not need Blood sugar monitoring.				
The foods I chose make it simple to maintain ideal blood sugar levels.				
I attend all prescribed doctor's visits for diabetic treatment.				
I follow the directions on my diabetic prescription, such as insulin or pills. <input type="checkbox"/> My therapy does not need the use of diabetes medications or insulin.				
Every now and then, I indulge in a lot of sweets and other high-carbohydrate meals.				
In order to keep track of my blood sugar levels, I take frequent measurements. <input type="checkbox"/> My therapy does not need regular monitoring of my blood sugar levels.				
I try to stay away from doctor's appointments connected to my diabetes.				
To maintain healthy blood sugar levels, I engage in frequent physical exercise.				
As prescribed by my physician or diabetic expert, I diligently adhere to The dietary guidelines I've been given.				
I do not test my blood sugar levels as much as I should. <input type="checkbox"/> My therapy does not need blood sugar monitoring.				
I avoid physical exercise, even though it might help my diabetes.				
I often forget or forego taking my diabetic medicine (insulin/tablets). <input type="checkbox"/> My therapy does not involve the use of diabetes medication/insulin.				
Occasionally, I go on genuine food binges (not triggered by hypoglycemia)				
In terms of diabetic care, I should visit my physicians more often.				
I often forego scheduled physical activities.				
I believe it is critical for me to maintain a healthy body weight.				
I ensure that my foot wear is always appropriate				
I believe that alcohol use has no beneficial influence on my diabetes.				
I will continue to smoke even if I get diabetes.				
Myself-care for diabetes is deficient.				

Source: (Schmitt et al., 2013). The Diabetes Self-Management Questionnaire (DSMQ): The creation and validation of a questionnaire to measure self-care behaviors connected with diabetes and glycemic management. Health and Quality of Life Outcomes. 2013. August 13;11:13810.1186/1477-7525-11-138



**APPENDIXV: KEY INFORMANT GUIDE**

*1. How long have you been employed at the Diabetes medical clinic?*

.....

*2. What duties do you conduct in the medical clinic while caring for Type II Diabetes Mellitus patients?*

.....  
.....  
.....

*What limitations do you have while treating individuals with diabetes mellitus in the clinic?*

.....  
.....

*3. What standards do you suggest improving the extent of adherence to self-care practices in Type II Diabetes Mellitus management?*

.....  
.....

*4. What factors contribute to patients' failure to exercise self-care in Type II Diabetes Mellitus management?*

.....

**Thank you for participation!**

## APPENDIX VI: LETTER FROM THE MASENO UNIVERSITY ETHICS REVIEW COMMITTEE (MUREC)



### MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3060  
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya  
Email: [muerc-secretariate@maseno.ac.ke](mailto:muerc-secretariate@maseno.ac.ke)

REF: MSU/DRPI/MUERC/00777/19

Date: 12<sup>th</sup> April, 2021

TO: Naomi Kerubo Mbunya  
EL/ESM/00872/2014  
Department of Public Health  
School of Public Health and Community Development  
Maseno University  
P. O. Box, Private Bag, Maseno, Kenya

Dear Madam,

**RE: Factors Influencing Adherence to Self-care Practices in Management of Type 2 Diabetes Mellitus among Patients attending Kakamega County Referral Hospital, Kenya**

This is to inform you that **Maseno University Ethics Review Committee (MUERC)** has reviewed and approved your above research proposal. Your application approval number is MUERC/00777/19. The approval period is 12<sup>th</sup> April, 2021 – 11<sup>th</sup> April, 2022.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by Maseno University Ethics Review Committee (MUERC).
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to Maseno University Ethics Review Committee (MUERC) within 24 hours of notification.
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to Maseno University Ethics Review Committee (MUERC) within 24 hours.
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to Maseno University Ethics Review Committee (MUERC).

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely

Prof. Philip O. Owuor, PhD, FAAS, FKNAS  
Chairman, MUERC




MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED



APPENDIXVII: LETTER FROM THE COUNTY DIRECTOR OF HEALTH,  
KAKAMEGA

**COUNTY GOVERNMENT OF KAKAMEGA**

E-mail: [wpph15@yahoo.com](mailto:wpph15@yahoo.com)  
Telephone: Kakamega 0702938346  
When replying, please quote:  
REF: CGH/KAK/ERC/VOL.1/100



COUNTY GENERAL HOSPITAL  
P.O. Box 15-C.P.O-50100  
KAKAMEGA  
DATE: 14<sup>th</sup> JUNE 2021

**MINISTRY OF HEALTH SERVICES**

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TO  
NAOMI KERUBO MBUNYA  
**REG. NO. MSU/DRPI/MUERC/00777/19**

**RE: RESEARCH PROPOSAL APPROVAL – 125-06/2021**

This is to inform you that the Ethics and Research Committee has reviewed and approved your work titled **“FACTORS INFLUENCING ADHERENCE TO SELF-CARE PRACTICES IN MANAGEMENT OF TYPE 2 DIABETES MELLITUS AMONG PATIENTS ATTENDING KAKAMEGA COUNTY GENERAL HOSPITAL”**.


The approval is valid for one year from the above date and any continuation thereafter will necessitate a request for renewal.

Note that the approval is only for the work that you have submitted to us. The committee must be notified of any changes or amendments and serious or unexpected outcomes related to the study. You will be expected to submit a final report at the end of the study and may be requested to do a presentation of the same to the hospital.


This information will form part of the database that will be consulted in future when processing related research studies so as to minimize chances of study duplication.


Thank you for your interest in research in our institution.

*for Samuel*  
DR. AJEVI AUSTINE  
CHAIRMAN  
ETHICS AND RESEARCH COMMITTEE  
CGH - KAKAMEGA




**APPENDIXVIII: ETHICAL PERMIT FROM NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION**

  
REPUBLIC OF KENYA

  
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: **716189** Date of Issue: **25/May/2021**


**RESEARCH LICENSE**




**This is to Certify that Ms. NAOMI KERUBO MBUNYA of Maseno University, has been licensed to conduct research in Kakamega on the topic: FACTORS INFLUENCING ADHERENCE TO SELF-CARE PRACTICES IN MANAGEMENT OF TYPE II DIABETES MELLITUS AMONG PATIENTS ATTENDING KAKAMEGA COUNTY REFERRAL HOSPITAL, KENYA for the period ending : 25/May/2022.**

License No: **NACOSTI/P/21/10406**

**716189**  
Applicant Identification Number

  
Director General  
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

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