# DEVELOPMENT OF FAMILY-BASED INTERVENTION MODEL TO IMPROVE FAMILY PARTICIPATION IN SELF-CARE MANAGEMENT FOR PATIENTS WITH DIABETES MELLITUS TYPE II IN KITUI COUNTY.

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## DECLARATION AND APPROVAL

**Declaration by the Student**

I, Mary Musembi, declare that this thesis is my original work and has not been presented at any University or for any other award.

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We confirm that the canditate carried out the work reported in this thesis under our supervision

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## DEDICATION

This dissertation is dedicated to my entire family for the moral support accorded to me.

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# ABSTRACT

## Background Information

Patients diagnosed with type 2 diabetes mellitus need full family support to enable them practice self-care management regularly.family involvement the county is very Low. Global predictions suggest that by 2035, over 642 million persons will have been affected by disorder.susbsaharan african countires including kenya continue to experience high prevalance of the disorder. Urban areas report higher prevalence than rural parts family based intervention model will help improve their participation in diabetes self-care practice.The study aimed at investigating patients routine self-care practices,patients and family factors influencing family participation in diabetic self-care practice come up with various strategies that could be used to enhance family participation and aid in developed family participation model. The concepts of develped model could be used to manage disease at family level instead of hospital settings.

**Methodology of the study**: An analytical -cross-sectional study design was utilized..Mixed methods were utilised to collect both quantitative and qualitative data. Study population comprised of all patients diagnosed with the for more than six months with their .family members. Study questionnaire and an interview schedules were utilized as data collection tools .Confidentiality was maintained, approval was sought and granted. A sample size of 68 respondents participated in the study. A test-re-test reliability co-efficient was used to test reliability. Association between patients, family factors influencing their participation in self-care management was analyzed using Pearson Chi-Square and t-test at alpha of 0.05. Qualitative data was interpreted using thematic analysis..Input from patients, families, diabetes experts and reseacher;s were all considered, utilised and triagulated in model development

## Findings

More males 35 (64.1%) had been diagnosed with DMTII as compared to 33 (48.6%) Females counter pants. similar findings was observed by Kautzky- wille (2023) .Majority 26(45.6%) respondents were also nursing hypertension.Majority 22(38.6%) of respondents diagnosed with disease aged more than 59 years.Statistical relationship was found between routine self care practices and family participation, with p-value of 0.000.Patients factors were reported to have much influence on family participation to self-care management as evidenced by Pearson Chi-Square of 0.030. Education was seen as among strategies to improve family participation as evidenced by high 57.9% of respondents had not received training on self-care practices Anova analysis, tested the goodness of model at 95% confidence Levell was found to be fit to use

## Conclusion

Full family participation is required for patients to display optimal routine self-care practices.planned support system to be put in place to get successful results.. Basic education offered to Patients and family members empowers them acquire knowledge, skills and cope with disease related chllenges. Self-care practice to be embraced aim at utilizing locally availlable resources in disease management.family support in diabetes care provides a good media for self-care practice

## Recommendations

National policy makers and plnners of health care to incoperate family particpation as part of diabetes care.Kitui County government and hospital administration need to design regular family based training/ counselling programs where patients and families fully participate in management of diabetes. .Kitui Hospital diabetes department to introduce whats up communication strategy. Patients/family to have diabetes routiine self care activity plan and calender.

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## LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AACE | American Association of Clinical Endocrinology |
| AIC | Glycated Hemoglobin. |
| AADE | American Association of Diabetes Education |
| ACE | American College of Endocrinology. |
| ADA | American Diabetes Association |
| BMI | Body Mass Index |
| BP | Blood Pressure |
| CVD | Cardiovascular Disease. |
| CHW | Community Health Workers |
| CI | Confidence Interval. |
| CCPD | Centre for Control and Prevention of Diabetes. |
| DCCT | Diabetes Control and Compliance Trial. |
| DKQ | Diabetes Knowledge Question |
| DM | Diabetes Mellitus |
| DMIC | Diabetes Management Information Centre |
| DMSES | Diabetes Self-care Efficacy Scale |
| DMTII | Diabetes Mellitus Type 2 |
| DSCM | Diabetes Self-Care Management |
| DSMES | Diabetes Self-care Management Education and Support. |
| EBP | Evidence Based Practice |
| EPI INFO | Epidemiological Information. |
| ERC | Ethics and Research Committee |
| FBDE | Family Based Diabetes Education. |
| FGD | Focused Group Discussions |

| | |
|---|---|
| H0 | Null hypothesis |
| HbA1c | Glycated Hemoglobin |
| HBM | Health Belief Model |
| HTN | Hypertension |
| IDF | International Diabetes Federation |
| KNDS | Kenya National Diabetes Strategy |
| NACOSTI | National Commission for Science, Technology and Innovation |
| NCD | Non-Communicable Disease |
| NCI | National Cancer Institute |
| NDD | Non- Insulin Dependent Diabetes |
| NIDDM | Non-Insulin Dependent Diabetes Mellitus |
| NGO | Non- Governmental Organizations. |
| RBG | Random Blood Glucose |
| SCP | Self-care Practice |
| SDSCA | Summary of diabetes self-care activities |
| SMBG | Self-Monitoring of Blood Glucose |
| SMART | Specific, Measurable,Attainable, Relevant, Time Bound |
| SMBS | Self Monitoring of Blood Sugar. |
| USA | United States of America |
| TDSCM | Theory of diabetes self-care management |
| W H O | World Health Organization |

# CHAPTER ONE

# INTRODUCTION

## 1.1 Backgrund information

This chapter comprises of the introduction, backgrounf information about study being done,purpose of the study, objectives of the study, hypothesis to be tested, , study justification , scope of the study, limitation that may be encountered by the researcher and delimitations, assumptions made as well as definition of significant terms in the study.

Diabetes mellitus as the name suggests, is a non-communicable disease(NCD) that is rapidly increasing globally( (Magliano et al.,2021) Consequently,despite this, aggressive interventions have been offered to contain it at family level (Deakin et al., 2005) .Among the well-known types, Diabetes mellitus, type two is the most common. It is well documented that the disorder accounts for between Ninety-five to one hundred percent of all diabetes cases (Piepoli et al., 2016).Consequently, According to Moien Abdul Basith Khan et al., 2020),642 million persons were affected by type two diabetes mellitus in the year 2017, a figure representing 6.28 percent of wolrd population. Global predictions suggest a substantial growth in number of individuals affected by this condition to perhaps reach to over 7079 million individuals by the year 2030. reflecting a worying trend across all parts in the world. In addition, an equivalent increase in number of complications associated with the disease are expected to be observed (Piepoli et al., 2016)..Efforts have however been mane to reduce this increasing trend. For example National program for prevention and control of Diabetes(NPCPD) have come up with

interventional initiatives geared towards lowering the number of diabetes cases (Esteghamati,A.H..and Halabchi.,F.2016). Today,reports indicate that diabetes mellitus type two is among the diseases that pose as major health concern globally(Ayesha A Motata, 2022) Globall prevalence now stands at 11.3% among individuals from ages 20 to 79 years (Schulze & Hu, 2022). Due to its slow phase in presentations most patients and their families habor the disease for prolonged periods without noticing (Ammoun et al., 2022). The International Diabetes Federation(2019). clearly literated that the number of persons suffering from DMTII was 425 million in the year 2017. Surprisingly, it is well anticipated that in the coming years the number of individuals by the year 2045,six hndrend and twenty- nine (629) million people will have been affected by the disease globally, will at worrying phase (International Diabetes Federation, 2019). The disease is known to affect more individuals living in Urban parts than rural settings worldwide. The International diabetes federation report on improving diabetes managemeng in elderly Hatians, (2017) showed that 65% of people suffering DM lived in Urban settings while only 35% who habored the disease were reciting in Rural parts.Although DMTII is known to be among the rare diseases in Sub-Saharan African countries (Dalal et al., 2011) it is now evidently known to be among the Non Communicable Diseases, where the prevalence and burden is worrying, presenting a significant socioeconomic burden to already strained economy (Mudie et al., 2019). Consequently, estimates from International Diabetes Federation (2021)have shown that prevalence is likely to rise to 134 percent between 2021 and 2045. The prevalence in the developing world is reported to be 3.9%. Estimates, in these developing world,however predict a huge rise in number

of people suffering from diabetes to rise up to 47.5% by the year year 2030 and an alarming rise to 142.9% by the year 2045. all of which more than 90 percent will be DMTII cases(IDF, 2019).Most people affected by this disorder are from ages of between 20-79 years. Currently, the prevalence stand at 11,3% ( Centre for Disease Control, 2022) More than 4 million persons aged between 20-79 from poor resource-limited countries have so far died from disease related complications (International diabetes federation Atlas ninth edition, ADA, 2017 ), This translates to one death in every eighth second (World Health Organization,2016). Out of an estimated 212.4 million people believed to have diabetes worldwide, 84.5 percent of these occurrences are also from poor and middle-income nations. Kenya has recognized diabetes as among the Non Communicable Diseases(NCD) if not attendent to promptly may bring public health issues, an issue, a concern raised since 2015(Ministry of Health, 2015). Studies reported that the prevalence of DMTII stood at 3.4% in the year 2015, almost twice as much in rural areas at 1.9% , according Kenya National Population Survey(Mohamed, et al., 2018). Higher prevalence have been reported in remote urban centers in the country mostly Nairobi at a prevalence of between 4.1 to 5.3%.(Asiki et al., 2018).Consequently, the country as a whole has been established to have a crude prevalence of DMTII of 5.3 percent, with a greater number of cases occurring in urban regions at 16% compared to 12% in rural sections of the country. (Manyara et al., 2024). Kitui County is among the counties reporting an increasing numbers of diabetes patients, reports from hospital health records office evidently show that fifty percent of diabetes cases are type two diabetes

mellitus (Theuri, 2020).Management of type two diabetes mellitus is usually very challenging and complex mostly due to its chronicity (Nyenwe et al., 2011).

Intervention offered at family level can be the best strategy in disease management. Family Participation in self-care management can be defined as an assistance offered by family members to the sick persons at their homes (Matrook et al., 2018) as such include among others offering a friendly sense of love and belonging to the sick persons, Monitoring of blood glucose levels through provision of needed tools, helping the sick persons set goals that are Smart geared towards behaviour change, financial as well as physical support (Weinstock et al., 2020). As the smallest unit of society,Family members play a crucial role in disease management, control and prevention (Elsayed, 2024) family members can provide support of all kinds to the sick person including Physical, social, psychological, as well as providing conducive environment where the patient live with utmost comfort (Mayberry & Osborn, 2012). Instrumental support has shown to play a significant role in management of DMTII in terms of diet monitoring, adherence to prescribed drugs, physician's appointment attendance, daily monitoring of blood glucose levels (Mayberry & Osborn, 2012). However,Brenda et al, in their study found that much of instrumental support was associated with depressive symptoms as it aroused symphathy which is usually associated with type two diabetes disease (Bădescu et al., 2016). Even though the role and responsibility of every family member has not been well defined. Qualitative study done by chesla et, al., on Chinese family aimed at evaluating the benefits of family participation in disease management through family focused group discussions(FFGD) found that some family members believed that family particpation

somehow assist , encourages but the patient should take the ultimate role in “self-doing’’ all self- care activities (Mayberry & Osborn, 2014). Consequently, The study carried out in the United States of America (USA) to determine the benefits of family participation in educational and support programs showed that only fourteen point four percent (14.4%) actively participated in educational activity program while 16.3% of the patients participated in carrying out routine monitoring of blood glucose levels (Jordan et al., 2024). Routine self-care in type two management entails a variety of practices in diabetes care that shoud be carried out on daily basis including self-monitoring of blood glucose levels(SMBG), regular Physical exercise practice, eating diet with low saturated fat, taking care of feet, change and adoption of lifestyle to fit in diabetes recommendation including avoidance of sedentary lifestyles such excessive alcohol intake , cigarette smoking, lack of exercise (Mayberry & Osborn, 2014). Members of family are therefore expected to assist and encourage in executing the above activities as a form of family participation. Astudy done by Chesla et al. On importance of family participation in self care management of diabetes reported that it it the sole role of patient to fully perform all self-care activities family members are there to just encourage (Baig et al., 2015). Knowledge in diabetes care is very essential, even though it needs to be backed by actions studies have reported that patients with adequate knowledge potray high lavel of self-care management as well as enhanced stability in blood glucose levels (Dinesh et al., 2016). In order to be successful in diabetes control both patients and their family members need to have adequate knowledge to enable them take charge and responsibility for their own health.Study done by (Dinesh et al., 2016) on effects of knowledge among

patients and their families on diabetes self-care practice showed family members who displayed high knowledge level on diabetes care potrayed good self-care practice especially on self-monitoring of blood glucose levels as members of family continuously updated them on all diabetes care (Dinesh et al., 2016) advancement. Additionally, Studies conducted by (Aglen et al., 2023) reported a variety of responses from family members upon learning that their relative had been diagnosed with DMTII. According to the (Rawal et al., 2021) significant variables contributing to the alarmingly high incidence of DMTII included shifts in demographic features, transitions in cultural practices and beliefs, Family members rarely participate in supporting their sick persons in attending to self-care activities. Globally., few family members participate attending to significant educational sessions offered at their homes. (Ahmad & Joshi, 2023) has categorized family participation in self care practice as among the significant components of diabetes management. Study conducted in United States of America (USA) to determine the benefits of family participation in instructional and support programs, its findings showed that only 16.3% of the patients who strictly practiced routine monitoring of their blood glucose levels Without relative's intervention, while 83.7% needed family support to enable them perform effective self-care practices (Martínez et al., 2021) thus demonstrating the reason to carry out this research. According to the American Diabetes Association (2017). Members of family should therefore fully participate and support their kin in carrying out and implementing all diabetes self- care activities, yet according to studies, family support is poorly practiced in the country(Lima,et al., 2014). survey done on behaviours of both the sick person and their

members of families regarding disease self-care management found that 41% of patients are not willing to change their unhealthy lifestyle behaviors as they continue to struggle to contain the disease on their own despite staying in the same household with many relatives, and that 49% of sick persons are not willing to practice the basic self-care activities as they lack support from significant others despite staying in the same household. cultural influences, religious practices and beliefs have to some extend contributed considerably to this poor family participation.Studies done in lower-eastern Kenya on educational interventions for individuals with diabetes reported equally high prevalence up from 6.3% in 2007 to11% in 2018, indicating a significant concern for aggressive diabetes interventions at the grass root levels...

Although efforts have been observed by the government to integrate families participation in general management of the disorder by launching the Kenya national diabetes strategy 2010 (*FIRST EDITION*, 2010), the level of family participation is still wanting especially in rural parts of the country (Karinja et al., 2019). Most patients and their families members do not know how the disease evolves, progresses or the importance of maintaining blood glucose at recommended levels (Ammoun et al., 2022). In some cases family support such as sociolization have been reported to enhance patients self-care reporting and general wellbeing (Reinhard et al., 2008)They should actively join and participate in diabetes education offered by health care workers during home-visiting, acquire necessary knowledge and skills, collaborate,cooperate and team work with their families geared towards achieving common goals (Reinhard et al., 2008). However, researches have reported that members of family interdependently care for their relatives

incase health needs arise (Reinhard et al., 2008). In kitui county just like other rural areas in the country,family participation in diabetes care is poorly practiced. Thus indicating the huge gap that has existed on value of patient's support in management of diabetes. Consequently. Few studies of this nature, their recemmendations have not been implemented,therefore carrying out evidence-based research of this nature would therefore be useful in informing Kenyan doctors, Nurses , policymakers, and health care planners to implement significant recommendations. There is need therefore to carry out this study.

**1.2 Statement of the Problem**

Currently, there is a global increase in epidemic of type two diabetes mellitus (Ahmad & Joshi, 2023).although it is evidently shown that interventional programs geared towards adhering to routine self-care practices can reduce risk of suffering from DMTII by more than 58% (Galaviz et al., 2015) many patients still potray low levels of self - care practice. (Bergman et al., 2020) Review of methods for detecting glycemic disorderstheir study evidently showed that between 36 and 69 percent of patients around the world are unable to attain the recommended glycemic measurements. Low levels of family participation, inadequate knowledge on degree of their participation has been the greatest challenges faced by many people in sub-saharan countries (Bergman et al., 2020). Concequently, there is limited research on modalities and extend of family participation in diabetes self-care practices (Cashman et al., 2021). Study done in Embu Referral Hospital in 2019 to establish the relationship between knowledge and family involvement in diabetes self-foot care among patients with DMTII reported significant poor outcomes

due to lack of family paricipation and due support. According to the findings of Matthewa et al. 2019, necessitating the need to come up with strategies to help address the observed challenges. In Kenya just like other resource limited Countries, family-based intervention, which serves as the foundation for family participation in self-care practice is yet to be implemented effectively. Few studies done are yet to implement their findings. Kitui county continues to endure an alarmingly high prevalence of DMTII. Health records department's report in the county referral hospital show that out of total newly diagnosed cases of diabetes mellitus, fifty percent are DMTII cases. Consequently, observation from the researcher and the team reported that out of sixty -eight respondents ,who visited diabetic clinic for help, only ten were accampanied by their family members hence indicating the huge magnitude of the problem.

**1.3 Purpose of the Study**

The Main Purpose of this study was to develop a family based intervention model to enhance family participation in self-care practices for persons diagnosed with Diabetes mellitus especially Type two.It aimed at investigating factors that motivate family members to participate in diabetes self-care management. Identified factors found to have negative impact and prevent relatives from participating in crucial diabetes self-care management will be addressed. The researcher aims at coming up with the best strategies and recommendations leading to development of simple, clear model whose concepts could be used by all members of family to manage the disorder at their homes. An intervention geared towards reducing the already observed high prevalence coupled by equal high cases of diabetes related complications caused by poor self-care practice with

inadequate family support. In such cases, both patients and their family members are empowered and made to see the need to take control and responsibility for their own health.Interventions are designed to provide information, guidance, training, and support to not only the sick persons, but also to family members who might experience stress while dealing with patients who have the disease. Acquisition of skills to both patients and family mbers((Montori et al., 2023)) in order for both patients and family members to contain the disease well,they need to acquire necessary skills, such as communication, decision-making, and problem-solving which enables them understand the disease better (Ahmad & Joshi, 2023). Understanding the elements that lead to good diabetic self-care management can assist guide an individual in adapting to the most effective interventional techniques This can help in improving self-care behaviors, achieving improved glycemic control, and preventing complications associated to diabetes (Ahmad & Joshi, 2023).

## 1.4 Objectives of the Study

### 1.4.1 Main Objective

To develop family-based intervention model to improve family participation in self-care management among diabetes mellitus type II patients in Kitui County.

### 1.4.2 Specific Objectives

i. To determine the routine self-care practices among patients with DMTII in Kitui County.
ii. To determine patients' related factors influencing family participation in self-care management among patients with DMTII in Kitui County.

**iii.** To determine family factors influencing their participation in self-care management for patients with DMTII in Kitui county.

**iv.** To Establish the interventional strategies to improve family participation in self-care management among patients with DMTII in Kitui county.

**v.** To evaluate the effectiveness of the developed model on improving family participation in self-care management among DMTII patients in Kitui county.

### 1.5 Research Questions

i. What are the routine self-care practices in self-care management among patients with DMTII in kitui county?

ii. What are the patients related factors influencing family participation in self-care management among patients with DMTII in Kitui County?

iii. What are the family related factors influencing their participation in self-care management among patients with DMTII in Kitui County?

iv. What are the strategies for improving family participation in self-care management among patients with DMTII in Kitui County?

v. Will the developed intervention model in self-care management be effective in improving family participation in self-care management among patients with DMTII in Kitui County?

### 1.6 Hypothesis of the Study

Hypothesis is a tentative statement about relationship between two or more variables in a particular study. Null hypothesis is used to indicate that there is no such a relationship

therefore most of times used. Its importance is that it can be tested and conclusion made. However Alternative hypothesis tend to agree with the statement.

**$H_0$:** Family based Intervention model is not statistically significant on improving family participation in self-care management among patients with DMTII in Kitui county.

### 1.7 Justification of the Study

Diabetes mellitus type II has become the most common and a fast growing non-communicable (NCD) disorder globally (WHO, 2018).Its worldwide increase in prevalence is worrying, Studies have equally shown that globally, the prevalence has doubled over the last thirty years up from 4.7% in1980 to 8.5% in 2014.This is worrying trend which calls for immediate intervention. The slow practice in family participation in diabetes self-care management have evidently been observed. Studies have reported that 46.6% of family members are not willing to help patients deal with their issues about the condition(KovacsBurns et al, 2013 . In united Kingdom(UK,) for example, only 38.7% of the family members are willing to participate in diabetes care. Embracing family participation through offering support of all kinds to the sick people at their homestead can be the best interventional strategy.Even though, scholars have recognised the need for patients and families to adapt to basic self-care management skills, the best mode of delivery still remain unclear. .In sub-saharan Countries, theoretical knowledge on how the DMTII occurs,progresses, controlled or prevented is wanting at grassroot level (American Diabetes Association,2018). As such can help reduce increasing cases of morbidity and mortality observed following diabetes related complications. In Kenyan

Health sector including Kitui county referral Hospital, diabetes related interventions such as health education is usually done in the hospital settings..This study aims at filling huge gaps observed. Through evidence based practice by developing this model whose concepts act as guidelines for family participation and support.

### 1.8 Scope of the study

The scope of a study explains the extent to which the research area will be explored including parameters within which the study will be operating

The study was carried out in Kitui county, Kenya and the surrounding areas defined the areas in my study.The study focused on enhancing family participation in self-care management for patients diagnosed with type two diabetes mellitus. Through development of model, patients and family members need to use its concepts to encourage family participation level hence manage disease at home rather than hospital settings. This study was my original work and no other documented study of this kind existed in the County.

### 1.9 Study Limitations

There could be likelihood bias in answering questions on the degree of family participation and support among family members. The participants could have responded positively just to please the researcher hence concealing deficiencies in-real situation..

Access to healthcare resources, education, and support systems in Kitui County may be compromised due to hard economic times, corruptions etc. This can affect the degree and consistency of interventional strategies e.g demonstrations on diet as well as implementation of model.

Family members' levels of commitment and engagement in the intervention may vary. Some families found it difficult to maintain long-term participation due to time constraints, lack of motivation, or competing priorities, potentially limiting the study's outcome. Transport issues including poor infrastructure from hospital to participants homes.Poverty and lack of money was also observed as among challenges faced most study respondents.

**1.10 Study Delimitation**

The researcher team developed a mechanism to overcome most of the limitations faced in the study.Biases in responding on family participation was resolved by researchers going to the field and directly observing actions and reactions of respondents as they interacted with family members. Use of mobile Comunication was embraced among patients, their family members and health care workers. -. This saved time patients spent by client going to hospital. In transport issues, prior arrangements was made earlier before commencement of the study. Communication barriers was catered for, a translator was available and handled all cases of misunderstandings especially during family focused group discussions.This was done through establishment of good rapport. He encouraged patients and family participation by posing open ended questions.. On implementation of routine self care practices such as diet, patients and family members were to be empowered to use locally available resources to make balanced diet. Come up with eating plan and encouraged all family members to fully participate

### 1.11 Study Assumptions

The following are assumptions that the researcher made; All study participants repsonded honestly.after assurance by the researcher on confidentiallity of the information given, sample size was large enough to allow for the generalization of the results, it was also assumed that the implementation of study findings was to benefit not only the study respondents and their family members but also the whole society. The knowledge and skills acquired helped in awareness creation. This understanding resulted in bahavioural changes hence control blood glucose to recommended levels. Patients and their members of the family to embrace teamwork in disease management. After pedagogy, both the sick person and families understood the importance of self-care in diabetes and took control and responsibilities for their own health.

### 1.12 Operational Definitions of Key Terms

**Adherence -** Is the extent to which a person's behavior in taking drugs following diet and or Performing lifestyle changes corresponds with agreed recommended guidelines

**Cases -** Study participants with Diabetes Mellitus type II in the study population in Kitui county outpatient diabetes Clinic.

**Complications**: Harmful effects of diabetes such as damage to eyes, heart, blood vessels, nervous system, kidney, etc.

**Diabetes mellitus Type II**; chronic metabolic disorder of blood glucose control which is as a result of body's ineffective use of insulin.

**Diabetes Self-care Management;** an ongoing process of facilitating knowledge, skills and ability necessary for diabetes care.

**Diabetes:** a metabolic disorder as a result of low insulin in the body or dwindled capability of the body to utilize the insulin or both.

**Diabetes Experts:** Medical professionals who have undergone comprehensive training on management of diabetes disease.

**Family Focused Group Discussion;** facilitated interactions between a researcher and a group of family members only on a specific theme in relation to diabetes care.

**Foot care:** All practices aimed at preventing and taking care of the ankle and foot

**Focused group discussions**: facilitated interactions between a researcher and group of between 5 to 12 study respondents with interest in a particular topic.

**Glycemic Control:** The regulation and maintenance of blood glucose levels within the normal range. Normal glycaemia should be HbA1c of 7% or fasting blood glucose levels of less than 7.0 mmol/l or random blood glucose measurements of less or equal to 11.0 mmol/l

**Home-Visiting**: Health care workers move to patients homes to offer health care services at patients homes instead of hospital

**Non-Communicable Disease**: Medical condition which is non-infectious and non-transmissible among persons.

**Physical Activity**: This includes exercises such as walking, running, cycling, aerobics, games and other work done at home to prevent disease related complications.

**Self-care Activities**; Behaviors aimed at attaining optimal glycemic control such appropriate diet, physical activity, self-monitoring of blood sugar levels, foot care.

**Self-Care**: Activities undertaken by a person to take care of or to maintain own self health and illness to prevent disease related complications.

**Self-efficacy**: Beliefs in ones capabilities to organize and execute the courses of action required to produce given attainment.

**Self-monitoring:** Measurement of blood glucose done by patients usually at home by **o**f blood glucose use of a glucometer

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

This chapter comprises of the following sections which are insights of objectives, Empirical literature based on study objectives that clearly identified research gap. All relevant literature including routine self-care practices, patient and family factors influencing family participation in self-care management, some interventional strategies used to enhance family participation in development of model of care were reviewed.Theoritical framework, Conceptual Framework were also included in this chapter. Finally a summary of literature review was offered.

## 2.2 Empirical literature

Type 2 DM and its complications continue to be word wide concern according to International diabetes federation (International DiabetesFederation(IDF) 2O21). Its global prevalence has risen to 537 million and this has been the trend for last few decades. The number of cases has risen to more than 90 % of the total DM cases (Gayatri et al.,2022). The global increase in disease is equally being felt by superpower countries such as United States of America.United states center for disease control and prevention (USCDCP) has reported an overwhelming increase in number of persons suffering from type two diabetes mellitus to be 9% of all diabetes cases. This means that 29 million people were affacted by the disorder(Centre for disease control,2019). In United States of American (USA), in the year 2021, CDC reterated that out of total US

population, 11.3 percent (37.3) million individuals were living with diabetes(CDC, National, diabetes population, 2022).However, Tuomilehto et al.,2001 in their study on prevention of diabetes concluded that DMTII could be prevented if those persons at risk of suffering from the disease adoption to the prescribed lifestyle changes.

Sub-saharan countries continue to lead in experiencing inreasing prevalence that stand at 80% of the world representations, (Wild S, 2023). The main goal in management of DMTII is to prevent disease related complications as a result of Microvascula and Microvascular diseases, consequently,improve the quality of life of affected patients(American Daibetes Association, 2014) To achieve this,Self-care management on daily basis becomes significantly important. For many patients with type 2 diabetes mellitus, achieving such is usually not an easy task carry out. ( walker RJ, 2014).One is said to have practiced good self-care management by potraying the ability to change the usual life style behaviours and adopt to new ways as dictadated by demands of disease and related guidelines , these alongside with seven diabetes self-care practices help control DMTII to standard levels(Wagner EH,(2001). According to the (Mahmoud et al., 2020) diabetes mellitus type II (DMTII) has evolved into a significant burden to not only the individuals affected by the disorder but also to the their entire family. According to (Chivese et al., 2022), it has been established that its prevalence has tripled across the globe over the past few decades, thereby becoming a severe threat to people's health (Tinajero & Malik, 2021). consequently it has been revealed in the past that majority of people affected by this condition are over the age of 45 years (Tinajero & Malik, 2021). This is inclusive of an estimated 462 million persons around the world who have been

reported to habour the disease, a figure representing 6.28 percent of the total population. However, reports show that in the year 2014,the prevalence comprised of 387 million individuals with prediction showing a sharp rise in prevalence by the year 2035 perhaps to reach 592 million persons (Zalan et al., 2021). In the year 2017, disorder claimed the lives of more than one million deaths becoming number nine leading cause of death across the globe (L. Guo et al., 2021). Also in the year 2016, diabetes accounted for 7.8 percent of all chronic disease treatment costs in Korea, an increase in One of the four non-contagious diseases that the World Health Organisation has designated as requiring close surveillance**. Family participation in self-care management is an important practice in management** of DMTII patients who practice seven routine self care activities report good progress.Droumaguet,2010).In order to attain objectives, it is strongly suggested that blood glucose levels, particularly fasting blood glucose level and glycated hemoglobin (HbA1c), be properly controlled. Nonetheless( ADA,2021), a practice that many patients from various developing world are unable to achieve. Studies have reported that 26% of diabetic patients in some countries, such as Korea, maintained a HbA1c level below 6.5%, the level suggested by the Korean Diabetes Association, according to data collected in 2018. In addition to managing aspects of emotional health like stress, the American Diabetes Association stresses the importance of adopting to healthy eating habits, and physical exercise , regular self-monitoring of one's own blood glucose levels and devotedly following healthcare providers' treatment plans, such as medication or injection regimens, for effective blood glucose control. Self-care activities have been identified in many researches to be key determinants affecting blood glucose

levels. For example, 61% of diabetic patients in Korea never received education on the disease, 65% do not practice self-monitoring of blood glucose levels, 41% of male patients with diabetes smoke, and 44.5% consume alcohol more than once a week; all of these behaviors are indicative of poor self-care (Kong & Cho, 2020). This startling surge aroused concerns about the disease's future. According to (Otieno et al., 2021). Thih trend in behaviour is similarly high level across African countries. According to estimates provided by the World Health Organization (2016), diabetes was directly responsible for 1.6 million deaths (*Analytical Fact Sheet Fact Sheet Diabetes, a Silent Killer in Africa*, n.d.). According to (Goyal et al., 2023) in the year 2017, around 15.5 million people between the ages of 20 and 79 years were diagnosed with DM. According to the International Diabetes Federation, 8.2% of persons aged between 20 and 79 years old are currently diagnosed with the condition. This represented a regional prevalence of 6%..This trend is worrying and demands for more aggressive interventions at the family level. Consequently reports show that in Kenya, the number of cases for DMTII continue to increase currently showing a prevalence of 5.4 percent (Animaw & Seyoum, 2017). Some scholars have associated the sudden increase in rural-urban migration, an aging population, and changes in lifestyle that have led to an increase in the number of cases of obesity, all of which have been recognized as important contributing factors to this increase (World Health Organization, 2019). The problem is considerably worse in urban areas of the country, where the rate of quick prevalence is 16%, which is significantly higher than the rate of rapid prevalence in rural areas, which is only 12% (Htet et al., 2016) treatment for type 2 diabetes must include a protracted follow-up, ongoing access

to and adherence to medications, consistent monitoring of blood glucose levels, frequent physical activity and the development of healthy eating habits (World Health Organisation, 2016). Individuals diagnosed with DMTII should be strongly urged to aggressively practice and adhere to the self-care activities (Mekonnen & Hussien, 2021). Self-care management includes engaging in physical activity (exercise), practicing healthy eating habits, developing skills to control blood sugar levels, adhering to prescribed medications, being able to self-monitor blood glucose levels, good foot care habits as well as treating complications at home (American Diabetes Association, 2018). Other components of self-care management include processing good coping mechanisms, problem solving and decision making abilities including excellent communication skills. However, for the vast majority of patients, adhering to such routine practices has been the most difficult challenging experience facing most patients. And this includes exhaustion and boredom as a result of such practices (Martin et al., 2005). Consequently it is well, evidently suggested that providing such assistance to patients with food preparation and meal planning, as well as encouraging sick people to continue eating even when they are feeling stressed can help prevent disease related complications that could otherwise occur (Ducrot et al., 2017).

According to the findings for example a study conducted to investigate the impact of family involvement in maintaining glycemic control, 67.7% of participants had poor blood glucose control because they did not receive support from their families, whereas 32.1% of participants had good blood glucose control due to the active participation of their families in carrying out self-care activities (Ducrot et al., 2017). however, a

conclusion made was that Individuals who have DMTII needed to adjust and adhere to new behaviours and lifestyle choices such as reducing alcohol consumption, cessation of smoking cigarettes a 24-hour meal plan, regular monitoring of blood sugar levels foot care as well as adoption of health eating habits (Grech et al., 2024). Kitui County being among counties in hard to reach areas, is facing severe challenges in fighting against huge cases of DMTII, coupled with low levels of family participating n supporting the sick. Therefore, patients and their families need to be empowered to aquire skills, adequate knowledge that help them manage DMTII by their own at their homes. This could help in achieving the recommended glycaemia. The outcome is usually decrease in diabetes related complications their goal blood, thereby enhancing their quality of life and pleasure with life.

### 2.1.1 Type Two Diabetes Mellitus.

Several risk factors have been identified for type 2 diabetes, however, the precise reason or causes are yet to be determined. Type 2 diabetes appears to share a remarkable genetic component as compared to type 1 diabetes, is substantially higher. Specific genetic abnormalities, however, have not been diagnosed as having type 2 diabetes. Specifically increased consumption of fat and processed carbohydrates and decreased engagement in physical exercise levels, which can be seen rather often in modern metropolitan communities. In individuals predisposed to developing type 2 diabetes due to genetic obesity (particularly "central" or "apple-shaped") to which they are genetically predisposed. Weight gain) and insulin resistance. It is believed that a combination of decreased insulin production and insulin resistance leads to type 2 diabetes. Due to insulin

resistance and a lack of ß-cells, the source of insulin, diabetes mellitus; insulin resistance; some people with type 2 diabetes have insufficient insulin secretion during the early phase. As a result, blood sugar levels rise after eating. Type II is the most frequent kind of diabetes. It is estimated that millions more patients with Type II diabetes have not yet been diagnosed. Untreated or poorly managed diabetes increases a person's risk of cardiovascular complications like heart attack and stroke. They are also more likely to get renal failure requiring dialysis or a transplant and to go blind. This is because of damage to the kidneys' nerves and blood vessels. In most cases, "prediabetes" (higher-than-normal blood glucose levels that are not yet high enough to be recognized as diabetes) exists before Type II diabetes develops. Studies have demonstrated that some long-term harm to the body, notably the heart and circulatory system, may already be occurring during prediabetes (Brannick & Dagogo-Jack, 2018). Both insufficient insulin production and insulin resistance contribute to the development of Type II diabetes. Insulin is required for glucose to be used as fuel in the body. Following digestion, the body converts all ingested sugars and carbohydrates into glucose, the primary fuel source for cells. Sugar in the blood is transported into the cells by insulin. Complications of diabetes can develop when glucose accumulates in the blood instead of being absorbed by the cells.

### 2.1.2 Signs and Symptoms of Type 2 Diabetes:

Classic diabetic symptoms only appear in about 53% of people. Unintentionally (during 30% of screenings and medical exams), infections); or the consequences associated with diabetes, such as neuropathy, retinopathy, and kidney failure among others.

The presence of obesity at the time of diagnosis is significant because it is a major risk factor.

It's estimated that moderate to severe hyperglycemia goes undiagnosed for an average of seven years.

**2.1.3 Type 2 Diabetes: Historical Perspectives and Insight.**

Diabetes has been recognized as a severe and potentially fatal disease for the past 2,000 years. Aretaeus, a Greek physician who practised in the first century A.D., defined the incapacitating consequences of diabetes and originated the name "diabetes" from the Greek word for "siphon" (www.diabeteshealth.com). Aretaeus is credited with coining the term "diabetes." Even while ancient medical professionals such as Aretaeus were aware of diabetes, they did not have any effective remedies available to them at the time. In the 17th century, a physician from London named Thomas Willis diagnosed diabetes in his patients by analyzing their urine. If it was overly sweet, he would state that they had diabetes mellitus, which is often referred to as "honeyed" diabetes in some circles. This method of determining glucose levels was considered the gold standard up to the turn of the twentieth century. Before the discovery of insulin, there was virtually little that could be done to help diabetes patients. They had a longer lifespan as a result of their low-calorie diet, but they were weak and undernourished. Despite this, in 1921, medical professionals in Canada were able to effectively treat terminally sick diabetic patients using insulin, bringing their patients' blood sugar levels back down to normal. Since then, there has been continuous progress in medicine, which has led to the extension and improvement of the lives of diabetics. In the 1950s, diabetes types I (also known as

"insulin sensitive") and II (also known as "insulin insensitive") were distinguished. Many advancements have been made in the study of diabetes in the two thousand years since Aretaeus coined the phrase "the mysterious sickness" to describe the condition for the first time. Researchers in the medical and scientific fields have been hard at work for decades trying to figure out what causes this condition and come up with a remedy for it. This set of knowledge was the impetus for the development of insulin, which took place in a laboratory in Canada. Since then, developments in diabetes treatment have made a condition that was ly manageable a great deal more so. Researchers are making significant strides toward a treatment or a cure for diabetes in the 21st century. Nobody knows what will happen in the future; perhaps another major discovery like insulin will be made shortly, or perhaps scientists will just have to be pleased with the slow grind of advancement (Vecchio et al., 2018).

### 2.1.4 Strategies to Improve Family Participation in Self-care Management

Type Two diabetes mellitus (DMTII) has been associated with multiple complications resulting in major disabilities and subsequent reduction in quality of life, (Oyewole et al., 2023). The disorder usually presents with symptomless presentations that take a long period even years before being detected by affected individuals. Change of unhealthy lifestyle Behaviors such as cigarette smoking cessation,adequate feet care, reduction of weight, physical exercises practices and early educational intervention have been identified as among the best ways of reducing the increased rates of the onset of the disorder (Ussher et al., 2019).

Self-care practice is very significant in detecting diabetes early enough and has contributed to an individual's long and healthy lifestyle (Roglic, 2016). Significant diabetes activities and better family participation help not only in preventing disease-related complications but prolonging the quality of life among sick persons (Roglic, 2016). Empowerment can be defined as the discovery and development of one's inherent capacity to be responsible for one's own life in the sense of placing value on autonomy and individual responsibility in greater control for their own health (Roberts, 1999).

The concept of Empowerment as a strategy in diabetes care was introduced in the early 1990s as a healthcare promotion principle (Gómez-Velasco et al., 2019a). Patients with DMTII need support, team play with family members and clinicians to develop their capacities and skills to recognize their own needs, solve their problems through resource mobilization and have control over their own lives (Gómez-Velasco et al., 2019a). Patients therefore need to collaborate with nurses and family members harmoniously. Nurses offer knowledge and expertise about diabetes self-care practices while patients and their families bring expertise to their lives on what can best work for them (Awang Ahmad et al., 2020). Aggressive family-based diabetes education (FBDE) geared towards assisting both sick individuals and their family members to actively participate in their care and prevent disease-related complications while enhancing the quality of life has long been embraced (Roglic, 2016). Risk factors can be reduced through early screening, education and counselling of the affected individuals (Roglic, 2016). The whole family can be educated and counselled on the nature of the disease and this gives the patient strength to deal with disease progression (Golics et al., 2013). A study done by (Miller &

DiMatteo, 2013), on social support and behavioural change, showed that family members played a significant role in reducing disease progression and subsequent reduction in family conflicts, consequently similar sentiments were reported by diabetes control and compliance trial (DCCT) whose findings showed a strong correlation between family education and blood glucose control (Roddy et al., 2022). Advocacy and support for the affected patients and their families should be put in place geared towards changing their behaviour including healthy lifestyle changes including, effective coping. Diabetes self-management includes self-monitoring of Blood Glucose (SMBG), Blood Pressure (BP) strict drug adherence and general prevention of complications including self-monitoring of foot health, and active participation in the screening of the eye, foot and renal complications (Ahmad & Joshi, 2023).

### 2.1.5 Type 2 Diabetes: An In-Depth Exploration of its Pathophysiology and Management

Diabetes mellitus is a chronic condition that has a significant impact on the lives of people who have it as well as their families. Self-management of diabetes provides particular challenges for diabetics, who must also contend with the pressures of leading a normal life in addition to managing their condition. The challenges of everyday life, are taxing on the mind but cannot be avoided.

Diabetes affects around 24 million people in the United States today. It's unusual in that those who have it must take on most of the responsibility for their care., Important components of diabetes control include a healthy diet and regular exercise. integrated into their daily routine. because there are so many facets that need to be coordinated. Effective

management of diabetes needs a wide variety of approaches and treatments to be effective. Resisting the realization that something is wrong and internalizing the blame for developing diabetes even fury, are natural responses to devastating news (Corkey, 2012). The goal of diabetes treatment is to mimic the effects that normal body function would have on a diabetic patient. keep insulin and glucose levels at recommended levels. A medical diabetes physician recommends a healthy diet and exercise program tailored to each individual's needs. age-appropriate, lifestyle-appropriate, and healthy choices-dependent (Evert et al., 2019). Other Primary care professionals who usually collaborate in the medical field include physicians and nurse practitioners. Community healthcare workers usually support a doctor in their duties (Zare et al., 2022). Lifestyle changes can reduce the risk of developing type 2 diabetes. metformin, or other interventions. NEJM 2002) Patients are educated about the link between what they consume and their glucose and lipid levels (Kosmas et al., 2018). The treatment of diabetes and other endocrine disorders is the speciality of an endocrinologist. conditions affecting the body's hormone-producing glands (the "endocrine system") that control the way the body works. The endocrine system includes the pancreas, which Insulin is an essential hormone for normal bodily function. An optometrist's role in a patient's treatment cannot be overstated. The retinal blood vessels may be compromised by diabetes. An ophthalmologist serves as the eye doctor. Regular eye exams are the most reliable method of diagnosing diabetic eye problems (Liu & Swearingen, 2017).

Experts in mental health care can lend a hand with life's more introspective and sentimental aspects. who has diabetes? Seeing a psychologist for a short period can

reduce disease-related stress Long-term therapy with a psychologist could be useful for addressing deeper systemic issues. Psychologists also offer therapy. A psychiatrist is a medical specialist who can treat the physical reasons for mental health issues with medication. Pharmacists are highly educated experts who are expected to understand the science behind the need for necessary therapies., including the positive and negative outcomes pharmaceuticals have on the human body. When it comes to helping people with diabetes, pharmacists provide prescriptions. They inform the patient about any drug's potential for mild, moderate, or severe adverse effects. Consequently, diabetic individuals might consult sources other than their primary care and inquire as to the best over-the-counter remedies for common colds and other mild ailments from their pharmacist. illnesses.

### 2.1.6 Microvascular

The eye consequences of microvascular diabetes are the most severe. An annual eye exam is recommended for all diabetic individuals. Diabetic retinopathy is the most common cause of adult blindness in Western industrialized countries. The risk of microvascular problems, such as diabetic retinopathy, of diabetes is proportional to the time spent in hyperglycemia and the degree to which it is experienced (Almdal, 2006). Diabetic retinopathy is often characterized as either background or proliferative. To correctly analyze eye movements, a basic familiarity with the characteristics of each Provide patients with examination results and information on how their disease is progressing. Background Retinopathy characteristics include, but are not limited to, microhemorrhages in the retina's intermediate layers. Hemorrhages." New blood vessel

growth is a hallmark of proliferative retinopathy. vitreous bleeding from ruptured blood vessels in the retina's surface (Watkins, 2003).In the United States, diabetic nephropathy is the main cause of renal failure. Twenty per cent to thirty per cent of people with diabetes will experience kidney damage, known as nephropathy. Initial therapy for diabetic nephropathy, like other consequences of diabetes, is prevention. Strong correlations exist between the other microvascular consequences of diabetes, including blood sugar levels and the likelihood of developing diabetic kidney disease. Treated to get the lowest achievable glucose level for diabetes prevention or control of kidney disease caused by nephropathy (Gross et al., 2005). Together with the rigorous treatment of high blood antihypertensive drugs help people with diabetic nephropathy whose blood glucose levels are consistently Drugs. Blocking the renin-angiotensin system offers additional benefits besides lowering blood pressure. Diabetic nephropathy patients have reduced blood pressure (Gross et al 2005).

The American Diabetes Association (ADA) acknowledges the existence of diabetic neuropathy. Defines peripheral nerve dysfunction as "the occurrence of symptoms and/or indications in patients with diabetes for which all other potential causes have been ruled out" (Diabetes Care, 2007). Just like other diabetes, and microvascular diseases, neuropathy risk increases. The severity and persistence of hyperglycemia, and some people may have characteristics in their genetic makeup that increase or decrease their risk for developing these problems. Not well understood, but probably involves mechanisms like polyol buildup, damage from AGEs and the stress of oxidation. Diabetic peripheral neuropathy can cause a variety of symptoms. Sensory, focal/multifocal, and

autonomic neuropathies are only a few examples. More than 80% of amputations happen because of foot ulceration or injury. Boulton et al. (2005) describe diabetic neuropathy. Significant morbidity and mortality are also caused by diabetic autonomic neuropathy. Death rate among diabetics. Systems may present with gastrointestinal (GI), bowel (bowel), skin (anhidrosis), and urinary (bladder) symptoms. Disorder, erection problems, exercise intolerance, rapid heart rate at rest, and silence Ischemic damage, and in extreme cases, cardiac arrest ((Boulton et al. Patients could either be completely symptom-free or report severe discomfort from a variety of "electrical" sensations. While the feet are typically hit harder than the hands.

**2.1.6.1 Macrovascular**

Atherosclerosis, which causes a global narrowing of artery walls, is the primary pathogenic mechanism in macrovascular disease. Chronic inflammation and damage to the arterial wall may play a role in the development of atherosclerosis. The lining of the arteries, especially those in the heart and brain (Lehto, 1996). The likelihood of developing cardiovascular disease is raised in those with diabetes. (CVD). Even though the exact mechanisms by which diabetes raises the risk and the exact causes of atherosclerotic plaque formation remain unknown, the connection between (Laing et al., 2003) both are significant. Major complications include heart problems. is the most common cause of death in those with diabetes (Merz et al., 2002). Patients with diabetes are 2–6 times more likely to experience problems. Diseases such as ischemic heart disease, stroke, and PAD than the general population. General population. Coronary heart disease has been identified as a macrovascular diabetic consequence. many research,

beginning with the Framingham study, have linked it to an increased risk of developing diabetes.To wit: (Kannel et al., 1979).Non-diabetic people who do not have diabetes still have severe cardiovascular risk factors (such as smoking, hypertension, and abnormal cholesterol levels) are also at play in diabetes, but the risks are higher in people with diabetes already present. Patients with diabetes have a 7-10 year life expectancy on average. the persons with diabetes are shorter than the people without diabetes. The metabolic syndrome is a common precursor to type II diabetes. Obesity, high blood pressure, high cholesterol levels, and increased coagulability. The risk of cardiovascular disease can also be increased by these additional elements. Despite the context, Among these many other risk factors, type II diabetes stands out as a major contributor to the independent risk factor for cerebrovascular and ischemic stroke, similar to coronary heart disease (Atherosclerosis, Lehto et al. Considering the higher probability of CVD, these are being treated more forcefully. Preventing coronary heart disease before it starts requires several factors to be in place. Occurs. Research on Type I Diabetes has demonstrated that strict adherence to a diabetes treatment plan is related to a reduced pulse rate at rest, and those with greater hyperglycemia have a faster average heart rate, which puts them at a greater Cardiovascular disease (Paterson et al., 2007). Patients with diabetes who have already developed clinical macro-vascular disease face huge challenges in managing the disease related complications

Macrovascular disease individuals with hyperglycemia had a worse prognosis for survival. Females lose their natural resistance to developing vascular disease when they reach menopause. Women with diabetes. Increasing the risk of cardiovascular disease

and death. Not a single question that hypertension is more prevalent in diabetes people and has a larger risk of developing disease related complications as such, it requires the same level of attention as treatment plans that prioritize glycemic control. When blood sugar levels aren't kept under control, hyperlipidemia might develop. Considered a separate factor in the development of cardiovascular disease. Roughly one-quarter of patients who visit the cholesterol levels of patients at a diabetes clinic tend to be high (Jacobson, 1985). Infections Patients with diabetes are also more likely to contract infections than people without diabetes. They are backed up by substantial evidence. Nonetheless, several illnesses are more prevalent in diabetic people and some occur practically exclusively in them. Different infections can be caused by heightened seriousness and are linked to a higher chance of problems. Diabetic individuals often have impaired immune function. proof that better glycemic control boosts immunity. Cystitis due to fungi, Some of the most common infectious diseases are rhino-cerebral mucormycosis and community-acquired pneumonia. infections that are frequently seen in diabetic patients (Gu, 1998).

### 2.1.7 Challenges Faced by Patients with Diabetes Mellitus Type II in Kitui County

Numerous obstacles affect the quality of life, health outcomes, and general health of people living with Type II Diabetes Mellitus (T2DM) in Kitui County, Kenya. Socioeconomic status, cultural dynamics, healthcare systems, and personal lifestyle choices all play a role in these complicated issues. To improve the quality of life for people living with type 2 diabetes in Kitui, it is essential to gain a better understanding of the unique obstacles they confront.

Restrictions on healthcare access for patients with type 2 diabetes in Kitui County confront the significant obstacle of inadequate healthcare service accessibility. Regular medical check-ups, monitoring, and prompt action might be challenging due to geographical distances, particularly in rural locations. Deficiencies in healthcare facilities' ability to handle diabetes management can lead to postponed diagnoses, insufficient treatment, and heightened susceptibility to complications.

Diabetes education and awareness gaps patients in Kitui face a substantial obstacle due to a dearth of diabetes education and awareness. Many people may be unaware of type 2 diabetes, its symptoms, risk factors, and the lifestyle changes that are required to manage the disease. Delays in diagnosis, ineffective self-management, and an increased risk of complications are all outcomes of a lack of understanding of the condition.

The cost of medications and other economic factors When it comes to managing type 2 diabetes in Kitui County, economic issues are paramount. People with diabetes and their families may struggle financially due to the high expense of diabetes medication, frequent medical exams, and monitoring devices. Medication non-adherence due to financial concerns may worsen health risks and undermine illness management efforts.

Traditional values and discrimination in how people in Kitui view type 2 diabetes may vary depending on their cultural norms and assumptions about health and disease. Isolation and a lack of willingness to seek medical help are possible outcomes of the stigmatization of diabetes. Health-seeking behaviours may be influenced by traditional ideas about the origins and treatment of diabetes, which could cause a delay in the adoption of evidence-based management strategies.

Foods that are safe for people with diabetes are hard to come by patients with type 2 diabetes in Kitui often struggle with their diets because there aren't many items that are good for them. Problems with following dietary recommendations may arise from the traditional diet's high carbohydrate content. Dietary management of blood glucose levels is already difficult due to the abundance of unhealthy food options at high prices.

Disconnect from social support systems one of the primary challenges faced by individuals with T2DM in Kitui is the lack of strong social support networks. Inadequate emotional and practical assistance may result from a lack of family awareness of the condition as well as social stereotypes. Isolation and ineffective management of diabetes might result from not having a solid support system.

Lack of knowledge about health and difficulty in comprehending prescription schedules, lifestyle changes, and physician orders is associated with low health literacy levels. It may be difficult for Kitui type 2 diabetic patients to understand the significance of self-monitoring, symptom recognition, and making educated decisions regarding their health. People with low health literacy may be less likely to take an active role in managing their diabetes on their own.

Difficulties with infrastructure and coordination unreliable transportation and insufficient connectivity in certain areas of Kitui County are infrastructure constraints that make it hard to access healthcare services and educational facilities. Patients' participation in diabetes management may be hindered if they have trouble getting to healthcare facilities for scheduled appointments or completing online instructional programs.

Challenges in Communicating across Languages in Healthcare Healthcare providers and patients in Kitui County may face communication barriers due to the country's linguistic diversity (*Cardiovascular Disease and Diabetes | American Heart Association*, n.d.). Patients in communities with a high concentration of different language groups may have trouble understanding their doctors' orders, which can lead to confusion over their care and how to best take care of themselves.

A dearth of diabetes support organizations patients in Kitui suffer from feelings of loneliness due in part to the lack of organized diabetic support groups. People can find emotional support, learn from one another's stories, and discuss relevant topics in support groups. Without these organizations, people with type 2 diabetes have fewer chances to learn from one another and support one another (*Cardiovascular Disease and Diabetes | American Heart Association*, n.d.).

The influence of weather and farming methods on daily routines. the weather and farming methods in Kitui can potentially affect the way people with type 2 diabetes live their lives. Many people in the area work in agriculture, which can be physically taxing and make it hard for them to exercise regularly. Additional difficulties may arise for outdoor physical activity due to climate-related variables, such as extremely high or low temperatures (*Cardiovascular Disease and Diabetes | American Heart Association*, n.d.).

### 2.1.8 The Routine Self-Care Practices among Patients with Diabetes Mellitus Type II.

According to (Association, 2019) people with DMTII who engage in good self-care behaviors are significantly more likely to keep the condition under control and avoid

problems associated with diabetes. Self-care practice can be defined by the World Health Organization (2018) as the ability of an individual, family, and society to promote and maintain health, prevent the occurrence of a disease, and cope with the illness and related complications with or without any external support. Self-management, on the other hand, is defined as the process in which a patient uses the learned abilities and skills to manage a chronic disease or risk factors. Recent studies have shown that those who have TIIDM have significantly lower rates of both productivity and participation compared to the general population (Colberg et al., 2016).

Good foot care, frequent physical activity, healthy eating habits, and self-monitoring of blood sugar levels are all components of the self-care routine that the American Diabetes Association recommends for individuals with diabetes mellitus type two. When discussing TIIDM, the term "self-care" can relate to a patient's capacity to take charge of his or her symptoms, treatment, physical and psychological consequences, and changes in lifestyle (ADA, 2016). According to (Maina et al., 2023), DMTII is a chronic condition that needs an individual to make a variety of daily decisions for the management of diabetes self-care and to engage in major activities related to diabetes self-care. According to Tommky et al. (2018), self-care practices encompass a wide range of domains, including dietary habits, physical activity, drug and alcohol use, methods of stress management, sleeping patterns, and behaviors regarding seeking medical attention.According to (Maina et al., 2023) in order for a patient to present with successful self-care practices, it is necessary for the patient to adopt appropriate self-care management. Diabetes self-care behaviors are habits that people who have diabetes

mellitus or who are at risk of developing the disease adopt with the intention of efficiently managing their condition on their own. Self-management is characterized by patient's decision and behaviors that they engage in any long-term disorder that affects their well-being (Stephani et al., 2018) While self-care is the care that includes any deliberate move aimed at looking at an individual's physical, mental, and emotional health, self-management is characterized by patient's decision and behaviors that they engage in. Study conducted by (Stephani et al., 2018), reported seven known types of diabetes self-care practices that an individual must routinely perform. These practices include consuming a healthy diet, engaging in physical dynamics, self-glucose monitoring, adhering to proper medication, adoption of good problem-solving skills, sound adapting capabilities, and risk reduction modalities. The presence of poor diabetic self-care habits among sick patients can mysteriously modify the trajectory of the disease and avoid the development of complications associated to the condition. Shrivastava et al.'s 2017 research was cited.According to (Stephani et al., 2018) more than 95% of diabetes care is carried out at home. Because of this, the establishment of food patterns according to patient's needs requires a personalized nutritional care aimed at achieving treatment goals, to actively practice regular physical activities, continuous self-monitoring of blood sugar levels and foot care, strict adherence to the prescribed medicine, and the ability to sort out both acute and chronic diabetes related complications. (AADE, 2019) is an acronym that stands for the American Association of Diabetes Educators. The guidelines of the American diabetic Association (ADA) state that any individual who has been diagnosed with DMTII should immediately begin adopting the seven diabetic self-care practices. In

addition, this individual should maintain normal levels of cholestertol, blood pressure, low density lipoproteins, and glycated hemoglobin (HbA1c). This has been demonstrated to be the case study carried out by United Kingdom prospective on diabetes study (UKPDS, 2017). (Shiroma et al., 2017) study that was done to evaluate the influence of family educational intervention on one of the communities in rural parts of Kenya in connection to reduction in glycosylated hemoglobin among sick patients .the results showed a very tiny difference of 0.3-1.4%. According to these guidelines, frequent exercise, for instance, can improve low blood sugar levels, lower cardiovascular risk factors, reduce weight, and prevent the risk of those with a family history of DMTII suffering from the condition (Abushamat et al., 2023) therefore such people should have a big responsibility for preserving their own health by communicating clearly and concisely with their families and occasionally seeking appropriate help when the situation calls for it (Abushamat et al., 2023).

#### 2.1.8.1 Assessing Routine Self-care Practices in type two diabetes

Self-care as difined by Adip-Hajbaghery & Alinapoor (2012), is the ability of the patient diagnosed with DMTII to undertaked the required activities aimed at achieving, paintaining and promoting optimal performance in adhering to self-care practices ((Jannoo & Khan, 2018).

### 2.1.9 Self- Care Management in Type two Diabetes Overview

The foundation of effective diabetic care is self-management. The best possible outcomes for people with diabetes depend on their ability and motivation to take charge of their disease on their own on daily basis. Self-care imposes many social, emotional, and

economic problems to the sick person. It is a human right to have access to health care services and information from trained specialists. People with diabetes need thorough education and strong motivation to take charge of their own health (Adhikari et al., 2021). Therefore, it is essential to have regular follow-up and ready access to guidance whenever it is needed. It is essential that medical professionals, families, and sick people all work together to ensure a smooth transition from the time one is diagnosed with the disease throughout one lifetime. Good self-management minimizes costs of care by reducing physicians appointment, disease related occurances in complication as well as psychological stress associated with such distress.. Diabetes Educators should try to eliminate bias against their patients in the community groupings, the workplace even at family level in everyday life. Enhancing diabetics' quality of life is the key objective. Understanding the psychological, economic, and psychosocial consequences of diabetes, the need of strong self-management skills, and strategies for easing access to diabetes health care services is very necessary. knowledge to self-care .based on the middle-range theory of chronic disease self-care and clinical guidelines, the Self Care on Diabetes Inventory (SCODI) was adapted for use in Korea can be utilised to enhance self- care management for individuals diagnosed with the disease and their families. The original tool was then translated into Korean, validated by specialists, then back re-translated by the author, and finally validated again. The experts analyzed if each question was relevant for self-care for diabetes and determined whether the adaption in Korean was valid by ranking the questions from 1 to 4, with 1 being "not valid at all" and 4 being "highly valid." This is a 40 question tool using likert scale one to four. The SCODI tool was

confirmed by experts to be accurate. The 40 questions in this instrument are broken down into four groups: self-care maintenance (12 questions), self-care monitoring (8), self-care management (9), and self-care confidence (11). Self-care upkeep, self-care tracking, and self-care administration were all rated on a 5-point Likert scale ranging from 1 (not at all) to 5 (always). Self-care assurance was measured on a 5-point scale, with 1 representing "not confident at all" and 5 representing "confident in everything"; higher scores indicated stronger self-care (Shrivastava et al., 2013). Participants who were injecting insulin had their SCODI scores converted based on 40 questions, whereas those who were not injecting insulin had their scores converted based on 39 questions, yielding a final score out of 100. The Cronbach's alpha reliability coefficients for the original tool were 0.81 for self-care maintenance, 0.84 for self-care monitoring, 0.86 for self-care management, and 0.89 for self-care confidence; the corresponding values for the current study were 0.77, 0.68, 0.74, and 0.90.

**2.1.10 Effects of Family Based diabetes education and knowledge to participate in self-care.**

Diabetes education is very critical method and therefore when offered to patients and their family members its aimed at creating awareness on fundamental issues including risks associated with a diagnosis of a diabetes early signs and symptoms, preventive and control measures and general management of the disease as lack of knowledge influences health seeking behaviors of a particular person. ( American Diabetes Association, 2016). Knowledge plays a significant role in containing and preventing development of any chronic disease . Adequate knowledge on DMTII occurs, progresses and control measures

can prevent the related Cormorbidities which has significant impact on the lives on both patients and their families. Information received can help them assess their risk of the disease, motivate them seek the best medical Care hence take charge of their own health ( Moodley et al ( 2016).Globally, there is general lack of knowledge as family members are rarely involved in the care , preventive and general management of the disease. Recent researches have shown that patients with high levels of knowledge potrayed desired behavior in disease management, hence marking it as the first step to measure the outcome , however, tools that are valid, easy to administer, reliable are very rare to get hence there is need to do family based educational intervention awareness ( sieradzki J (2017). The goal of diabetes education is not only to provide knowledge and skills necessary in coping with the disease related complications but also help in changing patients lifestyle behaviors including improving the quality of life through creation of awareness ( Mensing et al,2017).

Jasper et al. 2018 in their study on diabetes education to create awareness, concluded that 56.5 percent a of the observed respondents in Nigeria, over 88 % lacked knowledge om the meaning of glycosylated Hemoglobin, consequently Gambia scored 47%, where kenya got a score of 27% (Maina et al, 2017).The efficacy of educational Intervention is sorely dependent on the time the disease was diagnosed, the strength of family members in supporting the sick individuals, knowledge and readiness of the patient to Accept changes in behavioral lifestyles and support of all sorounding the patient ( Dec EL et al, 2017). Diabetes education offered to the sick individual and their family members should act As basic foundation for effective preventive, control and management of the disease

and therefore person with DMTII should have Knowledge, Skills and attitude necessary to control the condition. Recently, research carried out have shown that individuals who receive inadequate diabetes education have high chances of developing DMTII, however those sick persons who don't receive receive any diabetes education are four times more likely to develop diabetes related complications ( Esteghamati et al 2018). A another Study done to determine outcome of nutritional education in reducing blood glucose levels showed a reduction of Glycated Hemoglobin levels by 0.1-0.7% from baseline of 7.3 to 7.7 % 9,10

Drozdz et al (2017) demonstrated that education offered to patients with DMTII and their families rises their sense of responsibility for their own disease (Drozdz et al 2018).

**2.1.11 Barriers to Family Based Participation in Diabetes Self-Care Management**

Factors affecting family based diabetes education may be classified as issues that directly affect the sick persons such as stress, anxiety, ,patients age, basic knowledge on the disease,presence of complications, cultural factors such as misconception that DMTII is not a serious disease among others. (Seck H.and Spoleczna,2016.).others are identified as Clinicians' factors including lack of motivation, inadequate knowledge, poor Interpersonal skills including bad physician-client relationship as well as symphathizing with patients instead of showing emphathy (majernikova L,2018), Consequently family care givers factors are also alrighted including lack of patient support , inadequate fianancial care ( sieradzki and Cukrzyca, 201).Cultural factors have not been left out and have shown to that have shown to markedly influence their participation as such include the cultural beliefs and practices.

### 2.1.12 Self-Efficacy in Diabetes Management.

Patients' belief in their ability to carry out self-care tasks in accordance with established protocols is what is meant by "self-efficacy" in the context of diabetes. Patients with type 2 diabetes have claimed that this is a significant component in their ability to engage in effective self-care and adopt healthier lifestyle habits. Researchers discovered that people with higher levels of self-efficacy were more likely to engage in self-care, which in turn had a beneficial effect on the adoption and upkeep of healthy practices. Controlling blood glucose levels and preventing complications in type 2 diabetes requires first an individual to identify factors impacting self-care. A study was done to on self-efficacy to compare glycated haemoglobin(HbA1c), fasting blood glucose, and cholesterol levels of patients diagnosed with type 2 diabetes with those of the general population and people without diabetes. The results revealed that those who harbored the disease had ready mind set in terms of either lowering the blood glucose levels or maintaining the levels at recommended levels as compared to general population seemed not to be bothered (Mueller, C et al., 2017)

Arteriosclerotic cardiovascular disorders, for which obesity is the most well-known risk factor, are a leading cause of death in persons with type 2 diabetes. Participants averaged a body mass index ( BMI) of 25.8 (kg/m2), making them overweight at a rate of 73.7%. Since diabetes is a chronic condition, the risk of developing complications increases with time if sufficient self-care is not exercised. In order to raise patients' awareness of their illness and motivate them to maintain regular self-care practices, it is necessary to design

and implement intensive lifestyle care programs in which patients are actively urged to take part.

The greatest barriers to patients engaging in self-care stem from patients' perception of being overwhelmed by the complexity of their prescription schedules, as well as financial, time, and physical limitations. In most cases people with diabetes often lack the information they need to effectively manage their condition. Diabetic patients must constantly monitor these levels and handle complications throughout their life, as diabetes is a chronic disease that cannot be cured. Therefore, numerous programs must be designed to provide diabetes patients with individualized knowledge on diet, exercise, and medicine for self-care, with the goal of fostering a steady rise in self-efficacy based on positive feedback on their efforts (ADA, 2017).

### 2.1.13 Patient Factors Influencing Family Participation in Self-Care Management

There are various aspects related to family support and its impact on diabetes self-care, as well as the psychosocial variables and educational factors that influence a patient's ability to manage Type 2 diabetes effectively (Kalra et al., 2018). Emotional Responses to diabetes diagnosis: Receiving a lifelong diagnosis like Type 2 diabetes can trigger a range of emotions, including anger, despair, anxiety, and denial. These emotional responses can significantly affect how individuals cope with and engage in self-care activities. Family Misunderstandings; misunderstandings between patients and their families can hinder family participation in diabetes self-care procedures (Kalra et al., 2018). These misunderstandings may stem from family member may potray little knowledge on the disease progression, may not cooperate with care givers who may be a

relative, may even be depressed as may be in a denial state, to some, due to cultural beliefs and practices may belief or see it as a punishment from gods. Others upon learning about that they have the disease may fear burdening their family members during support as well as have phobia for disease related complications which are usually very severe (AlHaqwi et al., 2023). Communication gaps among family members have been reported to have an impact on their willingness to support the needy relative, others patients include persona factors such as perception and attitude towards the disease. Positive attitude and acceptancy of the disease by the sick individual can motivate the other family members hence improve their participation in self care (Simonsen et al., 2021). Environmental factors has also shown to play a crucial role on magnitude of family participation in diabetes self-care.patients from poor family may stay isolated as other relatives may lack physical materials such as money, may also stigmatize the sick person as is seen as a burden or bother to them, may also have inadequate knowledge to handle psychological issues and therefore try to avoid their expected crucial roles (AlHaqwi et al., 2023).

.Importance of Diabetes Support: Providing diabetes support, both emotional and physical, to patients is crucial. Such support aims to encourage patients to adhere to self-care activities, cope with the disease, and adapt to its challenges.Limited Effective Support Mechanisms: Despite the importance of support, reports indicate that only a small percentage of patients have effective support mechanisms in place, which can impede their ability to manage diabetes.Impact of Unhappiness on Glycemic Control: Unhappiness among patients due to inadequate support can lead to poor glycemic control,

which can have detrimental effects on their health.Factors Affecting Family Participation: Various factors affect the extent of family participation in diabetes management, including age, education, duration of illness, presence of complications, knowledge, and cultural beliefs.Patients' Trust in Self-Efficacy: Patients' trust in their own ability to manage their diabetes and their family's support in implementing required behaviors play a crucial role in achieving glycemic control (Busebaia et al., 2023). Role of Monitoring and Support: Frequent monitoring and progressive support from family and friends can help patients, especially adolescents, in performing diabetes self-care activities effectively. Irregular family involvement can lead to poor self-management, increased stress, and low coping mechanisms.Health Literacy: Health literacy, which refers to the ability to obtain, process, and understand basic health information, plays a significant role in patients' and families' ability to manage diabetes effectively (Busebaia et al., 2023). It empowers patients to carry out self-care activities and make informed decisions.Psychosocial Variables: Psychosocial factors, such as depression, can impact a patient's ability to manage diabetes. Depressed patients may receive inadequate support from their families, leading to conflicts and misconceptions.Importance of Education: Education and knowledge about diabetes are essential for patients and their families. Proper knowledge empowers patients to take responsibility for their health and manage their condition effectively.Self-Management Education: Self-management education for patients with Type 2 diabetes and their families can improve blood glucose control. However, the benefits may diminish over time, highlighting the need for continuous education and follow-up.Understanding Disease Progression: Lack of understanding

about diabetes progression and self-care practices can lead to complications and premature mortality among patients.CulturalSensitivity: Cultural factors can significantly influence how families and patients approach diabetes management. Healthcare providers should be culturally sensitive and adapt their support strategies accordingly.Social Stigma: Some individuals with Type 2 diabetes may experience social stigma, which can further isolate them and hinder their self-care efforts. Addressing this stigma and providing emotional support is crucial.Healthcare Access: Limited access to healthcare facilities and resources can impede a patient's ability to receive proper diabetes education and support (Powers et al., 2020). Expanding healthcare access is essential, particularly in underserved communities.Digital Health Tools: The use of digital health tools, such as mobile apps and telemedicine, can facilitate remote monitoring and support for diabetes patients, improving their self-care and overall outcomes.Family Education Programs: Implementing family-focused diabetes education programs can help families understand the condition better and actively participate in self-care activities.Psychological Counseling: Patients and their families may benefit from psychological counseling to address the emotional impact of a diabetes diagnosis, helping them cope more effectively (Powers et al., 2020). Community Support Groups: Creating or promoting community support groups for diabetes patients and their families can provide a valuable platform for sharing experiences and coping strategies.Financial Barriers: The cost of diabetes management, including medications and regular check-ups, can be a significant barrier. Developing financial assistance programs can alleviate this burden.Health Literacy Assessment: Regular assessments of patients' and families' health literacy levels can help

tailor education and support efforts to their specific needs (Murata et al., 2003). Early Intervention: Identifying diabetes patients at risk of inadequate support or complications early on and providing targeted interventions can prevent worsening of the condition.Patient Empowerment: Encouraging patients to take an active role in managing their diabetes and involving them in treatment decisions can lead to more effective self-care.Long. TermSustainability: Ensuring the long-term sustainability of support programs and education is essential to maintaining patients' self-care habits and glycemic control over time (Murata et al., 2003).

### 2.1.14 Exercise in Type II Diabetes Mellitus

As little as 30 minutes of moderate exercise every day can reduce the chance of acquiring type II diabetes by 30-50% (Gkaliagkousi, 2017). Regular exercise improves glycaemic management in all kinds of diabetes. Insulin resistance is the principal cause of hypoglycemia in type II diabetes and physical exercise is the greatest approach to improve insulin resistance (Goodpaster et al 2010). Insulin sensitivity is greatly enhanced by engaging in regular physical activity. Insulin resistance in obesity is primarily due to excess fat in the liver. Hepatic insulin resistance can be improved by exercising, as free fatty acid load to the liver is lowered as a result. (Haus et al., 2010). Moderate exercise, such as brisk walking, is recommended for at least 150 minutes per week (Diabetes Prevention Programme research group in NEJM 2002), or 30 minutes per day (Tuomilehto et al 2010). Reducing body weight, insulin resistance, and the metabolic syndrome's related effects like hypertension, dyslipidemia, and inflammation are all putative protective strategies. . According to the American Diabetes Association,

decreasing weight and engaging in regular physical activity both improve glucose management and lessen the need for insulin or diabetic medications. In addition to reducing the risk of health issues, it aids in maintaining the weight loss. More energy and better sleep are just two of the many benefits of regular physical activity, which also helps people feel less stressed, anxious, and depressed. According to the American Diabetes Association's 2007 guidelines for the medical management of diabetes, regular physical activity is recommended for persons of all ages to strengthen bones and muscles and maintain a healthy range of motion.

**2.1.15 Recommendations for Managing the Complications of Diabetes Mellitus**

It is recommended to check blood pressure regularly. Target BP should be less than or equal to 130 over 80 mm Hg. Patients with blood pressure readings below 140/90 mmHg require pharmacological therapy in addition to dietary and behavioral changes.Patients with systolic blood pressure between 130 and 139 over 80 to 89 mm Hg may consider a trial of After undergoing three months of intensive counseling on lifestyle and behavioral changes, drug treatment if their blood pressure is not normalized.At least once a year,Persons with diabetes should get their lipid levels checked. Lipid Adults with diabetes should aim for an Low Density Lipoprotein (LDL) level of 1000 mmol/l (or 700 mmol/l if taking statins). High Density Lipoprotein (HDL) greater than 500 mmol/l and fasting triglycerides below 100 mmol/l in patients with overt Cardiovascular Disease(CVD) 1500mmol/l.All diabetic individuals should be urged to cut back on their fat intake. cholesterol, saturated fat, and trans fat.It is recommended that people diabetic

type 2 patients should undergo such screening at the time of diagnosis.Maintaining healthy blood sugar and blood pressure levels at all times.

### 2.1.16 Family Related Factors Influencing their Participation in Self-Care Management

According to the institute for patient and family -centered care (2018), family members can be defined as two or more people who are linked in any way—emotionally, biologically, or legally—and as a result, can include nuclear families, extended families, single families, separated families, and others. According to burg et al. (2018), family members typically have an important role to play in the improvement of diabetes self-care management. This includes acting as reminders in medication adherence, changing patients' attitudes toward the condition in a positive manner, and initiating and maintaining changes in patients' activity and eating habits.Family-centered methods to the management of chronic conditions are extremely important because they place emphasis on the context in which the disease develops, which may include the patient's physical surroundings, relational dynamics, educational pursuits, and individual requirements, in addition to the requirements of their families. (HU 2018).According to Fisher et al., 2019, family members can have a positive influence on diabetes family structure, their views, and their skills in problem solving have demonstrated to lessen stress that is associated with the disease's incidence. For instance, a study that was carried out by Konen et al. (2017) and fisher et al. (2016) to evaluate the effects of family attitude and perceptions regarding the disease found that families who exhibited a positive attitude were more supportive, and their patients reported good glycemic control, healthier self-

care behaviors, high levels of drug adherence, and reduced stress levels (Konen et al., 2017). Those members of the family who actively participated in the teaching activities showed tremendous improvement in diabetes self-care Practice, whereas those families who did not participate in the intervention programs had difficulties in implementing diabetes self-care Activities (Denham et al., 2016). This was found in a systematic review that was also done in 2014 to assess the impact of family educational interventions with the extent to family involvement. According to findings of a study carried out by Mayberry and Osborn (2016), family members who had more knowledge on disease itself had tended to engage in more supportive behaviors and were more likely to manage their disorders well. On the other hand, family members who had little knowledge or misconceptions about the diabetes engaged in obstructive behaviors (maybery et al, 2016). consequently, the findings of a study conducted in China on diabetes knowledge on self-care among family members and their patients (Li, et al, 2017), reported that 50.09 percent of participants possessed fundamental knowledge regarding diabetes care. However, instruments that are valid, easy to administer, and dependable are extremely difficult to come by, hence the need to execute this study More recent researches have also demonstrated that having good information on self-care management result in desirable behavior. The American Diabetes Association (ADA) reports that diabetes intervention that involves the entire family not only contributes to the alleviation of stress brought on by the diagnosis of the condition but also generates awareness regarding the disorder's prevention, treatment, management, and control. Patients who showed a strong bond with their families were more motivated to make the right decisions, followed health

instructions, and undertook various lifestyle changes as compared to those patients who showed a strained relationship (American Diabetes Association, 2016). A good relationship between sick people and their families influences the family to participate more in diabetes self-care management.

### 2.1.17 Strategies to improve family participation in Self-care Management

According to WHO (2016), self-care has an extremely vital role in diagnosing diabetes at an early stage and has contributed to an individual's good healthy lifestyle.A variety of approaches and technology utilized to enhance family participation in diabetes treatment, have demonstrated to be effective in controlling blood glucose levels (Adu et al., 2019). According to the World Health Organization (20(Deakin et al., 2005)16), significant diabetic activities and improved family participation aid not only in preventing illness-related complications but also in enhancing quality of life among those who are afflicted with the condition. In the sense of placing importance on autonomy and on individual responsibility in greater control over one's own health, the term "empowerment" can be described as the discovery and development of an individual's inherent capacity to be responsible for one's own life (Adu et al., 2019). Empowerment can also be understood as the discovery and development of an individual's inherent capacity to be responsible for one's own life.In the early 1990s, the notion of empowerment as a strategy in diabetes care was initially presented for the first time as a philosophy for the promotion of health care (*Self-Care for Health and Well-Being*, n.d.). According to (Song, 2010) in order for patients to develop the capacities and skills necessary to identify their own needs, solve their own problems through resource

mobilization, and take charge of their own lives, they need to engage in collaborative activities with members of their families. Family support has a positive influence in changing attitudes of the rest of the family members through behavioral modification aimed at improving quality of life. Factors that influence family support include, among other things, age, culture, socio-economic status, occupation, and maritalstatus. Instruction in healthy living for the patient as well as their family members

According to (Song, 2010) nurses provide patients with knowledge and expertise about diabetic self-care practices, while patients and their families bring expertise on their own lives and what can work best for them.Make adjustments to your unhealthy way of living. Both (W. Guo et al., 2020a) identified a number of behaviors and early interventions as potential methods for reducing the rates of DMTII onset. These behaviors include the cessation of cigarate smoking, the cessation of alcohol consumption, the reduction of weight through physical exercise practice and healthy eating habits, and the practice of early intervention. It has been widely accepted for quite some time that aggressive family-based diabetes education (FBDE), which is aimed at aiding those who are ill and encouraging their family members to actively participate in the treatment of the condition, should be implemented (WHO, 2016).According to Roglic (2017), risk factors can be mitigated by conducting early screenings on persons who have a family history of the disease, in addition to providing affected individuals with education and counseling. According to (Ferreira et al., 2024) the entire family has the ability to get education and counseling on the nature of the condition, which allows them the fortitude to deal with the advancement of the sickness. A study conducted by (Ferreira et al., 2024) on the

effects of social support and behavioral change on the treatment of diabetes found that members of the patient's family played a significant influence in slowing the advancement of the disease, lowering stress, improving coping and acceptance of the disease, and, as a result, reducing the number of disagreements within the family. However, the Diabetes management and Compliance Trial (DCCT) observed similar feelings. The DCCT's findings demonstrated a high association between family education and blood glucose management (DCCT, Research group, 1993). It is necessary to provide advocacy and support to patients who have been affected by the condition, as well as to the patients' families, with the goal of modifying patients' behaviors, such as adopting healthier lifestyles and developing appropriate coping mechanisms (Antar et al., 2023).

**2.1.18 Depression and Diabetes Mellitus**

Depression among individuals with long-term diseases, such as diabetes, have unique emotional health needs that must be addressed in order to achieve optimal physical health. Living with diabetes can subject affected patient seek for psychological care. Recent according to recent report, in most cases, patients stay in denial immediately after diagnosis, if no attention is inflicted may progress to disease related complications as well as fatal side effects. Depression, anxiety, eating disorders, and phobias are all possible outcomes that need physicians attention.People with diabetes have a prevalence of depression that is around twice that of the general population (Katon et al,2019). According to www.diabetes.co.uk/diabetes-and-depression, those with a chronic physical health problem, such as diabetes, are three times more likely to be diagnosed with depression than those without the condition. Among people who have diabetes,

depression is the most common observed psychological condition. Stress is a possible reason, but the metabolic consequences of diabetes on the brain are also a factor (Kovacs et al., 1995). Some research have revealed that women with diabetes may be more likely to suffer from depression compared with their male counterparts (Wilkinson et al .1988). As a result, many people with diabetes feel unable to meet the demands placed upon them and lose motivation as a result. . Reducing depression has been shown to enhance glycemic control and reduce the chance of developing diabetic complications. Diabetes complications , such as heart disease and retinopathy, are more likely to occur in people with depression, according to a 1985 study (Jacobson et al 1985). As many as 50 percent of diabetic individuals with serious depression may have poor tolerance for or insufficient response to antidepressant medication (Popkin et al,1985). Quality of life is drastically impacted by depression, making it an essential comorbidity for people with diabetes that needs cautious management (Goldney et al, 2004). Depression can influence a patient's abilities to deal with their diabetes, including maintaining blood glucose levels effectively. Poor metabolic and glycaemic management has been linked to increased depressive symptoms in patients with diabetes and depression (Lustman et al., 2005). It has been shown that patients with diabetes who are sad are less likely to follow their prescribed diet and medicine, leading to a decline in health and an increase in medical costs.Improvements in glycaemic control, mood, and quality of life have all been observed when depression has been treated (Lustman et al., 2005). Having a chronic physical condition like diabetes can lead to a variety of mental health problems, depression being just one of them.

### 2.1.19 The Significance of Family Support in Chronic Disease Management

The role of culture in family dynamics the importance of family cannot be overstated in Kitui, as it is in many regions of Kenya. Cohabitation amongst members of the same family or other extended family is highly prized in this cultural setting. In such a context, the dynamics and structure of the family are intricately related to the importance of family support in managing chronic diseases. The cultural focus on reciprocal care and support, along with the shared responsibility within families, makes family involvement crucial in the management of chronic diseases like type 2 diabetes (Yin et al., 2015).

Supporting emotions and promoting mental health a vital source of emotional assistance for those living with type 2 diabetes is family support. The emotional toll of a long-term health condition, such as worry, despair, and stress, can be lessened with the support and understanding of loved ones (Yin et al., 2015). For those living with type 2 diabetes in Kitui, having someone to lean on emotionally helps improve their mental health, which in turn helps them manage their disease more effectively.

Treatment adherence and collaborative decision-making with family support, it's easier to make decisions about how to manage type 2 diabetes together. Treatment plans, lifestyle adjustments, and food restrictions are frequently discussed among family members in cultures that value communal decision-making (“Transforming the Workforce for Children Birth Through Age 8,” 2015). Interventions are tailored to each family's unique needs by taking into account each member's preferences, cultural beliefs, and the realities of family life through participatory decision-making. By working together, patients are more likely to stick to their treatment plans.

Adjustments to daily routine and nutrition modifying one's lifestyle, especially one's food and level of physical activity, is crucial for the management of type 2 diabetes. Having the support of family members is crucial when it comes to making and keeping these adjustments. In Kitui, where traditional eating habits run deep, it is essential to have everyone in the family involved when making changes to meal plans so that they fit with diabetes management recommendations and local tastes. By working together to plan and share meals, we create a community that encourages and supports each other in making healthy food choices (Samhsa, n.d.).

Care coordination and practical assistance one important part of family support is helping out with everyday tasks and coordinating care. People with type 2 diabetes often have trouble moving around, so their loved ones are vital in helping them with things like taking their medications, checking their glucose levels, and getting to and from medical appointments. People are more likely to obtain the help they need to manage their disease when they have family members who are willing to fill in care gaps (*Peer Support Groups by and for People with Lived Experience. WHO QualityRights Guidance Module*, 2019).

Awareness and education on health in the context of managing chronic diseases, family support acts as a medium for health education and awareness. Even though health literacy levels in Kitui can vary, family members take it upon themselves to educate their loved ones on type 2 diabetes, its symptoms, and the need of taking precautions. A supportive environment that promotes effective management of diabetes is fostered by this common understanding.

Sharing financial and other resources managing type 2 diabetes can place a heavy financial strain. By enabling resource sharing, family support plays a vital role in reducing this stress. To pay for medical treatment, get prescriptions, and get their hands on essential tools, many Kitui families band together, even if they may be struggling financially. People with type 2 diabetes can finance the necessary parts of their care thanks to this coordinated financing strategy (Sherifali et al., 2024). Assistance from family members to one another people with type 2 diabetes often find that their families are the best peer support system they have. There is a stronger bond of camaraderie inside the family when everyone shares in the ups and downs. This dynamic of peer support creates an accepting space where people with diabetes can feel heard, understood, and supported as they work to control their condition. Living with type 2 diabetes in Kitui is improved when there is strong peer support inside the family.

Minimizing the risk of complications caused by diabetes when it comes to preventing issues associated to diabetes, having family support is crucial. Family members have an active role in reducing the risks of type 2 diabetes by promoting frequent medical check-ups, medication adherence, and lifestyle changes. When it comes to long-term health outcomes, the value of family support in prevention cannot be overstated. This is especially true in communities where specialist healthcare services are not readily available.

Interventions tailored to culture and community involvement in order for interventions to be successful in Kitui, it is crucial to understand the cultural nuances of the people and to use family support to make culturally specific programs even more effective. To be

effective and well-received, family-based treatments must take cultural customs into account, involve community leaders, and include family members in all phases of the proess, from planning to implementation. These treatments integrate with Kitui culture to strengthen family support, which in turn improves diabetes management in the long run (Sherifali et al., 2024).

### 2.1.20 Existing Models of Family-Based Interventions in Diabetes Care

Comprehensive and patient-centered therapies are necessary for the efficient management of type II diabetes mellitus, which is a major health concern worldwide. In order to improve diabetes care outcomes, family-based interventions have been more popular in the past few years (Sugandh et al., 2023). Because managing a chronic condition like diabetes typically requires more than just the efforts of the person with the disease, these treatments acknowledge the critical role that families play in providing support to people with diabetes. Here, we take a look at the goals, components, and efficacy of different family-based intervention strategies for diabetes management.

A number of theoretical frameworks that stress the importance of the family unit in a person's health form the basis of family-based therapies. One such theory that highlights the importance of social impact and observational learning in changing health behavior is the Social Cognitive Theory. Improving patient adherence to self-care behaviors, addressing psychosocial elements of diabetes management, and boosting family support systems are common objectives of these interventions (Davies et al., 2022).

Educational and behavioral components are often combined in family-based therapies. A better grasp of diabetes, its symptoms, and the significance of making lifestyle changes

is the goal of the educational components. To help patients and their families cope with the day-to-day difficulties of diabetes, behavioral change is required.components typically include skill-building exercises like goal-setting and problem-solving (Association, 2022). Successful interventions frequently integrate cultural sensitivity and customization, acknowledging the different cultural contexts in which families operate. This entails tailoring intervention tactics to the target population's cultural beliefs, behaviors, and conventions in order to provide a more accommodating setting for the integration of diabetes control practices into everyday life.

Beyond just educating patients, family-based programs that really work include them in every step of their treatment. By involving loved ones in the process of making positive lifestyle changes, offering emotional support, and helping with medication management, loved ones can form a more comprehensive and long-lasting network of care. Some interventions use digital tools to improve engagement and communication in this age of rapidly developing technology. To keep tabs on patients' progress, send them timely reminders to take their medication as prescribed and make other lifestyle changes, and enable real-time information interchange, telehealth platforms, text messaging, and mobile apps are utilized.

Emotional and psychological health are just as important as physical health when it comes to managing diabetes. To help families cope with the mental toll of a loved one's illness and encourage overall well-being, many family-based programs incorporate psychosocial support services like counseling and support groups (Kuipers et al., 2019).

When planning family-based interventions, long-term viability must be a top priority. To ensure that families keep beneficial habits for the long term, successful models investigate ways to include diabetes control into their everyday routines. Involvement in the community, building of social networks, and removal of structural obstacles to long-term family involvement are all possible steps in this direction.

There are quantitative and qualitative ways to evaluate family-based intervention efficacy. Reduced diabetes-related complications, better glucose control, higher adherence to lifestyle and medication guidelines, and an overall better quality of life are vital outcomes. A more complete picture of the intervention's effect can be painted with qualitative insights, which record the personal accounts of patients and their loved ones (Kuipers et al., 2019). Although there is hope for family-based interventions, it is important to recognize the obstacles that may arise, such as logistical difficulties, reluctance to change, and individual differences within families. Additional investigation into the effects on health outcomes over the long term, as well as novel approaches to addressing these difficulties, should inform future study.

Patients with Type II Diabetes Mellitus can find a variety of strategies to improve their diabetes treatment results by involving their families in existing models of family-based therapies. These models have an emphasis on education, behavior change, cultural sensitivity, and long-term sustainability, and they are based on several theoretical frameworks. To keep up with the ever-changing profession and develop better interventions for people with diabetes and their families, new approaches and research are needed all the time.

### 2.1.21 Cultural factors influencing health behavior and family dynamics in kitui County

Patients with Type II Diabetes Mellitus and their families are profoundly impacted by the cultural milieu of Kitui County when it comes to health-related behaviors and family dynamics. In order to create treatments that truly connect with the community's beliefs, traditions, and social structures, it is essential to have a deep understanding of these cultural variables (Theuri, 2020). Cultural ideas have a significant role in shaping how people in Kitui County see health and illness. Conventional wisdom and scientific evidence may diverge on the origins of some diseases, such as diabetes. For healthcare providers and families to work together in accepting and managing diabetes, it is crucial to incorporate a knowledge of these attitudes into care interventions.

Family support and health-seeking activities can be severely affected by the stigmatization of diabetes. Misconceptions regarding diabetes can be a problem for people living with the disease in Kitui County, a region that places a premium on social status and community ties. In order to promote early diagnosis and family involvement, it is crucial to address and reduce stigma through culturally specific awareness and education initiatives (Mwadulo et al., 2023).

Kitui County is known for its strong extended family system, which is vital for giving support and care. The current family structure, which includes both nuclear families and extended relatives, must be recognized and used in interventions. People with diabetes can benefit from a stronger support system if they are able to rely on their extended family.

In Kitui County, food is more than just fuel; it is integral to rituals and celebrations. The control of diabetes is directly affected by dietary choices and culinary traditions. Dietary changes that are culturally appropriate should be included in interventions, and people should be given practical advice on how to incorporate healthier food choices into local cuisines (*CHANGES IN FAMILY STRUCTURE AND FUNCTIONS AND ITS IMPLICATIONS ON WELLBEING OF CHILDREN IN MURANG'A COUNTY*, 2023).

Families in Kitui County typically make decisions as a group and communicate according to cultural norms. Improve the efficacy of diabetes care programs by adjusting interventions to fit these communication styles and including the whole family in making decisions.

In Kitui County, people's religious views impact many aspects of daily life, including choices about their health. Diabetes care programs that involve religious leaders and institutions can help spread health information and rally community support. Messages on health that are in line with religious principles have a greater chance of reaching the community.

Cultural dynamics and socioeconomic factors interact to shape people's health behaviors. Affordability of pharmaceuticals, accessibility of healthcare facilities, and the impact of socioeconomic status on lifestyle choices are all important considerations for interventions that aim to alleviate financial hardships experienced by families in Kitui County (Githinji et al., 2022).

People in Kitui county are expected to fulfill specific tasks based on their gender, which impacts how they seek healthcare and who they choose to care for. In order to develop

inclusive treatments that encourage family shared responsibility for diabetes care, it is crucial to understand and address these gender dynamics.

**Barriers to Family Involvement in Diabetes Self-Care**

Kitui families' lack of knowledge and health literacy about diabetes is a major obstacle. Diabetes self-care behaviors may go unsupported due to a lack of knowledge about the disease, its complications, and how to treat it. To fill this information vacuum, educational programs that include patients' loved ones are crucial (Tefera et al., 2020).

One of the biggest challenges to family involvement with diabetes is the stigma that often accompanies the disease. Social stigmatization of people with diabetes and their families can result from misunderstandings regarding the disease's origins and how it spreads. In order to create a more accepting society for those living with diabetes and their loved ones, it is crucial to raise public knowledge through community-based initiatives that debunk misconceptions and lessen prejudice (Cavanaugh, 2011). Family participation in self-care for diabetes is hindered by economic issues such poverty and lack of financial resources. It can be difficult to get good food, affordable medicine, and equipment to monitor blood glucose levels regularly. Interventions should look into ways to make diabetes management more affordable for families, taking these financial constraints into account.

Diabetes care services may be difficult for families to access in Kitui due to distance and an inadequate healthcare infrastructure. Because of this, people may be less likely to participate in diabetes education programs, have frequent checkups, or even see a doctor when they need one. One possible solution to these geographical obstacles is the

implementation of community outreach programs and mobile health clinics (Eseadi et al., 2023).

The cultural norms and practices of Kitui's community have a significant impact on how people there perceive health issues and medical treatment (Onteri et al., 2023a). Families and individuals may avoid medical interventions supported by evidence if they rely on alternative medicines or traditional healing techniques. In order to successfully manage the combination of traditional beliefs with current diabetes care procedures, culturally relevant health education programs are essential.

Because of the county's linguistic diversity, patients and their families may have trouble understanding one another, which could delay the delivery of life-saving medical information. To maximize comprehension and engagement, interventions should make use of local languages and other culturally appropriate communication tactics.

A strong social network is essential for people with diabetes to successfully self-care, but this may not be the case for all families in Kitui. People living with diabetes and their families can benefit greatly from interventions that aim to develop community relationships, involve community leaders, and encourage the formation of peer support groups (Onteri et al., 2023a).

Caregiving duties typically fall on particular family members, which may be a result of traditional gender roles that lead to inequalities in family involvement. In order to promote equitable involvement in diabetic self-care, it is vital to address gender dynamics and encourage shared responsibility within families.

Time constraints resulting from rigorous work schedules can hinder family involvement in diabetic self-care in Kitui's primarily agricultural economy. So that families can participate without jeopardizing their livelihoods, interventions should think about educational program scheduling flexibility.

The dissemination of health information and the building of a supportive community environment for diabetes care can be hindered by insufficient community involvement measures. Health communication and intervention implementation can be enhanced by joint efforts with community-based groups and local leaders.

### 2.1.22 Innovative Approaches to Enhance Family Participation in Chronic Disease Management

In order to improve the care of chronic diseases, particularly those involving Type II Diabetes Mellitus, it is crucial to find new ways to include families in Kitui, Kenya. Improving diabetes care outcomes requires innovative and long-term solutions that take into account the specific obstacles presented by socioeconomic status, cultural differences, and healthcare resource scarcity. Here are a few fresh ideas adapted to the Kitui setting:

We offer mHealth solutions for mobile health. With the use of mobile health solutions, family involvement in diabetes control can be transformed in this tech-driven age. Patients and their loved ones can receive up-to-the-minute health updates, prescription reminders, and lifestyle advice through text message and mobile app services. Making sure the app is accessible and relevant for the Kitui community means making sure it accommodates local languages and cultural preferences.

Clinics in the cloud and telemedicine telemedicine and online clinics provide an encouraging alternative to physical healthcare facilities that are out of reach for many people in Kitui. Diabetics and their loved ones may now gain access to expert guidance, ask questions, and take part in educational programs without ever having to leave the house, all thanks to virtual consultations. By removing barriers to constant connection with healthcare practitioners, this method increases family involvement despite physical distance (Onteri et al., 2023a).

Home Health Advocates (CHWs) One game-changing tactic in Kitui could be to give more authority to community health workers. Healthcare facilities and families can benefit from the expertise of trained CHWs who are fluent in the local language and culture. In addition to providing continuous care, they can educate patients on how to manage their diabetes and make house calls (Johnson et al., 2022). By connecting the dots between the community's needs and the official healthcare system, CHWs play an important role in building trust and involvement.

Individualized curriculum for different cultures in order to effectively involve families in diabetes management, it is vital to establish culturally specific teaching programs. Local beliefs, traditions, and conventions should inform the development of educational materials, seminars, and workshops. Aligning interventions with the cultural fabric of Kitui and increasing understanding and acceptance within the community are achieved through integrating traditional healing techniques with evidence-based diabetic care. A Network for Peer Support The establishment of community-based peer support networks can offer families coping with diabetes both emotional and practical support. A peer

support group is a great place to meet other people going through the same things you are, to talk about what you've learned, and to work through problems together. Community groups or online forums can serve as meeting places for these families, bringing them together in a spirit of mutual support and understanding.

Rewards for health promotion through financing given the current economic climate, it may be possible to encourage family participation in diabetes management by offering financial incentives for health promotion activities. Medication subsidies, incentives for annual checkups, or awards for long-term behavioral changes are all possibilities. This novel strategy helps families prioritize diabetes care by removing financial obstacles.

Harmonization of conventional and alternative medical practices including traditional healers in diabetes treatment initiatives helps increase family involvement, which is important because traditional healing practices are very important in Kitui. In order to manage diabetes in a way that is both effective and respectful of local customs, it is important for healthcare providers and traditional healers to work together. Families are encouraged to seek a peaceful balance between traditional and modern healthcare through this collaboration, which builds mutual understanding and trust.

From various fields working together a wide range of stakeholders should be involved in innovative initiatives, not only those in the healthcare field. A hospitable environment for diabetes control can be established through cooperation among local companies, educational institutions, religious organizations, and community leaders. A multi-faceted strategy that includes wellness programs in the workplace, instructional activities in schools, and collaborations with religious groups can all help to engage families.

Health education with a gamification twist Kitui families might find health education more entertaining by utilizing gamification ideas. People of all ages can benefit from diabetes education games and activities that encourage healthy lifestyle choices and self-care. This method turns learning into a fun and engaging adventure for families, while still imparting important information.

Programs started by members of the community an innovative and sustainable strategy for diabetes control is to give communities the tools they need to take charge of their own care. Healthy food gardens, health fairs, and community awareness campaigns are all examples of community-led projects that inspire people to become involved. A sense of shared responsibility is fostered by including families in these projects' development and execution, which contributes to long-term involvement.

**2.1.23 The Importance of Family Participation in Diabetes Management**

The involvement of family members in the care of patients with Type II Diabetes Mellitus (DMTII) is crucial( American Diabetes Association, 2014) Family participation in self-care management can greatly affect their health and treatment Outcomes.(Deakin et al, 2005). Collaboratively addressing the various issues associated with diabetes is made possible by the support and cooperation of family members.

Collaborative decision-making and shared duty getting everyone in the family involved with diabetes care helps create a feeling of community and accountability. Families can work together to tackle issues like medication adherence, healthy eating, and way of life adjustments by participating in collective decision-making. The practice of shared

responsibility encourages a cooperative and supportive atmosphere among families by dividing up the work of diabetes management.

Supporting emotions and promoting mental health individuals' mental health greatly benefits from having family members who can empathize with their struggles as they navigate life with Type II Diabetes Mellitus. Patients with diabetes often experience psychological effects such as stress, worry, and loneliness; but, with emotional support from loved ones, they are better able to manage these effects. Better mental health outcomes for people with type 2 diabetes are associated with having a supportive home environment.

Reassurance with everyday tasks and drug administration support from loved ones is crucial when it comes to managing diabetes and the day-to-day tasks that come with it. Assistance with managing medications, checking glucose levels, and following treatment regimens are all part of this. By monitoring the diabetic's adherence to treatment plans, loved ones can lessen the likelihood of problems and keep the patient in the best possible health.

Advocate for the adoption of healthier lifestyle choices modifications to one's lifestyle are essential in the management of diabetes. As a unit, families may do their part to promote healthy lifestyles by doing things like exercising regularly, eating a balanced diet, and making decisions that help with diabetes management. Incorporating sustainable lifestyle adjustments is much easier when family members are involved.

Improvements in treatment compliance treatment adherence is greatly affected by the assistance of family members. Adherence to medication schedules, attendance at medical

appointments, and prescribed lifestyle modifications are all improved when family members are actively involved in the management process. Diabetic care that is both regular and effective benefits from the support and prompting offered by loved ones.

Prevention and knowledge of illnesses educating and raising awareness about diseases often begins with family members. Learning about Type II Diabetes Mellitus empowers families to take part in educational programs, share information at home, and help their loved one better understand their disease. When family members are more knowledgeable about diabetes, they are better able to take an active role in managing their condition.

Minimizing the risk of complications caused by diabetes reducing the risk of problems associated to diabetes can be achieved through family participation in the prevention process. Complications including cardiovascular disease, kidney disease, and neuropathy can be lessened when families work together to control blood glucose levels, take medications as prescribed, and live a healthy lifestyle.

Establishing a supportive atmosphere managing diabetes effectively is facilitated by a supportive home environment. When people have the support and encouragement of their loved ones, they are more inclined to take care of themselves. A supportive family environment fosters emotional health, motivation, and a positive outlook, all of which contribute to better outcomes for people with diabetes.

Encouraging consistent checkups and monitoring the importance of routine monitoring and medical check-ups can be assured with the help of family members. A person's loved ones can be a great help when it comes to making and keeping appointments, as well as

when it comes to lobbying for regular checkups. In order to manage diabetes proactively and notice any changes in health status early, monitoring is essential.

Enhanced dialogue and communication the key to effective diabetes care is open and honest communication within the family. Sharing stories, airing grievances, and working together to find solutions are all possible outcomes of an open dialogue. When a diabetic person's loved ones are there to help them understand and communicate with their healthcare providers, everyone benefits.

People living with Type II Diabetes Mellitus greatly benefit from having their families actively involved in their diabetes care. A more supportive atmosphere that encourages healthier behaviors, better mental well-being, and more treatment adherence are all results of families working together. If we want to create comprehensive and patient-centered methods of care, we must acknowledge the critical role that families play in the management of diabetes

### 2.1.24 Collaborative Approaches for Involving Families in Diabetes Education

Fostering a supportive atmosphere, improving health outcomes, and addressing the unique obstacles faced by families in the region are critical goals of collaborative approaches to integrating families in diabetes education for patients with Type II Diabetes Mellitus (T2DM) in Kitui, Kenya (Powers et al., 2016). In order to improve diabetes education, collaborative initiatives seek to incorporate local groups, families, healthcare practitioners, and community leaders while also acknowledging the importance of cultural nuances and community involvement.

Workshops and forums for the community is one way that communities can work together to educate families about diabetes is by hosting workshops and forums. Healthcare providers, community health workers, and community leaders can organize and present these events in easily accessible community locations (Powers et al., 2016).Education on diabetes, its prevention, and management techniques are all possible subjects for such a workshop. Involving families in presence of expertise (Q&A) and allowing them to ask research related questions of their choice can be a good empowerment strategy.according to Redpath et al.2013; Madden & Mcquin 2014; Bennett 2016.Quality assurance are important as researcher is able to weigh the understanding level from respondents on a certain issue as well the extend of acceptancy. Offering group discussion sessions fosters a cooperative learning atmosphere that adapts lessons to the unique requirements of Kitui's multicultural student body.Collaboration with regional medical facilities to guarantee the effectiveness of diabetes education programs as well as collaborate with local healthcare practitioners. It is possible to include educational programs into preexisting healthcare services through forming partnerships with health centers, hospitals, and clinics. By sharing their knowledge, hosting workshops, and providing context-specific medical advice, healthcare providers can make significant contributions (Gómez-Velasco et al., 2019b). By working together, diabetes education program's can be improved credibility and effectiveness while also encouraging a more comprehensive approach to patient. treatment.Engagement of CHWs, or Community Health Workers in Kitui, community health workers are vital in connecting families with healthcare institutions. In order to educate the population about diabetes, collaborative approaches

teach and empower CHWs to do so. Community health workers (CHWs) can play an important role in connecting families with healthcare providers by sharing information, offering continuous support, and capitalizing on the trust they already have in the community (Horwood et al., 2019). Diabetes education efforts are able to reach more people and have a greater impact because to our partnership (Hanfi et al., 2024).

Community elders and traditional healers in Kitui have a lot of say when it comes to engagement. Engaging with these esteemed individuals is one collaborative strategy for bringing cultural viewpoints into diabetes education. Traditional healers can shed light on local health beliefs and practices through dialogue and collaborative sessions. Cooperation helps people of different backgrounds understand and accept diabetes education better by promoting an atmosphere of mutual respect and combining traditional wisdom with scientific facts (Mphasha et al., 2022a).

Diabetic education programs in schools if school-based diabetes education initiatives want to reach more families, they should work with schools. Schools and community organizations can work together to raise diabetes awareness among children and their families by incorporating lessons on the disease into school curricula (Mphasha et al., 2022b). A culture of prevention can be fostered through age-specific educational resources, seminars, and events. A collaborative and all-encompassing approach to diabetes education is guaranteed when parents and educators are involved in the programs' development and rollout.

Working together with non-governmental organizations when it comes to healthcare and community development, non-governmental organizations (NGOs) are indispensable

partners (Mphasha et al., 2022a). Additional resources, knowledge, and support can be provided for diabetes education programs through collaboration with NGOs. These groups typically have a track record of success in health-related project implementation, extensive networks, and community engagement initiatives. Collaborating with non-governmental organizations (NGOs) enhances the effectiveness of diabetes education and fosters a systematic and long-term strategy in Kitui (Northwood et al., 2023).

Engagement with the Community through the use of digital Platforms One aspect of collaborative techniques is the use of digital platforms to engage the community. Digital resources and online communities can be more easily created through partnerships with local telecoms, social media platforms, and technology companies. Family members can participate in virtual learning sessions, share experiences, and have access to information through digital platforms. Digital solutions that are in line with Kitui's technical landscape are the result of collaboration with local tech projects (Hill-Briggs et al., 2021).

Building the Capacity of Community Advocates Community organizers, religious leaders, and tribal elders are all examples of local leaders who might be empowered to take an active role in diabetes education through collaborative initiatives. These influential people may help spread the word about upcoming awareness events, workshops, and campaigns by endorsing and attending them (Sidani & Patel, 2023). Diabetes education can only become a community-driven effort through collaborative advocacy, which in turn fosters a feeling of shared ownership and responsibility.

Merging of long-established cultural activities Diabetes education can be more culturally relevant and acceptable if it incorporates traditional cultural practices, which can be

achieved through collaborative ways. Workshops and instructional materials can benefit from incorporating traditional practices when developed in conjunction with community members and cultural specialists. By honoring local customs, this method makes diabetes education more relevant and meaningful to the people of Kitui (Sidani & Patel, 2023).

Collaborative investigations for individualized Treatment Plans Customizing diabetes education strategies to meet Kitui's unique needs requires active participation in joint research initiatives. Data particular to a certain context can be collected through partnerships with local academic institutions, community groups, and researchers. Diabetes management in the region is impacted by cultural, societal, and economic aspects; our joint research helps to inform the creation of specific therapies that address these factors (Onteri et al., 2023b).

Community involvement, cultural awareness, and cross-sectoral collaborations are key components of family diabetes education programs in Kitui, Kenya. Educators, community leaders, healthcare professionals, and technology partners can work together in this way to build a long-term framework for diabetes education. These efforts are designed to work together, so that treatments can be tailored to meet the specific needs of Kitui (Szafran et al., 2019). Our goal is to raise community knowledge about diabetes and find better ways to prevent and manage it.

### 2.1.25 Training and Empowering Families for Effective Diabetes Support

The treatment and well-being of individuals with Type II diabetic Mellitus (T2DM) can be greatly improved by training and equipping families in Kitui, Kenya, to provide appropriate diabetic support. Adapted treatments that provide families in Kitui the tools

they need to make a difference are required due to the town's distinct cultural and socioeconomic background (Bett & Ade-Oshifogun, 2024). In addition to improving diabetes treatment, this all-encompassing method creates a welcoming space where families may talk about the many difficulties they're having.

Diabetes literacy programs the first step in educating and enabling families in Kitui to manage diabetes is to launch diabetes education workshops. The basics of type 2 diabetes, including its characteristics, causes, symptoms, and consequences, should be covered in these seminars. Education on healthy eating habits, frequent exercise, and other lifestyle changes is also vital. These workshops are designed to help families better understand diabetes and how to manage it. They are held in accessible community venues and are led by healthcare experts or certified community health workers (Theuri et al., 2023).

Personalized curriculum for different cultures to make sure the information reaches the people of Kitui, it is crucial to provide culturally relevant teaching materials. Documents like brochures, posters, and films ought to use regional languages, cultural symbols, and believable instances. As a result, familiy members are able to understand and engage with the educational content. In turn the tools help diabetes education campaigns to be more effective by aligning with cultural norms and values.Antony Ishmael, 2022).Nutritional food selection, portion control, and informed food choices within the framework of regional cuisines should all be clearly outlined in instructional materials and workshops. Making dietary adjustments easier for families with diabetes can be achieved through cooking demos that show how to make meals that are suitable for the disease using products that are easily accessible in the area.

Education on Blood Sugar Tracking and Drug Administration An important part of providing good diabetes assistance is teaching families how to check blood sugar levels and take medications as prescribed. Glucometer usage, glucose reading interpretation, and the significance of medication adherence should all be part of practical training sessions. So that they can react quickly to changes in blood sugar levels, families should also learn to recognize the symptoms of hypo- and hyperglycemia (W. Guo et al., 2020b).

Modifications to One's Lifestyle through Behavioral Approaches Providing families with practical tools to make permanent changes is an important part of promoting behavioral techniques for lifestyle improvements. This encompasses methods for accomplishing objectives, tactics for creating habits, and conquering typical obstacles to altering one's way of life. A significant influence on the treatment of diabetes over the long term can be achieved through behavioral interventions that enable families to assist their loved ones with type 2 diabetes in establishing and maintaining healthy lifestyle choices (Chamberlain et al., 2016).

Approaches of Reducing Stress Managing stress is crucial for people with diabetes, as it has the potential to affect blood sugar levels. Creating a nurturing atmosphere can be achieved by teaching families stress management practices including mindfulness, relaxation exercises, and good communication strategies. People with type 2 diabetes and their loved ones can benefit emotionally from establishing habits and engaging in activities that help reduce stress.

Promoting Family Physical Fitness Getting regular exercise is essential for people with diabetes, and it's even better for everyone's health if families do it together. Incorporating

culturally relevant activities, such traditional dances or outdoor games, into age-appropriate exercises is something that families can get ideas for during training sessions (da Rocha Fernandes et al., 2016). The goal should be to make exercise fun and easy enough that the whole family can participate.

Strategic Management of Funds and Assets Diabetes care can put a heavy financial strain on families in Kitui. This facet of assistance requires training in budgeting and resource management. Healthcare spending plans, finding financial aid, and making the most of limited resources are all possible subjects for such seminars. The financial burdens of diabetes care can be better managed if families are better educated about personal finance (da Rocha Fernandes et al., 2016).

Mutual Aid and Involvement in the Neighborhood the empowerment of families relies heavily on the development of peer support networks and active participation in the community. A feeling of community can be fostered by establishing support groups where families can talk to each other, share resources, and get emotional support. Community events, internet platforms, or monthly gatherings can all play a role in facilitating peer support efforts, which strengthen the network of families supporting each other in diabetes care.

Ongoing Monitoring and Support Rather from being a one-and-done deal, training and empowerment must be continuous endeavors. Ensuring that families keep their knowledge and abilities over time requires continuous follow-up and reinforcement (Harreiter et al., 2016). This can be achieved through monthly check-ins, refresher seminars, and supportive communication channels. Families can better manage diabetes

and its complications if they have access to consistent feedback and assistance (Harreiter et al., 2016).

An all-encompassing and culturally appropriate strategy is required to train and empower families in Kitui, Kenya, to effectively support those living with diabetes. The goal of these treatments is to help family's better support individuals with Type II Diabetes Mellitus by taking into account the specific cultural and socioeconomic factors of the area. A supportive environment that positively improves diabetes management results in Kitui can be fostered by families through education, practical help, behavioral measures, and community engagement.

### 2.3 Theoretical Frameworks

Theoretical models and conceptual frameworks demonstrate exactly how interventions at family level influence outcome of long term disorders (Baig, 2015)

In this section,Paradigms of various models and theories will be applied. Such include Patient and family centered care theory, health belief model, dorothea orem's self-care theory, principles and guideline from American Association of Diabetes Educators. Each theory/model used in this study has a significant impact on meeting objectives for this study.A systematic review carried out to determine the critical role family Members play in diabetes management showed that majority of interventional studies used similar hypothesis (Torenholt et , 2014).

#### 2.3.1 American Association of Diabetes Educators

American Association of Diabetes Educators (AADE).The framework offers evidence-based guidelines for the assessment, intervention, and evaluation measurements that

should be performed on each individual person who has diabetes mellitus. According to Austin M. (2016). The framework provides seven self-care behaviors that are essential for successful and efficient self-care management. These behaviors include healthy eating habits, physical exercise, self-monitoring of blood glucose levels, drug adherence, problem-solving skills, health coping methods, and risk reduction methods. The outcome of this paradigm is a set of links to sequences of outcomes, ranging from immediate learning to long-term changes in health status and behavior.The ideas that make up this framework were put to use not only in the process of teaching and training patients and their family members, but also in the assessment of how well the model works. The overall outcome helped in providing support for a paradigm that will change diabetes treatment from being content driven to being outcome driven, with patient goals aimed at encouraging behavioral change.(AADE, 2011). The framework offers educators with defined standards for assessment, issue solving, barrier identification and resolution, goal setting and evaluation, and it improves the quality of care provided to diabetes patients as well as policy makers. (AADE, 2011).

**2.3.2 Patient and Family Centered Care Model**

This model was adapted from the work of Johnson, B. H & Abraham, M.R (2010) , partnering with patients and their families. Concepts of this model best fits inmeeting the goals of objective number two and three. The model emphasizes on the nurses working with the sick patients and their families rather than just "doing to" or for "them". (wagner, 1998).The model provides the best approach in providing care to the patients that is respectful of and responsive to individual patient preferences needs

and values including ensuring that patients values direct and guide all decisions made towards the patients ( committee on quality of Health Care in America institute of medicine, 2016).Patient- and Family-Centered Care provides guidance on the major concepts underlying patient- and family health conditions. In this theory, Healthcare providers respect, listen to, and honor patient and family perspectives and choices they make (. Institute for Patient- and Family-Centered Care. 2014). Patient and family knowledge, values, beliefs, and cultural backgrounds must be incorporated into the planning and delivery of care. Patients and families require timely, complete, and accurate information in order to effectively participate in care and decision making. however, patients and families are encouraged and supported in participating in care and decision making ( Institute for Patient- and Family-Centered Care. 2014**).**

This perspective is based on the recognition that patients and their families are essential allies for quality and safety and not only in direct care interactions , but also in quality improvements , safety initiatives, education, facility design and policy development.

Patient and family centered care leads to better health outcomes, improved patient and family experience of care , better clinician and staff satisfaction and wise allocation of resources.

In terms of interventions for patients with diabetes, others have described frameworks for the inclusion of family in health interventions. ( fisher, et al,1998) Clinical interventions may be most effective when characteristics of patients that affect disease outcomes are integrated with perspectives of the family context.( fisher et al,1998) Interventions must also address patients' and family members' beliefs and expectations, family stresses, and

allocation of the responsibilities of disease management. Other frameworks stress the importance of biculturalism and integrating cultural knowledge, skills, practices, and identities into diabetes self-management interventions for racial/ethnic minorities.( Psychological impact of biculturalism: evidence and theory.(fromboise et al 1993.

**The Concepts of patient and family centered care Model**

**Dignity and Respect-** Health care practioners listen to and honor patient and family perspectives and choices. Patient and family knowledge, values beliefs and cultural background are in cooperated into planning and delivery of care

**Information sharing;** Health care practioners communicate and share complete unbiased information with patients and families in ways that **a**re affirming and useful. Both patients and families receive timely, complete and accurate information in order to effectively participate in care and decision making.

**Participation –** patients and families are encouraged and supported in participating in care and decision making at all level they choose

**Collaboration**- patients, families , health care practitioners and health care leaders participate in policy and program development , implementation and evaluation

**2.3.3 Self-care model developed by Dorothea Orem**

Self-care model developed Dorothea Orem was used to meet Objective number one.(Orem, 1995) . For patient to achieve optimal blood glucose control, routine self-care activities must be practiced The sick person must therefore must carry out by self and avoid actvities that might bring unpleasant outcomes.

According to Orem's definition (Orem, 1995), self-care is the action of an individual that tends to and maintains their own personal health, illness, and the prevention of complications following a specific attack by a disease. According to this view, the patient is not only responsible for receiving health care services, but also for being powerful, dependable, and responsible in the process of making personal decisions that are directed toward strengthening the patient's ability to care for him or herself by participating in educational and training opportunities (Orem, 1995).In addition, ). In addition, the theory of diabetic self-care management, also known as TDSCM, was applied to the orems self-care theory in order to reinforce it. According to TDSCM, a person's ability to engage in self-care practices that lead to the desired outcome is impacted by both personal and environmental factors. A person's age, gender, marital status, religion, level of education, awareness of diabetes, and sense of self-efficacy are examples of personal factors, whereas environmental influences are limited to social support. The theory was selected because it is appropriate for examining the association between two variables in diabetic self-care practice and also because it has a cultural relevance (Sousa VD, 2005). AADE,2011).

**2.3.4 Health belief Model (HBM)**

In an effort to meet objectives number two and three, concepts of Health belief Model (HBM) developed by Hochbaum, Rosenstock and others in 1950s were utilized. This is a health promotion model aimed at monitoring changes in a patients behaviour geared towards recovery from a certain chronic disease and defines key factors that influence health behaviour of a patient, a nurse therefore need to communicate well, offer

supportive environment where policies, systems and environmental change strategies are designed to promote healthy behaviours and healthy choices readily available and easily accessible to both patients and their family members. this was utilized in objective in testing the effectiveness of the developed model. The elements of the Health belief model (HBM) were typically utilized during the process of putting the produced model into practice and evaluating its effectiveness. HBM is extremely effective in situations where health education is required to provide patients and their families with the knowledge and skills essential to empower patients to take control for their health and avoid the advancement of disease and related problems. It places an emphasis on modifying behaviors and preventing diseases. People who have TIIDM need to have a clear understanding of the dangers of developing complications, adjust their beliefs on illness management, and investigate the challenges and foundations that individuals face when participating in their own self-care. The primary emphasis is placed on the avoidance of disease and the encouragement of healthy ways of living (National Cancer Institute, 2005). A nurse is able to make predictions on the behaviors of patients, take the required actions to prevent the onset of a disease, and in turn, a patient is able to adopt to a certain behavior that results in risk reduction and regulation of blood glucose levels to normal range.(Clement S. 2018, to be exact).

In spite of all these facts, concepts of patient and family centred care model was the primary model that was utilized in the whole research. The work of Johnson, B. H., and Abraham, M.R. (2010), which involved working with patients and their families, served as the inspiration for this paradigm. It places more of an emphasis on the nurse

collaborating with the patient as well as the patient's family as opposed to simply "doing to" or for "them" (wagner, 1998).(Committee on quality of health care in America institute of medicine, 2016) The model provides the best approach in providing care to patients that is respectful of and responsive to an individual patient's preference needs and values. This includes ensuring that patients' values direct and guide all decisions made regarding their care. Care that is oriented on the patient and their family also offers direction on the fundamental ideas that are at the heart of the patient's and family's health situations. According to this model, healthcare providers respect, listen to, and honor the patient and family perspectives and choices they make (Institute for Patient- and Family-Centered Care. 2014). Patient and family knowledge, values, beliefs, and cultural backgrounds must be incorporated into the planning and delivery of care, which requires timely, complete, and accurate information in order to effectively participate in care and decision making. Patient and family knowledge, values, beliefs, and cultural backgrounds must also be incorporated into the planning and delivery of care. According to the Institute for Patient- and Family-Centered Care (2014), patients and their families need to be encouraged and supported in order to participate in self-care practices and decision making. This results in better health outcomes, an improved patient and family experience of treatment, higher satisfaction among staff members, and more judicious resource allocation. When it comes to interventions for patients who have diabetes, family members need to be included in the interventions that are geared towards addressing patients and family members, their beliefs and expectations, family stresses, and the allocation of the responsibilities in disease management (fisher, et al, 1998). Important

ideas for this framework include "dignity" and "respect," in which "health care practitioners listen to and honor patient and family perspectives and choices, knowledge, values, beliefs, and cultural background are all incorporated into planning and delivery of care," and "knowledge, values, beliefs, and cultural background are all incorporated into planning and delivery of care." In methods that are both reassuring and helpful, professionals in the health care industry communicate and share comprehensive, objective information with patients and their families. Patients and their families are provided with information that is timely, comprehensive, and accurate in order for them to successfully participate in the treatment and decision making, and they are encouraged and supported in participating in self-care activities. Learning takes place, and a positive outcome is obtained in terms of controlling blood glucose levels and reducing risk when families and health care personnel work together cooperatively. Team play takes place in a setting that is conducive to learning

## 2.4. Conceptual FrameWork

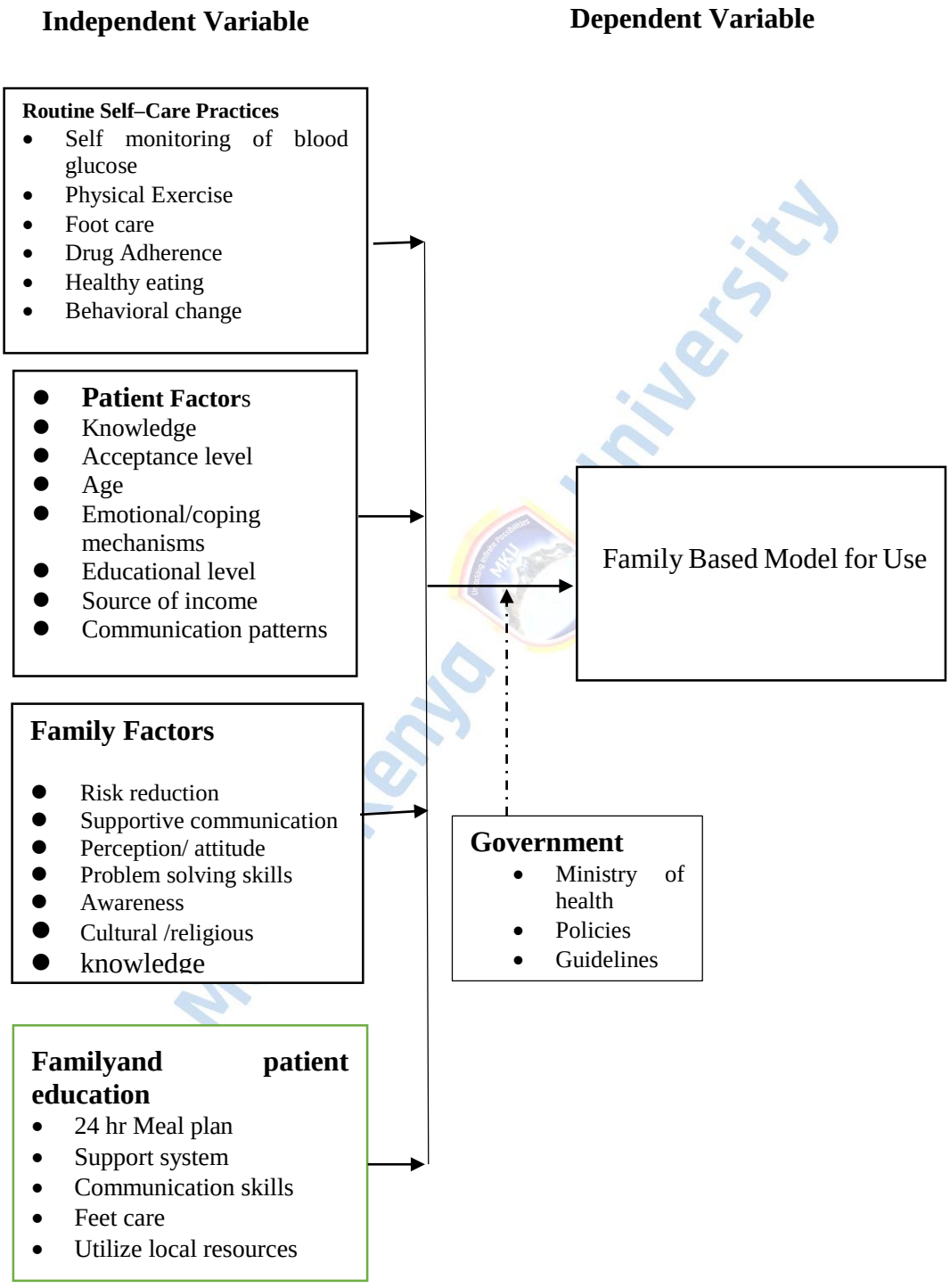


**Figure 2. 1: Conceptual framework**

**source: author**

## 2.5 Chapter Summary

Type 2 diabetes mellitus (DMTII) also called adult diabetes is a disorder that occur when a body has a problem in regulating and using blood glucose as fuel.

This condition has evolved into a global health crisis, with its prevalence tripling in the past few decades. Concequently, according to international diabetes federation(IDF, estimates show that the prevalence is rising at an alarming rate.In the year 2021 report showed a prevalence of 10.5 percent, subsequent projections showing that by the year 2040 to an alarmining prevalence will move up to 12.2%.( Magliano et ,al., 2021).

affecting approximately 462 million people, a figure projected to rise dramatically by 2035. Factors such as aging populations, urbanization, and lifestyle changes, including reduced physical activity and increased consumption of processed foods, have contributed to the surge in cases. Studies highlight that individuals over the age of 45, particularly those in urban areas, are disproportionately affected. In Kenya, for instance, the current prevalence stands at 5.4%, with urban areas showing higher rates compared to rural regions. Despite advancements in medical interventions, type 2 diabetes remains a leading cause of death globally, accounting for over one million deaths in 2017 alone. Effective management strategies emphasize the importance of self-care practices, including regular monitoring of blood glucose levels, adherence to prescribed medications, and lifestyle modifications such as smoking cessation and physical exercise. Family involvement plays a crucial role in managing DMTII, significantly impacting patients' ability to maintain glycemic control and engage in self-care activities.It is well

documented that patients who receive support from their families have better outcomes in controlling their blood glucose levels as compared to those who lach such support. Family-based diabetes education programs have been identified as effective in empowering patients and their families to take an active role in managing the disease. Empowerment strategies, introduced in the 1990s, emphasize the importance of patients taking control of their health through collaboration with healthcare providers and family members. By involving families in the education and management process, patients can better adhere to treatment plans, reduce the risk of complications, and improve their overall quality of life. Despite the challenges associated with managing diabetes, including the psychological burden of daily self-care, studies suggest that family support can mitigate these difficulties and contribute to better health outcomes.

**2.6 Summay of the Literature**

While there is substantial evidence on the rising prevalence and complications of DMTII, the literature does not adequately explore how family involvement in self-care practices is shaped by specific socioeconomic, cultural, and healthcare system challenges in different regions, particularly in Kenya and sub-Saharan Africa. Understanding how these factors interact with family support could provide key insights into improving DMTII management strategies in these areas, where healthcare resources may be scarce and cultural practices may differ significantly from Western contexts.

Further research is needed to identify the most effective strategies for involving families in diabetes care in these regions, taking into account local socioeconomic dynamics, cultural attitudes towards illness and caregiving, and the availability of healthcare

resources. Addressing this gap could help inform targeted interventions to improve the quality of life and health outcomes for DMTII patients in sub-Saharan Africa.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter comprises the study design, study location, target population, sampling procedures and techniques, methods used to arrive at the right sample size, tools used to collect data and their validity and reliability, study variables, pretesting, selection criteria, methods used to collect data and analysis of such data, Ethical considerations, and philosophical underpinnings of the methodology.

The development of this model aims at equipping patients and their family members with crucial knowledge, information, and skills essential to manage the disorder smoothly at their homes at their convenience time.

According to recent studies, Family members play a crucial role in management of DMTII (Torenholt et al, 2014). Their participation therefore can have a high impact in reducing multiple severe complications that have been witnessed in the past((Deakin et al., 2005)Mayberry et al, 2014)The uptake in the management of diabetes mellitus type two is quite low worldwide and therefore maintaining congruency between the study's purpose, objectives, model development, implementation, and evaluation is a fundamental principle in guiding this study.The goal is geared towards ensuring that the paradigms and concepts from theories that relate with objectives as guided by American association of diabetes education. were fully utilized especially during data collection phases.Institutional health care team to work., Community leaders to work closely through mutual agangement with patients and their families to manage the

disease at home in an easy manner and at the most convenient level possible. Similarly,involving patients and families need to put in place , more emphasizes to be on the benefits of family participation in caring for the sick.person. Astudy done by . Constantino et al., 2013) on importance of family partication diabetes management reported a massive reduction in disease-related complications and an unexpected abrupt decrease in morbidity and mortalities for those patients whose families fully participated in diabetes care. This can be well evidenced by a qualitative paradigm was used in this study. It sought to comprehend patterns, linkages, and relationships that exists between the phenomena being studied and related outcomes based on Key findings. An evidence-based model backed by the scientific rationale that used culturally/traditionally based pedagogy was used. The pedagogy included the utilization of high levels of good communication skills during training that emphasized lifestyle and behaviour change strategies that were goal-setting oriented, problem-solving, and motivational. The research questions were developed in a manner that depicted patients' and family members' degree of understanding in implementing self-care activities about diabetes care. As a result, these questions formed bases for the development, implementation, and evaluation of the model. The Patients' understanding of the importance of participating in self-care made them collaborate with not only members of their immediate family but also with the health care team and community members to get the best possible results. A variety of research approaches were utilized to achieve the goals of the study These approaches enabled the researcher to gain a comprehensive grasp of the phenomenon

under investigation in addition to providing a rich description of the phenomenon (Renjith et al., 2021).

### 3.2 Study Design

Study design can be defined as an overall strategy applied to integrate various components of study in an organized logical manner. Research design aims at ensuring that research problems are addressed effectively (Tierney, 2002). An analytical cross-sectional study is a type of quantitative, non-experimental research design that seeks to "gather data from a group of subjects at only one point in time (Zammar, 2022). The Main aim is to measure the association between an exposure and a disease condition or outcome in a defined population. In this study, An Analytical cross-sectional study design was utilized to assist in the analysis of qualitative and quantitative data as well as to assist in the creation of a model. Before the development of the model, baseline information was gathered based on the objectives of the study. The information gathered from patients and family members together with facts through literature review were cooperated and helped the researcher in model development. In the beginning, a researcher focused on cultivating trustworthy relationships with patients and their family members. All the ideas were considered during the research process, including the researcher's ideas and observations, patients' and family member's opinions and suggestions as well as literature review references and reports, which were later analyzed and incorporated into a model of self-care. The researcher also borrowed ideas and concepts from the framework developed by the American Association of Diabetes Educators (AADE) and diabetes Self management education and support (DSMES). The concepts of the latter helped in

empowering the members of family of the sick person become part of burden. The main goal was to help the sick individual achieve behavioural change in diabetes management The DSMES is structured around seven key self-care behaviours known as ADCES7 in diabetes care. According to Association of diabetes care and specialists (2023).In these framework , patient works with Educational specialists and diabetes experts who help them set priorities in improving own care (AlHaqwi et al., 2023). The emphasize is geared towards ensuring that the sick person assisted by families and health care set priorities in the following areas in diabetes care- healthy coping mechanisms,practice physical activity, adoption of good problems solving skills, reducing risks, self monitoring blood glucose, as well as adhering to prescribed medication . Sme of this concept was applied during data collection period. The overarching result was to establish a culture-sensitive realistic model of caregiving as the general consequence. The exercise required the full participation and cooperation of all stakeholders, including patients, family members, friends, and clinicians. The researcher required provision of access to mobile phones and web-based platforms that could be assist in consultations and additional advice where applicable. The health care team Provided instructional resources such as medication reminders and meal planning tools, as well as aggressive home visits. This was and taught patients in their homes. Any obstacle observed that could prevent family participation was immediately addressed and corrected. Conceiving countermeasures to these challenges was also noted, which included analyzing the situation and making adjustments when appropriate. Recommendations for areas of improvement based on the data collected were made

where both patients and members of the family were encouraged, making it possible for them to openly discuss their issues, and cultivate an atmosphere that motivates and inspires them.

### 3.2.1 Study Design Framework

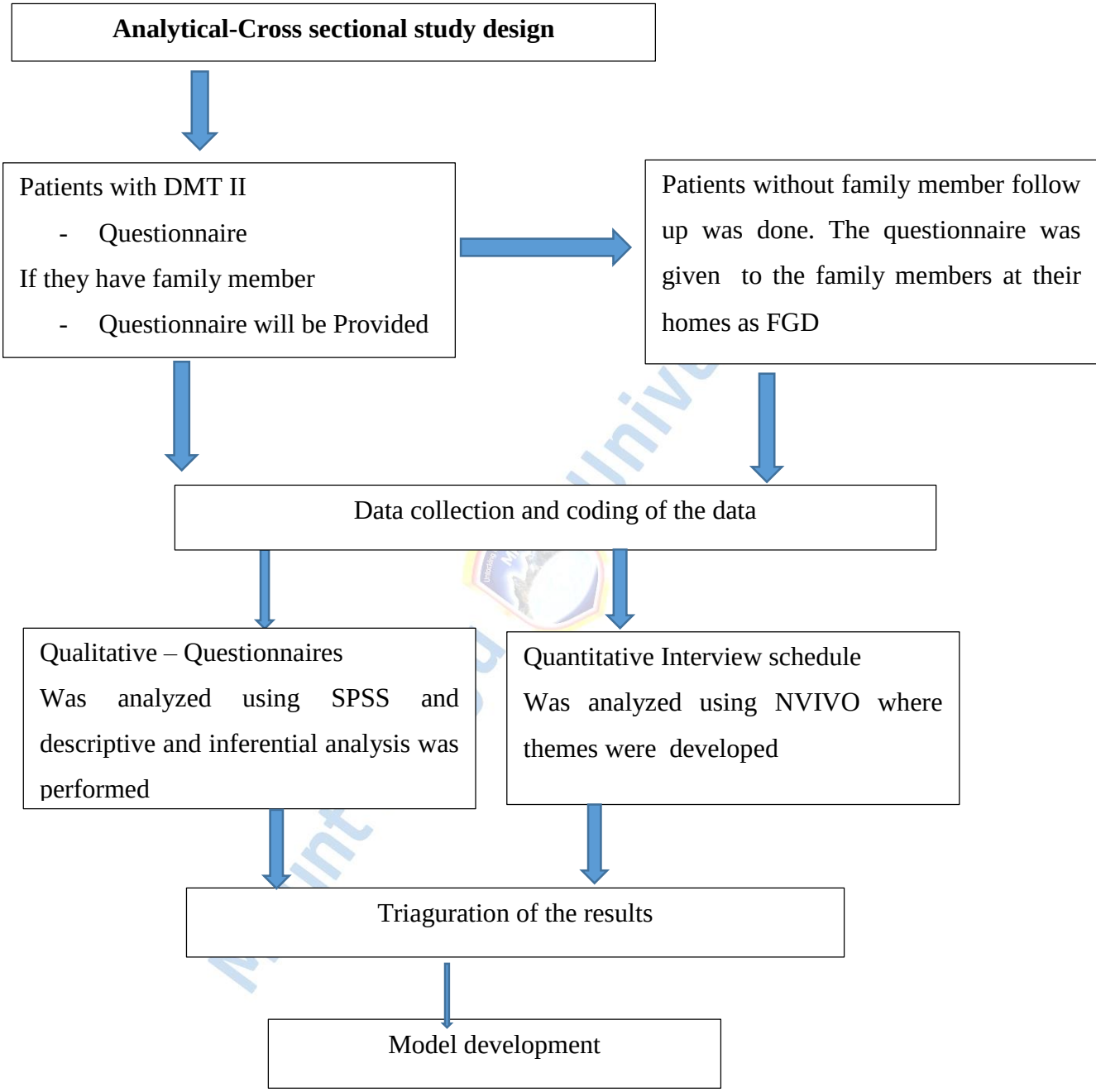


**Figure 3. 1: Study design framework**

### 3.3 Study Areas

Kitui County was the location of the research project. In what was formerly Kenya's Eastern region. The county may be found 170 kilometers Southeast of the capital city of Nairobi. Kitui is both the county's headquarter and most populous town. while Mwingi is a significant urban center in Kitui County. This was according to the census completed in 2019. Total population in Kitui County is approximately 1,136187. It shares its borders with the following counties: Tharaka Nithi and Meru to the north, Embu to the northwest, Machakos and Makueni to the west, the Tana River to the east and southeast, then Taita-Taveta to the south. Kitui County Referral Hospital (KCR) is the county's largest hospital, and it acts as a referral center for all other health facilities. The health facility offers promotive, preventive, curative, and rehabilitative, as well as in-patient services. The in-patient wards include Surgical, Paediatrics, Maternity, Medical, and Gynaecological. wards. Outpatient clinics include Diabetes, Ophthalmology, Ear, Psychiatry and Mental health, Nose and Throat and Comprehensive Care Center among others. Specialized services provided in the hospital include an operating theatre, renal unit and intensive care unit.The study was carried out in Kitui County and Referral Hospital, Diabetes outpatient Clinic and the sorounding areas.

### 3.4 Study Population

The term "study population" refers to any group of people that a researcher is interested during the study period.it is in this group where the Researcher uses in investigating and taking a sample of respondents. All study respondents who had been medically tested

and test turned positive for for type two diabetes mellitus a period of six months onwards in out patient diabetes mellitus were allowed to participate in this Study.

### 3.5 Study Variables

#### 3.5.1 Independent Variables

The independent variables included routine self-care practices, Patients, and family factors influencing family participation in diabetes self-care management, strategies that could use to help enhance their participation in management of the disorder.

The **routine diabetes self-care practices** - These were daily activities that both patients and their family members were expected to perform as one of the treatment moda*ies* for the disorder. The American Diabetes Association guideline recommendation for should practice the critical diabetes self- care activities inorder to maintain blood glucose levels ADA, 2021Such cases, there is decreased reduction in disease related complications including premature ,ortalities that could have otherwise occur. &=( ADAM 2021. To achieve such, full family participation, and support is usually required.

**Patient and family factors influencing their participation-** these included variables that push and direct both patient and their families towards helping one onother in diabetes self-care management. It could be sucg acts as motivation, empowerement, education among others. Other factors that could positively influence family participation indiabetes care include team workwork,good communication skills, practice,provision of support system at family level, including moral, psychological, physical, and financial support among others. In contrast, others factor such as cultural/ religious beliefs and practices, patients' and family attitudes and perceptions towards the disorder, inadequate

knowledge of the importance and consequences of failure to adhere to recommended daily self-care activities among others

**Modifying Factors:** These included expected support from the government—Ministry of Health headquarters, including health policy, guidelines, updating health care workers on any changes in treatment modalities as well.and employment of enough clinicians to offer quality care.

### 3.5.2 Dependent Variable

**Developed model of self0care** These are outcomes folloing aggressive intervenyion offered by diabetes team. These included patients who participated and cooperated with the rest, family members who agreed to participated and undergo educatcation and training m diabetes Care experts who willingly participated and gave out the best opinions on diabetes care especially on ways to go to ensure family members participated in suppoting one of their family diagnosed with the disease.

### 3.6 Sample Size Determination

Sample size, N, for a population which is more than 10,000 was calculated using Fisher's formula as follows,

According to Kasiulevicius, Sapoka, and Filipaviciute (2006).

$N = \frac{z^2 pq}{d^2}$

N = population sample

z = standard normal deviate corresponding to 95% confidence level (1.96)

confidence interval = 1.96

The prevalence of diabetes mellitus in Kitui county is 12% so it was used to calculate sample size.

p = proportion of the target population, with DM in kitui county rural at 12% was used.

q = 1-p

d = precision set at ±0.05

$= \frac{1.96^2\ (0.05\ x\ 1-0.12)}{0.05^2}$

3.84x 0.044

0.0025

= 67.584 = 68

Further, the study used healthcare workers who worked in diabetic clinics for interviewchdule. They comprised 5 experts, 2 clinical officers, 1 medical officer, 1 nutritionist, and 1 nursing officer. According to (Abdul et al., n.d.) a sample size of less than 10 respondents results in a sample size of 10. For our case, the sample of health care officers was Five , which resulted in a sample size of Five .

**3.7 Sampling Procedure Used in the Study.**

A systematic random sampling method was used in the diabetes outpatient clinic for the patients who had attended appointments on that particular day. The sampling frame included all DMTII individuals between the ages of 18 and 70 registered in the diabetes clinic and also patients who visited the clinic because of various reasons and were registered in diabetes registration book. The sampling interval was four. Therefore, every Fourth patient in the queue,who met inlusion criteria accepted to participate, was selected

to participate in the study. This took place at Kitui County Referral diabetes outpatient clinic waiting bay. Before recruitment, patients were scrutinized for inclusion criteria, given full information about the study, and then requested to sign a consent form, their details were then taken including biographic data, cell number, location where their residential area(name of the street, village, chief, village elder). This enabled the researcher to book an appointment with the patients were not accamponied by their family members for a home visit.

**3.8 Research Instruments**

A questionnaire is a research instrument used to collect data, It consists of a set of questions that study participants respond to. This method has several advantages, including being cost-effective, simple to develop, and not requiring extensive expertise. One significant benefit of using a questionnaire is that it often ensures anonymity, particularly when addressing sensitive topics and Isuues.

In this study, a pre-tested semi-structured questionnaire was used to gather detailed responses from the participants. The questionnaire assessed various factors such as the participants' socio-demographic and economic characteristics, routine self-care practices, and patient and family factors influencing family participation in diabetes self-care management was utilised The structure of the questionnaire was guided by a the American Association of Diabetes Educators (AADE). The hybrid of two scales - Summary of Diabetes Self-Care Activities (SDSCA) and diabetes self – care management questionnaire (DSMQ) .This helped in meeting objective number one *routine Self-care practices The tool was first subjected to verification by a group of five experts from

diabetes department, including two clinical officers with bachelor's degrees, a medical officer with a degree in medicine, nursing Officer with bachelors degree in nursing and a nutritionist. The tool underwent two rounds of verification. The first was through a pilot pre-test at Mwingi Level four Hospital, and the second was with a panel of experts from the diabetes clinic, who provided feedback, leading to further corrections.

Qualitative data were collected from family members through interviews in focused group discussions. The questionnaire was adapted from the SDSCA framework for routine self-care practice and modified to align with Dorothea Orem's self-care theory and the Health Belief Model, incorporating inputs from experts, patients, family members, literature reviews, and the researcher's ideas.

**Tool for assessing routine Self-care management.**

| Tool | Author | Strengths | Weaknesses |
|---|---|---|---|
| Summary of Diabetes Self Care Activities | **(**Aljohani , Kendall & Snider, (2016). | It has an Acceptalble Cronbach's alpha of 0.618 in reliability and 0.76 validity . Suitable in low income settings | Further comparative studies need to be done on it with other tools on diabetes self-care actvities |
| **Diabetes self-care management Questionnaire** | **(**Schimitt et al, 2013) | Good overall internal consistency Chonbach's alpha of 0.84. It provides adequate information on self-care practices associated with glycemis control. | The tool lacks inclusivity , for example the self care management of feet which very crucial in diabetes care**.** |

### 3.9 Selection Criteria

#### 3.9.1 Inclusion and exclusion criteria

The study included all the families whose one of their kin relative was clinically diagnosed with diabetes type II, above 18 years old and below 70 years old, both genders, mentally sound, with at least six months duration following diagnosis of type two diabetes mellitus.DMTII was included in this study, however, patients with cognitive impairment, other forms of diabetes, those below eighteen years old and those not willing to participate were all excluded from the study.

### 3.10 Pre-Testing

Pre-testing was conducted at Mwingi Level 4 Hospital to assess the reliability and validity of the research instruments. Mwingi Level 4 Hospital, located in central Mwingi Town off the Nairobi-Garissa Road, 47 kilometers from Kitui Town, provides both outpatient and inpatient services, similar to other Level 4 hospitals in Kenya. By pre-testing in this hospital setting, the research team ensured the instruments were suitable for assessing the intended variables and could produce consistent, accurate results when applied to the study population.

### 3.11 Data Quality Assurance

To ensure the validity and reliability of the data collected for the study, several measures were implemented. First, the research instrument underwent expert verification, where specialists reviewed the tool to confirm its comprehensiveness and accuracy. Additionally, pilot testing was conducted at Mwingi Level 4 Hospital, where the questionnaire was pre-tested with 10% of the sample size, allowing for significant modifications based on the initial findings.

Furthermore, feedback from a panel of experts from the diabetes clinic contributed to refining the tool, ensuring that it effectively captured the necessary data. The theoretical basis of the instrument was also carefully considered; it was grounded in established frameworks, including Dorothea Orem's self-care theory and the Health Belief Model, patient and family centered theory which helped ensure conceptual reliability.

To enhance the overall quality of the data collection process, research assistants were provided with intensive training over two days. This training focused on familiarizing

themselves with the data collection instruments and methods as well as practical approaches to engaging with study participants. Finally, the data collected was monitored daily by the supervisor for accuracy, completeness, and clarity, with oversight from the principal investigator. These combined measures aimed to uphold the integrity of the research findings and support robust conclusions.

### 3.12 Data collection procedure

At the beginning of the data collection exercise, an overview introduction of the study was done at the diabetes outpatient clinic in kitui County Refferal outpatient diabetes clinic using a powerpoint presentation tool. A narrative video was developed and audio-taped using a tape recorder. This applied to all patients and their family members who visited or had an appointment with a physician at that time. The data was collected in two phases where phase I comprised of data collection from patients using questionnaires. Similarily the questionnaire was provided to the patients who were found to be accompanied by their family members. For those who were not accompanied by a family member the data was collected in Phase II, where they were visited at their homes or the residence of choice during this time , they were requested to produce at lease one family member who was to take charge, to participate in the study.

Interviews were recorded using a digital voice recorder and transcribed verbatim. Each session took a duration of an average of 20 minutes in length. A trained officer on record monitoring was recruited as the discussion continued who also made comments about non-verbal communication among the study respondents (Del Giacco et al., 2020). Transcripts were compared with tapes for accuracy. Pamphlets and other diabetes-related

materials were distributed to the five participants in the focused group. Concepts from three models theories including the health belief model, Simmons et al, delf. Care theory and patient centered care model were applied in the FGD interview (Del Giacco et al., 2020). at first, consent was obtained and granted by the respondents then the first part which had social demographics was filled in by the respondents. confidentiality was highly maintained (Del Giacco et al., 2020).

### 3.13 Data Management

To ensure the quality of data, edit checks were performed to verify data as needed in each question and any missing information or clarification was corrected. It was then cleaned and coded. Confidentiality and anonymity of the participants' information were ensured during the period of the Study.

### 3.14 Data Analysis

Data was analyzed where the descriptive analysis was used to explain the demographic characteristics such as gender, marital status, residence, religion educational levels. Routine self-care practices was analysed using descriptives, infereal and thematic methods, this helped identified as whether good or poor. The association. This helped in getting detailed information general routine self0care practice including the changes faced.

Relationship between patients, family factors and family participation was also analysed analyzed. Pearson chi-square, and T-test at an alpha of 0.05. was applied .tQualitative data was interpreted using thematic analysis from the data collected from interview schedules. NVIVO software was used to code interviews and themes were generated

from the analysis. In put from patients, and family members following thematic method m observationmmade during interview schedulesm ediabetes experts inputs, researchers observation, video recorded information was collected. After data was analyzed the results were triangulated to come up with the model of the study.

### 3.15 Ethical Considerations

The respondent's anonymity was maintained. This was done where data collected tools were coded and names of study respondents were not displayed. Research assistants were trained on mostly in handling of respondents profesionally.a romm was kept purposely for reseach work. During recruitment, each respondent who met inclusion criteria was requested to meet a resercher in a private room which was next door to the outpatient clinic, They were given information about the study,mostly on A consent was sought from study respondents. This also applied to family based focused group. Those demonstrated willingness to participate were given a written consent forms to sign. The actual data collection commenced after the researcher received the approval from Kitui County Research Committee, Mount Kenya University scientific research and Ethical Committee, National commission science, Technology and Innovation (NACOSTI). Respondents. Confidentiality was ensured, the objective of the study was explained, and risks and benefits were all conveyed to them. However, the respondents were informed that they were at liberty to withdraw from study any time they felt like.

# CHAPTER FOUR

# RESEARCH FINDINGS AND DISCUSSIONS

## 4.1 Introduction

This section of the study includes presenting the study results and findings and a discussion of the study objectives. The sub-sections of this chapter are as follows: questionnaire return rate, reliability analysis, determination of the routine self-care practices among DMTII patients, determination of patients' related factors influencing family participation in self-care among DMTII patients, determination of family factors influencing their participation in self-care among DMTII patients, establishment of interventional strategies to improve family participation in self-care among DMTII and evaluation of the effectiveness of the developed model on improving family participation in self-care management among DMTII patients at Kitui county.

## 4.2 Questionnaire Return Rate

This survey showed a response rate of 83.8%, indicating a nonresponse bias of 16.2%. Similarly, if the response rate is 20%, the nonresponse bias increases to 80%, according to (Fincham, 2008). Researchers should aim for response rates of around 60% in most research studies, as this is the expected standard set by the researcher. Representativeness pertains to the degree of similarity between the sample selected for the questionnaire research and the target population, allowing readers to assess the study's findings confidently, knowing that the respondents in the sample reflect various aspects of the population comprehensively. Nonresponse bias refers to the absence of responses from potential participants in the sample or population. Table

4.1 below indicates the questionnaire return rate for the study.

**Table 4. 1 : Questionnaire Return Rate**

| Sample size | Return rate | Frequency | Non-participants | Frequency |
|---|---|---|---|---|
| Patients (68) | 57 | 83.8% | 11 | 16.2% |
| Total (68) | 57 | 83.8% | 11 | 16.2% |

**Source Field Data (2023)**

According to Table 4.1, the study indicated an 83.8% return rate. This was higher than the 80% threshold, meaning the study did not suffer from non-response bias. As a result, the study population was well-represented, and the findings can be generalized to the broader population of patients with Type 2 Diabetes Mellitus (DMTII) in Kitui County.

### 4.3 Reliability Analysis

Reliability analysis was performed and the results were presented according to Table 4.2 below.

**Table 4. 2: Reliability analysis**

| Variables | No of items | Cronbach's Alpha coefficient |
|---|---|---|
| To determine the routine self-care practices among DMTII patients in Kitui County. | 15 | 0.871 |
| To determine patients' related factors influencing family participation in self-care among DM TII patients at Kitui County. | 12 | 0.752 |
| To determine factors influencing family participation in self-care among DMTII patients at Kitui County. | 11 | 0.884 |
| To establish the best intervention strategies to improve family participation in self-care among DMTII at Kitui County. | 12 | 0.756 |

| | | |
|---|---|---|
| To evaluate the effectiveness of the developed model on improving family participation in self-care management among DMTII patients at Kitui County. | 12 | 0.9232 |
| All questionnaires items | 49 | 0.8372 |

**Source Field Data (2023)**

Table 4.2 indicates that Cronbach's Alpha for items used in assessing routine self-care practices among Type 2 Diabetes Mellitus (DMTII) patients in Kitui County was 0.871, demonstrating the high reliability of the questionnaire parameters for this study. A Cronbach's Alpha of 0.752 was reported for the second objective, indicating that the parameters were reliable, as values above 0.7 are generally considered acceptable for reliability. For determining factors influencing family participation in self-care, Cronbach's Alpha was 0.884. The last two objectives recorded values of 0.756 and 0.9232, further supporting the reliability of the study tools. The overall reliability score was 0.8372, signifying that the research instrument was robust and appropriate for data collection, thus successfully achieving the study's objectives.

### 4.4 Demographic Analysis

Demographic data help researchers gain a comprehensive understanding of the characteristics of a population, such as age, gender, ethnicity, education level, income, marital status, and many more. This information allows researchers to identify patterns, trends, and variations within different demographic groups. It helps in providing the characteristics of the study population hence ensuring the generalizability of research findings. In table 3 below indicated the demographic characteristics of the respondents under the study.

**Table 4. 3: Demographic Analysis of the Study Respondents**

| Test Item | | F | % |
|---|---|---|---|
| Gender | Male | 35 | 61.4% |
| | Female | 22 | 38.6% |
| Age of the respondent | 18-28 | 9 | 15.8% |
| | 29-38 | 13 | 22.8% |
| | 39-48 | 5 | 8.8% |
| | 49-58 | 8 | 14.0% |
| | Over 59 years | 22 | 38.6% |
| Residence | Rural | 28 | 49.1% |
| | Urban | 29 | 50.9% |
| | Married | 15 | 26.3% |
| | Divorced | 8 | 14.0% |
| | Single | 19 | 33.3% |
| | Separated | 4 | 7.0% |
| | Widowed | 11 | 19.3% |
| | Others please specify | 0 | 0.0% |
| Level of education | Never gone to school | 11 | 19.3% |
| | Primary | 10 | 17.5% |
| | Secondary | 14 | 24.6% |
| | College | 18 | 31.6% |
| | University | 4 | 7.0% |
| | Others | 0 | 0.0% |
| Religion | Catholic | 19 | 33.3% |
| | Christian | 22 | 38.6% |
| | Hinduism | 2 | 3.5% |
| | Muslim | 13 | 22.8% |
| | Others | 1 | 1.8% |
| Social activity | Employed | 13 | 22.8% |
| | Farming | 8 | 14.0% |
| | Business | 24 | 42.1% |
| | Unemployed | 8 | 14.0% |
| | Others | 4 | 7.0% |
| Income Rate | 0-5000 | 11 | 19.3% |

| | | | |
|---|---|---|---|
| | 6000-11000 | 16 | 28.1% |
| | 12000-17000 | 13 | 22.8% |
| | 18000-23000 | 8 | 14.0% |
| | More than 24000 | 9 | 15.8% |
| | Others | 17 | 29.8% |
| When were you diagnosed with diabetes mellitus type II | Below 2 years ago | 16 | 28.1% |
| | 3-5 years ago, | 22 | 38.6% |
| | 6-8 years ago | 13 | 22.8% |
| | More than 9 years | 6 | 10.5% |
| Where was the diagnosis made? | Home | 23 | 40.4% |
| | Hospital | 31 | 54.4% |
| | Any other please specify | 3 | 5.3% |
| Who takes care of you? | Friends | 12 | 21.8% |
| | Colleagues | 7 | 12.7% |
| | Family members | 22 | 40.0% |
| | Any other | 14 | 25.5% |
| What are your major constraints? | Financial | 19 | 34.5% |
| | Physical | 7 | 12.7% |
| | Psychological | 17 | 30.9% |
| | Any other | 12 | 21.8% |
| Are you diagnosed with other diseases apart from DMTII? | Heart disease | 0 | 0.0% |
| | Hypertension | 26 | 45.6% |
| | Foot disease | 3 | 5.3% |
| | Kidney disease | 1 | 1.8% |
| | Eye disease | 13 | 22.8% |
| | Any other | 14 | 24.6% |
| How did you react after receiving the news after you informed that you had DMTII? | Shocked | 8 | 14.0% |
| | Denied how true it could be | 4 | 7.0% |
| | Accepted the outcome | 22 | 38.6% |
| | Decided to move on with the life | 12 | 21.1% |
| | Fainted following the bad news | 3 | 5.3% |
| | Any other please specify | 8 | 14.0% |

**Source Field Data (2023)**

The study indicated that majority of the respondents were males 35 (64.1%) had DMTII as compared to 33 (48.6%) of the Female counterpants. This study showed a similar findings with the work of Kautzky- wille (2023) which reported higher prevalence of Type two diabetes mellitus in males than females.

Majority of DMTII patients were found to be over 59 years of age with a response rate of 22(38.6%) of total respondents, followed by those who aged between 29 – 38 years with a response rate of 13(22.8%) respondents. The respondents who aged between 18 – 28 years, 39 – 48 years and 49 – 58 years were represented by a response rate of 9(15.8%), 5(8.8%) and 8(14.0%) of total respondents respectively. The study further indicated that majority of the DMTII patients lived in urban settings with a response rate of 29(50.9%) of total respondents while those who lived in rural parts were represented with a response rate of 28(49.1%) respondents. Literature in this study has clearly reported that 16% of individuals with diabetes live in urban areas as compared to 12 % in rural areas.

High frequency of DMTII patients were found to be single with a response rate of 19(33.3%), followed by those who were married with a response rate of 15(26.3%), while those who were widowed were represented by a response rate of 11(19.3%) of total respondents, the study further indicated that the respondents who were found to be divorced, separated were represented by a response rate of 8(14.0%) and 4(7.0%) respondents respectively. Most of the respondents had been education up to college level which were represented with a response rate of 18(31.6%), followed by those who had attained secondary level of education which were represented by a response rate of 14(24.6%) of total respondents. Those respondents who were found to have never went

to school, had reached primary level of education and those who were found to have gone up to university education were represented by a response rate of 11(19.3%), 10(17.5%) and 4(7.0%) of total respondents. Majority of the study respondents who had DMTII were Christian and Catholics which were represented by a response rate of 22(38.6%) and 19(33.3%) respectively, while the Muslim, Hindu and the others were represented by a response rate of 13(22.8%), 2(3.5%) and 1(1.8%) of total respondents. The study found that majority of the DMTII patients had ventured into business with a response rate of 24(42.1%) of total respondents while those who had ventured to employment, farming, those who were unemployed and other activities were represented by a response rate of 13(22.8%), 8(14.0%), 8(14.0%) and 4(7.0%) respondents respectively. Similarly, the income rate of the respondents was found to have an average of 6,000 – 11,000 with a response rate of 28.1% of total respondents followed by those who earned between 12,000 – 17,000 with a response rate of 13(22.8%) while those who earned over 24,000 were represented by a response rate of 9(15.8%) total respondents. The study indicated that majority of the study respondents were diagnosed with diabetes mellitus type II between 3 – 5 years ago with a higher response rate of 22(38.6%) followed by those who were diagnosed below 2 years ago with a response rate of 16(28.1%) while those who were diagnosed over 9 years ago were represented by a response rate of 6(10.5%) and they were diagnosis at hospital which were represented by a response rate of 31(54.4%) while those who were diagnosed at home were represented with a response rate of 23(40.4%) and those who were diagnosed at another places were represented by a response rate of 3(5.3%) of total respondents. The study indicated that majority of the respondents 26(

45.6%) had also been diagnosed with hypertension.Similar findings were reported by Waeber & Luis (2001). which showed that the incidence of hypertension was more in patients diagnosed with type 2 diabetes mellitus. This was followed by those who were diagnosed with any other with a response rate of 14(24.6%) while for eye disease and diabetes foot were represented by a response rate of 13(22.8%) and 3 (5.3% respectively while a response rate of 17(29.8%) indicated other diseases. Family member were majority of the members who took care of the DMTII patients with a response rate of 22(40.0%) while those who were taken care by friends, colleagues and other people were represented by a response rate of 21.8%, 12.7 and 25.5% respondents respectively. There were two major constraints among the DMTII patients which were financial and psychological which had a representation rate of 19(34.5%) and 17(30.9%) respondents respectively, some of the other constraints included physical harm and any other with a response rate of 7(12.7%) and 12(21.8%) respondents respectively.

Most of the DMTII patients accepted the outcome of the results after they tested positive which were represented by a response rate of 22(38.6%), followed by those who decided to move on with the life which were represented by a response rate of 12(21.1%) of total respondents, those who were found to be shocked and indicated other specify were represented by a response rate of 8(14.0%) each.

### 4.5 Determination of the routine self-care practices for patients with Type 2 diabetes

#### 4.5.1 Descriptive analysis on determination of routine self-care practices

Table 4.4 indicated the analysis on the determination of the routine self-care practices among the DMTII patients and it was represented in form of frequencies and percentages and the results were tabulated.

**Table 4. 4: Descriptive analysis on determination of the routine self-care practices**

| Test item | | F | % |
|---|---|---|---|
| Develop healthy eating and activity plan. | Yes | 29 | 50.9% |
| | No | 28 | 49.1% |
| Cook following nutritionist's instructions. | Yes | 34 | 59.6% |
| | No | 23 | 40.4% |
| Feed as per doctors instructions with the right amount, time and consistency. | Yes | 24 | 42.1% |
| | No | 33 | 57.9% |
| Monitor blood sugars on daily basis by myself | Yes | 28 | 49.1% |
| | No | 29 | 50.9% |
| Recognize the signs of high or low blood glucose levels. | Yes | 27 | 47.4% |
| | No | 30 | 52.6% |
| Know the action to take when blood sugar levels is low or high. | Yes | 30 | 52.6% |
| | No | 27 | 47.4% |
| Take it as my responsibility to do exercise. | Yes | 26 | 45.6% |
| | No | 31 | 54.4% |
| Take drugs as per doctors instructions without missing | Yes | 28 | 49.1% |
| | No | 29 | 50.9% |
| Seek medical intervention when sick | Yes | 33 | 57.9% |
| | No | 24 | 42.1% |
| Monitor my feet, eyes and skin to catch the problem early | Yes | 31 | 54.4% |
| | No | 26 | 45.6% |
| Always put on closed shoes | Yes | 23 | 40.4% |
| | No | 34 | 59.6% |
| Consult when unable to handle a particular task | Yes | 35 | 61.4% |
| | No | 22 | 38.6% |
| Intentionally take alcohol and or smoke cigarette and other substances. | Yes | 33 | 57.9% |
| | No | 24 | 42.1% |
| Manage stress and deal with daily diabetes care | Yes | 37 | 64.9% |
| | No | 20 | 35.1% |
| Buy diabetes supplies and store them properly | Yes | 26 | 45.6% |
| | No | 31 | 54.4% |

**Source Field Data (2023)**

Out of the total respondents, 29 individuals responded with "Yes," indicating that they have developed a healthy eating and activity plan. This accounts for approximately 50.9% of the total respondents. On the other hand, 28 individuals responded with "No," representing approximately 49.1% of the respondents who have not developed a healthy eating and activity plan. To determine the "Cook following nutritionist's instructions," two parameters were measured: "Yes" and "No." The frequency of the "Yes" response was 34, which corresponds to a percentage of 59.6%. On the other hand, the frequency of the "No" response was 23, accounting for a percentage of 40.4%. These statistics provide insight into the participants' adherence to the nutritionist's instructions when cooking. The majority of participants (59.6%) reported following the instructions, while a significant portion (40.4%) indicated not following them. These findings suggest that a considerable proportion of individuals may have deviated from the prescribed instructions when preparing meals, indicating a potential area for further exploration or intervention to promote adherence to nutritional guidelines.

Among the respondents, 24 individuals (42.1%) answered "Yes," indicating that they adhere to the nutritionist's instructions for feeding. These individuals make conscious efforts to follow the prescribed guidelines provided by their doctors, ensuring that they provide the right amount of feed at the appropriate times, and maintain consistency in their feeding routine. On the other hand, 33 individuals (57.9%) responded with "No," implying that they do not strictly follow the nutritionists's instructions when it comes to feeding. These individuals may have various reasons for not adhering to the prescribed

guidelines, such as personal preferences, challenges in maintaining consistency, or lack of awareness regarding the importance of following the instructions.

In the study, one of the test variables examined was the practice of monitoring blood sugars on a daily basis by oneself. The parameter used to measure this variable was a simple binary choice between "Yes" and "No." Out of the total sample size, 28 participants (representing 49.1% of the sample) reported that they monitor their blood sugars on a daily basis. On the other hand, 29 participants (50.9% of the sample) indicated that they do not engage in this practice. To determine how respondents are able to detect or "Recognize the signs of high or low blood glucose levels" was administered to the participants, with two response options: "Yes" and "No." Among the participants, 27 individuals responded "Yes," indicating that they are able to detect/ recognize the signs of high or low blood glucose levels. This corresponds to a frequency of 27. The percentage of participants who responded "Yes" is calculated as 47.4%. On the other hand, 30 participants responded "No," indicating that they were not able to recognize the signs of high or low blood glucose levels. 30 respondents answered "Yes," indicating that they possess knowledge about the appropriate actions to take when blood sugar levels are low or high. This accounts for 52.6% of the total responses. On the other hand, 27 respondents answered "No," indicating a lack of knowledge regarding the necessary actions. This represents 47.4% of the total responses. A total response of 26 individuals (45.6%) answered "Yes," indicating that they perceive it as their responsibility to engage in exercise. On the other hand, 31 individuals (54.4%) answered "No," indicating that they do not perceive it as their responsibility to exercise.

Out of the total number of respondents, 28 individuals (49.1%) answered "Yes," indicating that they adhere to their doctor's instructions and do not miss taking their prescribed drugs. On the other hand, 29 individuals (50.9%) answered "No," indicating that they do not consistently follow their doctor's instructions regarding medication and may occasionally miss taking their prescribed drugs. In examining the "Seek medical intervention when sick," the parameters consist of "Yes" and "No." Among the respondents, 33 individuals (57.9%) answered "Yes," indicating that they actively pursue medical intervention when they are ill. Conversely, 24 individuals (42.1%) answered "No," indicating that they do not seek medical intervention when they are sick. The study further indicated that 31 individuals (54.4%) answered "Yes," indicating that they actively monitor their feet, eyes, and skin to catch any problems early. On the other hand, 26 individuals (45.6%) answered "No," indicating that they do not engage in regular monitoring of their feet, eyes, and skin for early disease detection. Among the total number of respondents, 23 individuals (40.4%) answered "Yes," indicating that they consistently wear closed shoes. On the other hand, 34 individuals (59.6%) answered "No," indicating that they do not always put on closed shoes.

The study determined whether the patients were Consulting when unable to handle a particular task"this was evaluated based on the parameters "Yes" and "No." Out of the total respondents, 35 individuals (61.4%) indicated that they consulted with others and relevant authorities when they were unable to handle a particular task. This implies that they are able to recognize the importance of seeking assistance or guidance when faced with challenges. Conversely, 22 individuals (38.6%) answered "No," indicating that they

prefer not to seek help and instead handle tasks independently. In analyzing the test variable "Intentionally take alcohol and/or smoke cigarettes and other substances," the parameters include "Yes" and "No." Out of the total number of respondents, 33 individuals (57.9%) answered "Yes," indicating that they intentionally consume alcohol and/or smoke cigarettes and other substances. Conversely, 24 individuals (42.1%) answered "No," indicating that they do not engage in intentional alcohol consumption or cigarette smoking.

Out of the total number of respondents, 37 individuals (64.9%) answered "Yes," indicating that they are capable of managing stress and coping with the daily care required for diabetes. On the other hand, 20 individuals (35.1%) answered "No," indicating that they struggle with managing stress and dealing with the demands of daily diabetes care. Out of the total number of respondents, 26 individuals (45.6%) responded with "Yes," indicating that they do purchase diabetes supplies and ensure proper storage. Conversely, 31 individuals (54.4%) responded with "No," indicating that they do not engage in buying diabetes supplies or storing them appropriately.

In comparison to other studies on routine self-care practices among patients with diabetes mellitus type II, the findings of this study align with existing literature. The results reveal that 29(50.9%) of respondents have developed a healthy eating and activity plan, while 28( 49.1% have not. Similarly, studies by (Patel et al., 2024) emphasize the importance of lifestyle modifications, including diet and exercise, in managing diabetes, but also highlight that a significant proportion of patients struggle with adhering to these recommendations.

The study found that 59.6% of participants cook following a nutritionist's instructions, while 40.4% do not, which aligns with the results of (Baral et al., 2022) who found that adherence to dietary recommendations can be challenging for patients due to various social, economic, and personal factors. This is further emphasised by the fact that only 42.1% of respondents follow doctors' instructions on the right amount, time, and consistency of feeding, while 57.9% do not.

Regarding blood sugar monitoring, only 49.1% of respondents indicated that they monitor their blood sugars daily, consistent with findings from (Mathew et al., 2023) who reported that regular self-monitoring of blood glucose is often inconsistent among diabetes patients, especially in low-resource settings. Moreover, the ability to recognize signs of high or low blood glucose was reported by 47.4% of the participants, which is similar to results from studies by (Silbert et al., 2018) suggesting that many patients lack sufficient knowledge about hypoglycemia and hyperglycemia symptoms.

Furthermore, 45.6% of participants reported taking responsibility for exercise, while 54.4% do not. These findings are consistent with the work of (Cartagena et al., 2021) who found that many patients with DMTII struggle with incorporating regular physical activity into their routine, despite its known benefits.

### 4.5.2 Inferential analysis on the determination of the routine self-care practices

The inferential analysis was done using a one-sample t-test among the patients who were found to have DMTII in Kitui County regarding self-care practices, and the results are presented in Table 4.5. To determine the "Develop healthy eating and activity plan," a one-sample test was used, which produced the following results: a t-value of 22.322 and

a significance level (Sig.) of .000, indicating that the results were statistically significant, with a mean difference of 1.491. This reflects the extent of the change or effect related to the development of healthy eating and activity plans. The t-value indicates the magnitude of the difference between the observed mean and a hypothetical mean, with higher values indicating a larger difference. The study found that "Always put on closed shoes" was analyzed using a one-sample test, which yielded a t-value of 24.352. This indicates the t-value is significantly different from zero, with a p-value (Sig. 2-tailed) of .000, indicating a highly significant result. The mean difference between the sample mean and the hypothesized population mean is 1.596. Since the t-value was the highest, the study concluded there was a statistically significant difference between the observed sample mean and the hypothesized population mean, supporting the notion that individuals tend to consistently wear closed shoes. The "Manage stress and deal with daily diabetes care" was analyzed using a one-sample test and had the lowest t-value according to Table 5 above. The t-value obtained was 21.182, indicating a significant difference between the observed mean and the hypothesized population mean. The significance level (Sig. 2-tailed) was recorded as .000, which is below the conventional threshold of .05, suggesting strong evidence against the null hypothesis. The mean difference of 1.351 signifies the extent of deviation between the observed sample mean and the hypothesized population mean. Overall, these results indicate that there is a substantial difference in how individuals manage stress and handle their daily diabetes care, as supported by the significant t-value and low p-value.

**Table 4. 5: One sample t-test self-care practices among DMTII patients**

| One-Sample Test | Test Value = 0 | | | | | |
|---|---|---|---|---|---|---|
| **Test Item** | **t** | **df** | **Sig.** | **Mean Difference** | **95% CI Lower** | **Upper** |
| Develop healthy eating and activity plan. | 22.322 | 56 | .000 | 1.491 | 1.36 | 1.63 |
| Cook following nutritionist's instructions. | 21.408 | 56 | .000 | 1.404 | 1.27 | 1.53 |
| Feed as per doctors' instructions with the right amount, time and consistency. | 23.932 | 56 | .000 | 1.579 | 1.45 | 1.71 |
| Monitor blood sugars on daily basis by myself | 22.585 | 56 | .000 | 1.509 | 1.37 | 1.64 |
| Recognize the signs of high or low blood glucose levels. | 22.876 | 56 | .000 | 1.526 | 1.39 | 1.66 |
| Know the action to take when blood sugar levels is low or high. | 22.087 | 56 | .000 | 1.474 | 1.34 | 1.61 |
| Take it as my responsibility to do exercise. | 23.196 | 56 | .000 | 1.544 | 1.41 | 1.68 |
| Take drugs as per doctors' instructions without missing | 22.585 | 56 | .000 | 1.509 | 1.37 | 1.64 |
| Seek medical intervention when sick | 21.539 | 56 | .000 | 1.421 | 1.29 | 1.55 |
| Monitor my feet, eyes and skin to catch the problem early | 21.878 | 56 | .000 | 1.456 | 1.32 | 1.59 |
| Always put on closed shoes | 24.352 | 56 | .000 | 1.596 | 1.47 | 1.73 |
| Consult when unable to handle a particular task | 21.305 | 56 | .000 | 1.386 | 1.26 | 1.52 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Intentionally take alcohol and or smoke cigarette and other substances. | 21.539 | 56 | .000 | 1.421 | 1.29 | 1.55 |
| Manage stress and deal with daily diabetes care | 21.182 | 56 | .000 | 1.351 | 1.22 | 1.48 |
| Buy diabetes supplies and store them properly | 23.196 | 56 | .000 | 1.544 | 1.41 | 1.68 |

**Source Field Data (2023)**

The study concluded that all the parameters used to assess self-care practices among DMTII patients had a statistical relationship, as all the p-values obtained were 0.000, which is less than 0.05, indicating a significant relationship between self-care practices and managing DMTII among patients in Kitui County.

Compared to similar studies on self-care practices among diabetic patients, the results from this research emphasize the importance of healthy lifestyle interventions in managing diabetes. For instance, the analysis of "Develop healthy eating and activity plan," with a t-value of 22.322 and a p-value of .000, demonstrates a highly significant result, similar to findings by Delahanty et al. (2020), where structured lifestyle changes were shown to significantly improve glycemic control among diabetic patients. Similarly, the parameter "Always put on closed shoes," which had the highest t-value of 24.352, aligns with research by Reddie et al. (2023) highlighting the importance of foot care in preventing diabetic complications. Additionally, the observation that "Manage stress and deal with daily diabetes care" had the lowest t-value of 21.182, while still statistically significant, is consistent with findings from Eshete et al. (2023), where stress

management was noted as a challenging but essential component of comprehensive diabetes care.

Overall, the study's conclusion that all self-care practices measured had statistically significant p-values aligns with existing literature, which underscores the multifaceted nature of diabetes management, as illustrated by Ernawati et al. (2021) in their work on comprehensive diabetes self-care.

### 4.5.3 Thematic analysis on the determination of the routine self-care practices

The study determined the self-care practices among DMTII patients, and the following are some of the factors indicated by the respondents that would help them improve their self-care practices:

> *"Assessing the patient's understanding of their condition and knowledge about diabetes management. Evaluate their awareness of the importance of self-care practices, including diet, physical activity, medication adherence, and blood glucose monitoring."*
>
> *"Assess the patient's adherence to prescribed medications, including oral hypoglycemic agents or insulin. Discuss any challenges they may face in taking medications regularly, such as forgetfulness, side effects, or cost-related concerns."*
>
> *"Assess the patient's emotional well-being and their coping mechanisms. Diabetes can be emotionally challenging, so it is crucial to address any feelings of depression, anxiety, or diabetes-related distress. Encourage support systems, counseling, or appropriate referrals if needed."*

*"Exploring the patient's stress levels and their ability to manage stress effectively. Discuss stress management techniques such as relaxation exercises, meditation, counseling, or support groups that can help in coping with the emotional and psychological impact of diabetes."*

*"Assessing the patient's adherence to prescribed medications, including oral hypoglycemic agents or insulin. Discuss any challenges they may face in taking medications regularly, such as forgetfulness, side effects, or cost-related concerns."*

*"Evaluating the patient's current level of physical activity and their willingness to engage in regular exercise. Discuss the benefits of exercise in managing diabetes, including improved insulin sensitivity, weight management, cardiovascular health, and stress reduction."*

*"Evaluating the patient's social network and support systems. Identify the availability of family, friends, or support groups that can offer encouragement, assistance, and motivation in their self-care efforts."*

The study indicated that it is essential to approach the determination of self-care practices among DMTII patients holistically, considering these aspects and collaborating with the patient to develop an individualized self-care plan that suits their unique needs and circumstances.

### 4.6 Determination of the patients' related factors influencing family participation.

The second objective was used to determine the patients' related factors influencing family participation in self-care among DMTII patients, and the study results were presented next.

#### 4.6.1 Descriptive analysis on determination of the patients' related factors influencing family participation.

A descriptive analysis was conducted on the patients' related factors influencing family participation in self-care among DMTII patients, and the results were presented in frequencies and percentages, as shown in Table 4.6.

**Table 4. 6: Descriptive analysis on the determination of the patients' related factors influencing family participation in self-care among DMTII patients**

| Test Item | | F | % |
|---|---|---|---|
| How would you rate the severity of the DMTII? | Mild | 19 | 33.3% |
| | Moderate | 17 | 29.8% |
| | Severe | 21 | 36.8% |
| Does the patient have any complications related to DMTII? | Yes | 22 | 38.6% |
| | No | 35 | 61.4% |
| How involved are you in the your self-care activities? | Strongly agree | 4 | 7.0% |
| | Agree | 10 | 17.5% |
| | Neutral | 11 | 19.3% |
| | Disagree | 16 | 28.1% |
| | Strongly disagree | 16 | 28.1% |
| What specific self-care activities do you do? | Medication Management | 12 | 21.1% |
| | Meal Planning | 18 | 31.6% |
| | Exercise | 27 | 47.4% |
| How would you rate the your knowledge about DMTII and their ability to manage your condition? | Low knowledge | 22 | 38.6% |
| | Medium knowledge | 16 | 28.1% |
| | High knowledge | 19 | 33.3% |
| What motivates the you engage in self-care? | Personal health goals | 15 | 26.3% |
| | Family support | 16 | 28.1% |
| | Healthcare provider recommendations | 26 | 45.6% |
| How would you describe the communication between the you and family members regarding DMTII self-care? | Low | 21 | 36.8% |
| | Medium | 22 | 38.6% |
| | High | 14 | 24.6% |
| How often are decisions regarding the your self-care made collectively among family members? | Rarely | 14 | 24.6% |
| | Occasionally | 20 | 35.1% |
| | Frequently | 23 | 40.4% |
| Are there any cultural or social factors that influence family involvement in your self-care? | Yes | 28 | 49.1% |
| | No | 29 | 50.9% |
| | Yes | 27 | 47.4% |

| | | | |
|---|---|---|---|
| Do you experience caregiver burden in assisting yourself with their self-care? | No | 30 | 52.6% |

**Source Field Data (2023)**

Among the respondents, 19 individuals rated the severity of DMTII as mild, accounting for approximately 33.3% of the total respondents, indicating that a significant portion of the patients experienced a milder form of the disease. Additionally, 17 respondents indicated that the severity was moderate, representing around 29.8% of participants, suggesting a notable number of patients had a moderate level of disease severity. Furthermore, 21 participants rated the severity of their DMTII as severe, comprising approximately 36.8%, highlighting that a substantial portion of patients had a more severe form of the disease. These findings underscore the variability in disease severity among the patients involved, showing that while a significant number had mild or moderate disease, a considerable portion experienced more severe forms of DMTII. Understanding this distribution is essential for tailoring interventions to meet the needs of patients at different stages of disease progression.

The study also indicated that 38.6% of participants reported having complications related to DMTII, while the majority (61.4%) did not. Most respondents (44.4%) disagreed or strongly disagreed with statements regarding family involvement in self-care activities, suggesting a lower level of family participation. On the other hand, those who agreed or strongly agreed with these statements made up 24.5%, with 19.3% falling into the neutral category.

Among the respondents, 12 individuals (21.1%) reported assisting with medication management, indicating that some family members actively support the patient's adherence to their medication regimen. Regarding meal planning, 18 respondents (31.6%) were involved, indicating significant family support in planning and preparing meals aligned with dietary requirements. A notable 27 respondents (47.4%) reported assisting with exercise, suggesting strong family engagement in promoting physical activity, a crucial aspect of managing DMTII.

In terms of the patient's knowledge, 38.6% of participants rated the patient's understanding of DMTII as low, while 28.1% rated it as medium, and 33.3% rated it as high. A total of 15 respondents (26.3%) mentioned personal health goals as their primary motivation for self-care, while 16 respondents (28.1%) cited family support, and 26 respondents (45.6%) highlighted healthcare provider recommendations as a key motivator.

Communication between the patient and family regarding DMTII self-care was rated as low by 21 individuals (36.8%), medium by 22 individuals (38.6%), and high by 14 individuals (24.6%). Regarding decision-making, 14 respondents (24.6%) reported that decisions were rarely made collectively, while 20 (35.1%) indicated occasional collective decision-making, and 23 respondents (40.4%) mentioned that decisions were frequently made collectively among family members.

When asked about cultural or social factors influencing family involvement in self-care, 28 participants (49.1%) responded affirmatively, while 29 respondents (50.9%) stated no

such factors existed. Regarding caregiver burden, 27 individuals (47.4%) reported experiencing this burden, while 30 (52.6%) did not.

The findings align with similar studies. For instance, Golics et al. (2013) found that disease severity, which was reported as severe by 36.8% of respondents, directly impacts family participation in self-care. The 38.6% of participants reporting complications is consistent with research by Alshahrani et al. (2023), who found that diabetes complications often increase family involvement in disease management. Similarly, the 44.4% of participants who expressed low self-care involvement aligns with findings by Page-Reeves et al. (2023), who linked low patient engagement with reduced family involvement. High engagement in exercise, as reported by 47.4%, corresponds with the findings of Mendez et al. (2022), who emphasized family support in promoting physical activity. Aldharman et al. (2023) also noted the need for educational interventions to address the low levels of knowledge (38.6%) found in this study. Additionally, Yasin et al. (2024) highlighted healthcare provider recommendations as a significant motivator, similar to this study's finding that 45.6% of respondents cited such recommendations. Lastly, caregiver burden, experienced by 47.4% of participants in this study, is consistent with the findings of Adib-Hajbaghery & Ahmadi (2019), who reported that caregiver burden is common in families managing chronic illnesses, especially when cultural or social factors influence family dynamics, as reported by 49.1% of participants in this study.

### 4.6.2 Inferential analysis on the determination of the patients' related factors influencing family participation.

A Pearson chi-square test was used to determine the statistical relationship among the patients' related factors influencing family participation in self-care among DMTII, and the results were presented in Table 4.7.

**Table 4. 7: Pearson's chi-square on the determination of the patients' related factors influencing family participation in self-care among DM TII patients**

| Chi-Square Tests | | | |
|---|---|---|---|
| | Value | df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 114.000[a] | 11 | .030 |
| Likelihood Ratio | 124.290 | 11 | .201 |
| Linear-by-Linear Association | .048 | 1 | .827 |
| N of Valid Cases | 57 | | |

**Source Field Data (2023)**

According to the results indicated in Table 7, the Pearson Chi-Square ($\chi^2$) = 114.00, and since $p < 0.05$, the chi-square test results indicate a statistically significant association between patient-related factors and family participation in self-care among DMTII patients. Specifically, the p-value for the Pearson Chi-Square was 0.030, which is less than the threshold of 0.05, confirming the significance of the relationship.

A study by Zewdie et al. (2022) concluded that several factors influence the ability of diabetes mellitus patients and their families to engage in self-care activities. These factors include the availability of healthcare services, effective communication with healthcare

professionals, individual patient traits, psychological well-being (such as stress, depression, and distress), and personalized education or behavioral support tailored to the specific needs of both the patient and the family.

In comparison to similar studies on factors influencing family participation in self-care among diabetes mellitus patients, the results of this study align with existing research. In this study there was a statistically significant association between patient-related factors and family involvement in self-care. This finding is consistent with Zewdie et al. (2022), who concluded that factors such as access to healthcare services, patient traits, and psychological well-being significantly affect the ability of patients and their families to engage in self-care activities.

The study by Zewdie et al. (2022) emphasized the importance of effective communication with healthcare professionals and the provision of personalized education or behavioral support, which is reflected in the results of this analysis. Similarly, the significant p-value in this study highlights the crucial role that patient-related factors play in determining family participation. This finding is further supported by other research indicating that family involvement in chronic disease management, including diabetes, is often influenced by psychological and educational support tailored to the family's needs (Baig et al., 2015).

### 4.6.3 Thematic analysis on determining the patients' related factors influencing family participation.

Acknowledging the patients' factors that influence family participation in self-care among Type 2 diabetes mellitus (DM TII) patients is crucial for providing practical support and

assistance to these individuals. Here are some of the factors that were indicated in the study by the respondents:

*"Family involvement plays a vital role in supporting patients with DM TII in managing their condition effectively. When families are aware of the factors that impact their participation, healthcare providers can work collaboratively with them to establish a supportive environment. This can include providing education and resources tailored to the family's needs, fostering open communication channels, and encouraging active involvement in self-care activities."*

*"Patient-related factors, such as psychosocial adjustment, can significantly affect their ability to adhere to self-care practices. Acknowledging these factors allows healthcare providers to identify potential barriers and tailor interventions accordingly. By involving the family in the patient's care, they can provide additional support, encouragement, and reminders to adhere to treatment plans, resulting in improved treatment adherence and better health outcomes."*

*"Recognizing individual patient and family characteristics allows healthcare providers to provide personalized education and behavioral support. By understanding the unique needs, preferences, and circumstances of the patients and their families, interventions can be tailored to promote effective self-care practices. This may include adapting educational materials, providing culturally sensitive guidance,*

*and incorporating behavioral change techniques that resonate with the patient and their family."*

*"Factors like stress, depression, and distress can impact self-care activities and overall well-being. By acknowledging these emotional factors, healthcare providers can implement appropriate strategies to address them. This may involve providing mental health support, counseling, or referring patients and families to specialized services that can help them cope with emotional challenges."*

In summary, acknowledging the patients' related factors influencing family participation in self-care among DMTII patients is essential for developing comprehensive, patient-centered care plans. By recognizing these factors, healthcare providers can enhance support systems, improve treatment adherence, address emotional well-being, and provide tailored education and behavioral support, ultimately assisting patients and their families in effectively managing their condition.

## 4.7 Determination of the factors influencing family participation in self-care

### 4.7.1 Descriptive analysis on the determination of factors influencing family participation

To determine the factors related to patients and factors influencing family participation in self-care among DMTII patients were determined, and the results are presented in Table 4.8.

**Table 4. 8: Respondents analysis on the determination of the patients' related factors**

| Test Item | | F | % |
|---|---|---|---|
| How has your educational levels influenced your family's participation in self-care activities? | Improve self-care practice | 27 | 47.4% |
| | Didn't improve self care practice | 30 | 52.6% |
| Has your knowledge on self-care activities influenced your daily diabetes practices in any way? | Yes | 32 | 56.1% |
| | No | 25 | 43.9% |
| Has your age affected the family participation in daily self-care practice? | Yes | 27 | 47.4% |
| | No | 30 | 52.6% |
| Has the family support provided made you realize the sense of belonging hence motivated you in improving diabetes self-care practice? | Yes | 33 | 57.9% |
| | No | 24 | 42.1% |
| Since diagnosis of the disease, how have you been able to cope and accept this chronic disorder? | Yes | 23 | 40.4% |
| | No | 34 | 59.6% |
| Has your cultural beliefs and practices affected your family in participating in diabetes self-care management? | Yes | 22 | 38.6% |
| | No | 35 | 61.4% |
| In your own opinion, what are some benefits in family participation in self-care management to the patient | Yes | 31 | 54.4% |
| | No | 26 | 45.6% |
| Would you recommend family participation in diabetes self-care management? | Yes | 29 | 50.9% |
| | No | 28 | 49.1% |
| In your own opinion, State the factors that you think; | Prevent family participation in self-care management | 30 | 52.6% |
| | Positively influence family participation in self-care management | 27 | 47.4% |

**Source Field Data (2023)**

The study revealed that 27 individuals (47.4%) reported "Improved self-care practice," indicating that their educational levels positively influenced family participation in self-care activities. Conversely, 30 individuals (52.6%) indicated "Didn't improve self-care practice," suggesting that their educational levels did not influence family engagement in self-care.

Regarding the question, "Has your knowledge of self-care activities influenced your daily diabetes practices?" Thirty-two respondents (56.1%) answered "Yes," indicating their knowledge had a positive influence on their diabetes management, while 25 respondents (43.9%) answered "No," implying no impact on their daily practices.

In examining whether age influenced family participation in self-care, 27 respondents (47.4%) answered "Yes," while 30 respondents (52.6%) answered "No," indicating that age had not influenced family involvement in most cases.

When asked if family support provided a sense of belonging that motivated them to improve self-care, 33 respondents (57.9%) answered "Yes," while 24 (42.1%) answered "No." This suggests that family support positively influenced motivation for a majority, though it was not universal.

Regarding coping with and accepting the chronic disorder, 23 respondents (40.4%) indicated they were able to cope, while 34 (59.6%) said they faced challenges. Cultural beliefs and practices were reported by 22 individuals (38.6%) as influencing family involvement, whereas 35 individuals (61.4%) indicated no influence from cultural factors.

The study further showed that 31 individuals (54.4%) believed there were benefits in family participation in self-care management, while 26 individuals (45.6%) disagreed. A similar split was observed in recommendations for family participation in diabetes management, with 29 respondents (50.9%) recommending it and 28 (49.1%) opposing it. Lastly, 30 respondents (52.6%) acknowledged that factors prevented family participation in self-care management, while 27 respondents (47.4%) believed that factors positively influenced family participation.

In comparison to other studies, these findings are consistent with existing literature. For instance, 47.4% of respondents indicated that their educational levels influenced family participation, similar to findings by Lee et al. (2019), which emphasized the role of education in enhancing family involvement, though it noted that not all patients fully utilize educational resources.

Additionally, 56.1% of respondents agreed that their knowledge of self-care influenced their daily practices, in line with Niño-de-Guzman Quispe et al. (2023), who found that patients with better knowledge were more likely to engage family members in diabetes care. However, the impact of age was less clear, with 47.4% agreeing and 52.6% disagreeing, reflecting inconsistencies observed in the work of Kumar & Mohammadnezhad (2022).

The significance of family support, noted by 57.9% of respondents, aligns with the findings of Miller & DiMatteo (2013), which highlighted the motivational role of family support in adhering to self-care routines. Furthermore, 40.4% of respondents struggled

with coping and acceptance, a challenge echoed by Corchon et al. (2021), who identified psychological barriers to chronic disease acceptance.

Cultural beliefs influenced family participation for 38.6% of respondents, consistent with Kumar & Mohammadnezhad (2022), who identified cultural barriers as significant factors affecting family involvement in diabetes management.

### 4.7.2 Inferential analysis on the determination of factors influencing family participation.

To determine whether there was a statistical relationship in the determination of patient-related factors influencing family participation in self-care among DMTII patients, linear regression analysis was conducted. The results were presented in three tables: Model Summary, ANOVA Summary, and Multiple Linear Regression, labeled as Table 4.9, 4.10, and 4.11, respectively.

**Table 4. 9: Model Summary on the determination of the patients' related factors influencing family participation in self-care among DM TII patients**

| Model Summary | | | | |
|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .780[a] | .8200 | .570 | .00000 |

**Source Field Data (2023)**

The study indicated a moderate to strong positive correlation with an R-value of 0.780. The R-squared value is 0.8200, meaning that approximately 82% of the variance in family participation in self-care can be explained by the patient-related factors in the model. The adjusted R-squared is 0.570, suggesting that the patient-related factors can explain

approximately 57% of the variance in family participation in self-care. From the above table, the study indicates that the included factors substantially influence family participation in self-care among Type II Diabetes Mellitus patients.

**Table 4. 10: ANOVA Summary on the determination of the patients' related factors influencing family participation in self-care among DM TII patients**

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | | **Sum of Squares** | **Df** | **Mean Square** | **F** | **Sig.** |
| 1 | Regression | .431 | 9 | 2.048 | 1.533 | .003[b] |
| | Residual | 4.222 | 47 | 1.090 | | |
| | Total | 4.653 | 56 | | | |

**Source Field Data (2023)**

Table 4.10 indicates the ANOVA summary, where the F-value was found to be 1.533, which is greater than 1, indicating a good and efficient model. At a 95% confidence level, the model was statistically significant since the significant value was found to be 0.003, which is less than 0.05, indicating a statistical relationship between the dependent and independent variables.

Research often explores the influence of social support on family participation in self-care for various diseases, according to a study by Hasan et al. (2024). This can encompass emotional, informational, and practical support from family members or significant others. Effective communication and shared decision-making between patients, family members, and healthcare providers are essential. Good communication facilitates family involvement in self-care management. Cultural and individual beliefs can influence family participation in self-care. Research may examine how these factors affect decision-making, attitudes, and behaviors regarding involvement in patient self-care. The role of patient and family education in promoting family participation in self-care is also

significant. Providing adequate information and training can empower patients and their family members to engage in self-care activities.

Additionally, this study's results mirror Moayed's conclusion that effective communication and shared decision-making among patients, family members, and healthcare providers facilitate greater family involvement in self-care practices. Similarly, cultural and individual beliefs were found to play a pivotal role in shaping family participation in self-care, which is consistent with Hasan's research exploring how these factors impact decision-making and self-care behaviors (Hasan et al., 2024). Finally, the significant F-value of 1.533 in this study reflects other research findings showing that providing patient and family education can positively influence family engagement in self-care activities by empowering them with the necessary knowledge and skills (Hasan et al., 2024).

**Table 4. 11: Regression Summary on the determination of the patients' related factors influencing family participation in self-care among DM TII patients**

| Coefficients | | | | | | |
|---|---|---|---|---|---|---|
| | | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. |
| Model | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.281 | .396 | | 3.234 | .002 |
| | How have your educational levels influenced your family's participation in self-care activities? | -.065 | .086 | -.113 | -.752 | .456 |
| | Has your knowledge of self-care activities influenced your daily diabetes practices? | .061 | .086 | .106 | .709 | .482 |
| | Has your age affected the family's participation in daily self-care practice? | -.022 | .087 | -.038 | -.251 | .803 |
| | Has the family support made you realise the sense of belonging, motivating you to improve your diabetes self-care practice? | -.044 | .085 | -.076 | -.517 | .607 |
| | Since the diagnosis of the disease, how have you been able to cope with and accept this chronic disorder? | .095 | .096 | .163 | .992 | .327 |
| | Have your cultural beliefs and practices affected your family's participation in diabetes self-care management? Please indicate in the space provided | .093 | .088 | .158 | 1.049 | .300 |
| | In your own opinion, what are some benefits in family participation in self-care management to the patient | .023 | .089 | .040 | .259 | .797 |

| | | | | | |
|---|---|---|---|---|---|
| Would you recommend family participation in diabetes self-care management? | .034 | .087 | .059 | .385 | .702 |
| In your own opinion, State the factors that you think; | -.029 | .088 | -.051 | -.333 | .741 |

**Source Field Data (2023)**

According to Table 11, the study indicated an overall statistical relationship on the model since the sig value was found to be 0.002, which was less than 0.005, hence the statistical relation at a 95% confidence level. To determine the beta value contribution of each parameter, the study and the following multiple linear regression were developed for the study.

$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \varepsilon$

$y = 1.281 - .065x_1 + .061x_2 - .022x_3 - .044x_4 + .095x_5 + .093x_6 + .023x_7 + .034x_8 - .029x_9 + \varepsilon$

From the equation above, “Since the diagnosis of the disease, how have you been able to cope and accept this chronic disorder?” was found to have the highest correlation of .095 hence high influence determination of the patients’ related factors influencing family participation in self-care among DM TII patients while “In which ways has your educational levels influenced your family in participating in self-care activities?” had the minor correlation of -.065 hence low correlation on the dependent variable.

### 4.7.3 Thematic analysis on the determination of factors influencing family participation

The following were some of the issues raised when it came to determining the patients' related factors influencing family participation in self-care among DM TII patients.

> *"The support and dynamics within the patient's family play a crucial role in determining their participation in self-care. Supportive and involved family members who understand the importance of self-care and are willing to aid and encouragement are more likely to participate actively."*
>
> *"Cultural beliefs and social norms can influence family involvement in self-care. Some cultures emphasise collective decision-making and family involvement in health matters, while others may prioritise individual autonomy."*
>
> *"The burden placed on family caregivers and their availability to provide support can impact their participation in a patient's self-care. High caregiver burden or limited availability may affect the extent to which family members can contribute to self-care activities."*
>
> *"Effective communication and shared decision-making between patients and their family members are essential for involving families in self-care. Open and respectful communication can foster collaboration and facilitate the exchange of information and responsibilities."*

It is important to note that these factors are not exhaustive and may vary depending on individual and cultural contexts. Understanding these factors can help healthcare providers tailor interventions and support systems to enhance family participation in self-care among T2DM patients, ultimately improving disease management and patient outcomes.

### 4.8 Establishment of interventional strategies to improve family participation .

The fourth objective was to determine the best intervention strategies to improve family participation in self-care among DMTII at Kitui county and results were presented into 3 different sub section which comprised of descriptive analysis, inferential and thematic analysis and was presented as follows:

#### 4.8.1 Descriptive analysis on establishment of interventional strategies to improve family participation .

The patients' ratings on the establishment of the best intervention strategies to improve family participation in self-care among DMTII patients in Kitui County, which comprised frequencies and percentages, were presented in Table 4.12.

**Table 4. 12: Patient rating on establishment of interventional strategies to improve family participation**

| Test Item | | F | % |
|---|---|---|---|
| How involved are you in the self-care activities of the patient with DMT2? | Very involved | 13 | 22.8% |
| | Somewhat involved | 13 | 22.8% |
| | Not very involved | 18 | 31.6% |
| | Not involved at all | 13 | 22.8% |
| Have you received any education or information about DMT2 and its management? | Yes | 27 | 47.4% |
| | No | 30 | 52.6% |
| How often do you communicate with healthcare providers about your DMT2? | Frequently | 17 | 29.8% |
| | Occasionally | 13 | 22.8% |
| | Rarely | 14 | 24.6% |
| | Never | 13 | 22.8% |
| Do you feel comfortable discussing concerns or asking questions about the DMT2 with healthcare providers? | Yes, very comfortable | 15 | 26.3% |
| | Somewhat comfortable | 13 | 22.8% |
| | Not very comfortable | 12 | 21.1% |
| | Not comfortable at all | 17 | 29.8% |
| Have you received any training or guidance on how to assist yourself in self-care activities? | Yes | 24 | 42.1% |
| | No | 33 | 57.9% |
| How effective was the training or guidance in self-care needs? | Very effective | 10 | 17.5% |
| | Somewhat effective | 18 | 31.6% |
| | Not very effective | 14 | 24.6% |
| | Not effective at all | 15 | 26.3% |
| Are you part of any support groups or counseling sessions specifically designed for families of individuals with DMT2? | Yes | 29 | 50.9% |
| | No | 28 | 49.1% |
| How beneficial do you find these support groups or counseling sessions in | Very effective | 20 | 35.1% |
| | Somewhat effective | 14 | 24.6% |
| | Not very effective | 9 | 15.8% |

| | | | |
|---|---|---|---|
| addressing the challenges associated with your DMT2 disease? | Not effective at all | 14 | 24.6% |
| How well do you feel the care plans are tailored to your family's specific needs and circumstances? | Very well tailored | 14 | 24.6% |
| | Somewhat tailored | 14 | 24.6% |
| | Not very tailored | 10 | 17.5% |
| | Not tailored at all | 19 | 33.3% |
| Have you been provided with any behavioral change strategies to encourage your involvement inyour self-care? | Yes | 31 | 54.4% |
| | No | 26 | 45.6% |
| How effective do you find these strategies in motivating your participation in your self-care? | Very well tailored | 16 | 28.1% |
| | Somewhat tailored | 15 | 26.3% |
| | Not very tailored | 16 | 28.1% |
| | Not tailored at all | 10 | 17.5% |

**Source Field Data (2023)**

The frequency distribution of responses regarding involvement in self-care activities revealed that 31.6% of participants were "Not very involved," with equal proportions (22.8%) of participants being "Very involved," "Somewhat involved," or "Not involved at all." These findings highlight a significant variation in involvement levels, consistent with research by Whitehead et al. (2018), which noted similar disparities in family engagement in chronic disease self-care. Parham's study emphasized the role of personalized education and communication strategies in enhancing family participation, a theme echoed by the results of the present study.

When examining the receipt of education or information on diabetes management, 47.4% of participants reported receiving such resources, while 52.6% did not. These findings align with a study by Leukel et al. (2022), which stressed the importance of educational

interventions to empower families in managing diabetes. Similarly, communication with healthcare providers showed that 29.8% of participants communicated "Frequently," aligning with recommendations from Kant et al. (2020), who found that frequent patient-provider communication significantly improved family participation in self-care.

Moreover, the study revealed that 42.1% of respondents received training on assisting in self-care activities, although only 17.5% found this training "Very effective." This mirrors the findings by Stepanian et al. (2023), which pointed to gaps in the perceived efficacy of family training for chronic disease management. Additionally, participation in support groups was found to be beneficial, with 35.1% of participants finding these groups "Very effective" in addressing diabetes challenges. These results corroborate findings from Doull et al. (2017), who highlighted the critical role of peer support groups in chronic disease management.

### 4.8.2 Inferential analysis on establishing the intervention strategies to improve family participation.

Inferential analysis was performed to establish the best intervention strategies to improve family participation in self-care among patients with Type II Diabetes Mellitus (DMTII). The results were presented in Tables 4.13, 4.14, and 4.15, which comprised the model summary, ANOVA summary, and multiple linear regression, respectively.

**Table 4. 13: Model Summary on the establishment of the intervention strategies to improve family participation in self-care among DMTII**

| Model Summary |
|---|

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .454[a] | .526 | .012 | .2865631 |

**Source Field Data (2023)**

According to table 4.13 above it indicated the value of R being 0.454 this indicated the relationship between the on the establishment of the intervention strategies to improve family participation in self-care among DMTII was 45.4% while the value of r squared of 0.526 was achieved which was greater than 0.5 this indicated goodness in model fitting of the study.

**Table 4. 14: ANOVA Summary on the Establishment of the Intervention Strategies to Improve Family Participation**

**ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | .958 | 11 | .087 | 1.060 | .013[b] |
| | Residual | 3.695 | 45 | .082 | | |
| | Total | 4.653 | 56 | | | |

**Source Field Data (2023)**

The study indicated there was a statistical relationship between the dependent and independent variable since the significance value obtained was 0.013 which was less than 0.05 hence the study concluded that there existed a statistical relationship at 95% level of confidence level. The study achieved an f value of 1.060 which was greater than 1 this indicated the goodness in model fitting. Given that adults with diabetes rely on the support of their families to help manage their condition, it is crucial to investigate family-

based interventions designed for adults with diabetes. This research is significant as it provides insights into enhancing existing diabetes self-care programs by identifying effective strategies to engage and involve family members in supporting adults with diabetes.

Furthermore, the study highlights the role of family members in supporting individuals with diabetes, consistent with findings by (Mphasha et al., 2022b) which emphasized the positive impact of family involvement on patient adherence to self-care routines. Similarly, research by (Baig et al., 2015) demonstrated that effective family engagement in diabetes management led to improved glycemic control and overall well-being, underscoring the value of tailored intervention strategies.

**Table 4. 15: Regression analysis on establishment of best Interventional Strategies to Improve Family Participation**

| Coefficients[a] | | | | | | |
|---|---|---|---|---|---|---|
| | | Unstandardized Coefficients | | Standardized Coefficients | | |
| Model | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 1.871 | .381 | | 4.917 | .000 |
| | How involved are you in the self-care activities of the patient with DMT2? | -.006 | .038 | -.023 | -.163 | .871 |
| | Have you received any education or information about DMT2 and its management? | .115 | .083 | .201 | 1.389 | .172 |
| | How often do you communicate with healthcare providers about the patient's DMT2? | -.031 | .038 | -.125 | -.818 | .418 |
| | Do you feel comfortable discussing concerns or asking questions about the patient's DMT2 with healthcare providers? | -.050 | .039 | -.203 | -1.267 | .212 |
| | Have you received any training or guidance on how to assist the patient with self-care activities? | -.013 | .080 | -.023 | -.163 | .871 |
| | how effective was the training or guidance in preparing you to support the patient's self-care needs? | -.057 | .043 | -.212 | -1.324 | .192 |
| | Are you part of any support groups or counseling sessions specifically designed for families of individuals with DMT2? | -.084 | .082 | -.147 | -1.021 | .313 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | how beneficial do you find these support groups or counseling sessions in addressing the challenges associated with the patient's DMT2? | -.075 | .035 | -.312 | -2.139 | .038 |
| | How well do you feel the care plans are tailored to your family's specific needs and circumstances? | -.041 | .037 | -.168 | -1.090 | .281 |
| | Have you been provided with any behavioral change strategies to encourage your involvement in the patient's self-care? | .085 | .085 | .149 | 1.009 | .318 |
| | how effective do you find these strategies in motivating your participation in the patient's self-care? | .057 | .039 | .213 | 1.456 | .152 |

**Source Field Data (2023)**

A multiple linear regression was analyzed and presented according to table 15 above and the study found that "Have you received any education or information about DMT2 and its management?" had higher correlation of 0.115 followed by "Have you been provided with any behavioral change strategies to encourage your involvement in the patient's self-care?" of 0.085 while "Are you part of any support groups or counseling sessions specifically designed for families of individuals with DMT2?" had the least correlation of -0.084. A multiple linear regression was formulated and presented as below;

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \beta_{11} x_{11} + \varepsilon$$

$$y = 1.871 - .006x_1 + .115x_2 - .031x_3 - .050x_4 - .013x_5 - .057x_6 - .084x_7 - .075x_8 - .041x_9 + .085x_{10} + .057x_{11} + \varepsilon$$

The study concluded that there was a statically relationship since the sig value was 0.000 which was less than 0.05 at 95% level of confidence level.

### 4.8.3 Thematic Analysis on Establishment of best interventional Strategies to Improve Family Participation

Below are some of the mechanism that can be employed to help establishment of the best intervention strategies to improve family participation in self-care among DMTII as indicated by the study respondents;

> *"Providing comprehensive education and information about DMT2 to both patients and their families is crucial. This includes raising awareness about the condition, its management, potential complications, and the importance of family involvement in self-care activities."*
>
> *"Providing training and guidance to family members on how to assist with self-care activities can improve their involvement. This includes teaching practical skills such as blood sugar monitoring, medication administration, healthy meal preparation, and physical activity."*
>
> *"Having an effective communication channels should be established between healthcare providers, patients, and their families. Encouraging open and regular discussions helps address concerns,*

*share progress, and set realistic goals. Collaboration among all stakeholders is essential for successful intervention strategies."*

*"Integrating behavior change techniques can enhance family participation. Strategies such as goal setting, positive reinforcement, and motivational interviewing can increase motivation and sustain long-term behavior modifications."*

*"Recognizing that each family's needs, preferences, and circumstances are unique is crucial. Interventions should be tailored to individual families, considering cultural, social, and economic factors. Personalized care plans enhance engagement and participation in self-care activities."*

*"Recognizing the emotional impact of DMT2 on both patients and families is vital. Offering counseling, support groups, and resources to address stress, depression, and distress can enhance family well-being and participation in self-care."*

*"Regular evaluation of intervention strategies is necessary to assess their effectiveness. Collecting feedback from patients and families and incorporating it into program improvements enhances the quality and impact of interventions."*

By considering these factors and implementing evidence-based strategies, healthcare providers can establish effective intervention programs that improve family participation in self-care among individuals with DMT2. Ongoing evaluation and continuous

improvement ensure the interventions remain responsive to the evolving needs of patients and their families.

**4.9 Evaluation of the Effectiveness of the Developed Model on Improving Family Participation In Self-Care Management.**

Implementing a model to improve family participation in self-care management among individuals with Type 2 Diabetes Mellitus carries significant importance. Firstly, It helps in engaging family members in the self-care management of DMTII hence creating a strong support system for the sick individuals. The model can facilitate effective communication, collaboration, and active involvement of family members in routine care for the patient, leading to improved adherence to self-care activities. It will help in involving families in the self-care process through the distribution of the responsibilities in managing the disorder. Family members become active participants, sharing the burden of disease management hence reducing the emotional and physical strain on the affected person. This shared responsibility promotes a sense of unity and empowerment within the family, fostering a management of DMTII, the model promotes long-term sustainability. Family support and involvement can help establish consistent self-care routines and habits that extend beyond short-term interventions. This leads to better long-term health care outcomes for the patient hence reducing the risk of disease-related complications. (American, Association Association positive environment for self-care. By integrating family participation into the self-care.

The figure below helps in implementing the various strategies to Enhance Family Participation in Self-Care Management among Type 2 Diabetes Mellitus (DMTII) Patients:

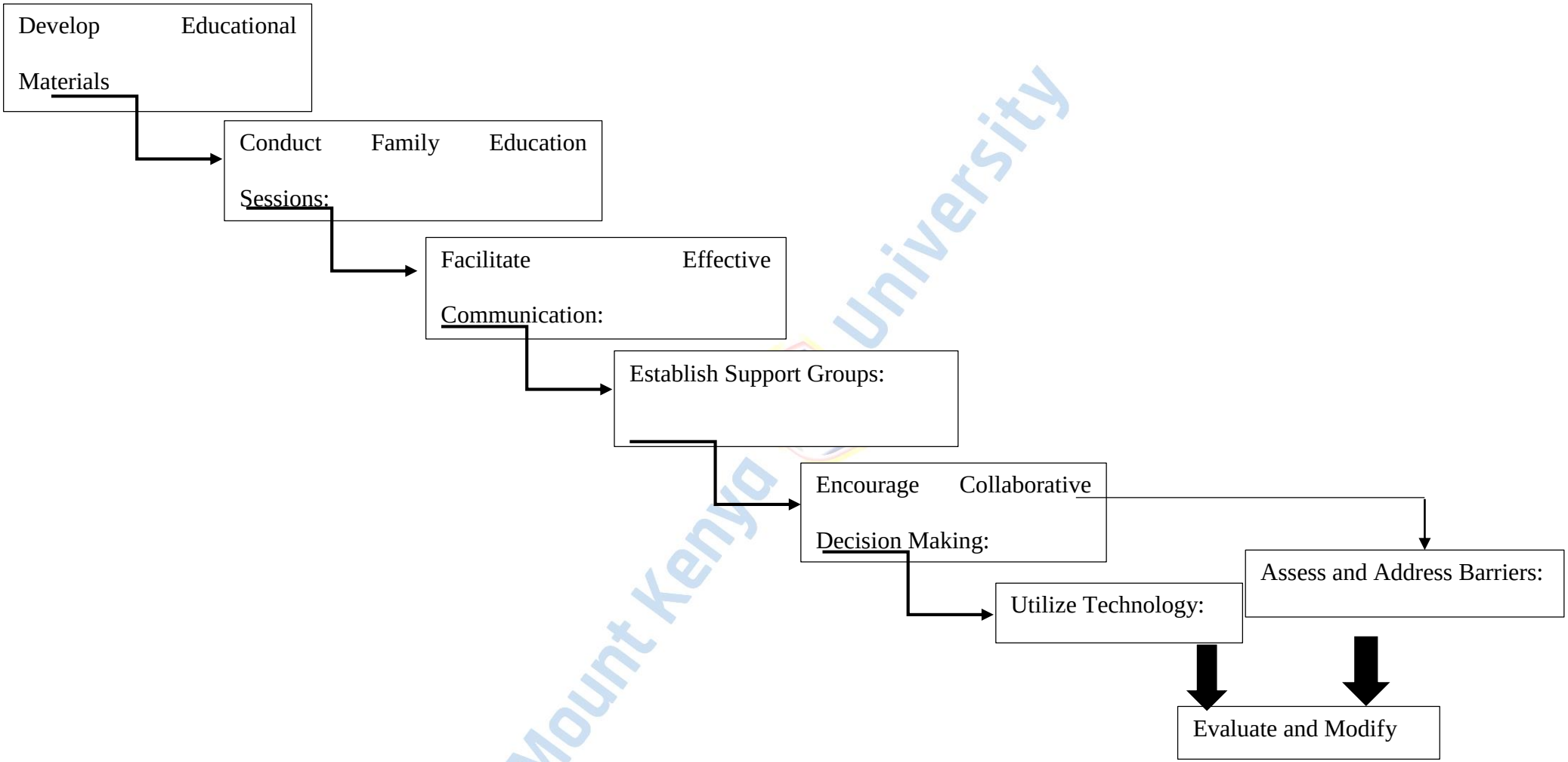


**Figure 4. 1: Model for the study to Enhance Family Participation in Self-Care Management among Type 2 Diabetes Mellitus**

**Step 1**

**Develop Educational Materials: develop a theme based on self-care activities**

Create informative brochures, pamphlets, or booklets that explain the importance of family involvement in DMTII self-care management.

Provide educational materials on DMTII self-care practices, including dietary guidelines, exercise recommendations, medication adherence, and blood glucose monitoring. The materials were easily understandable, culturally sensitive, and available in multiple languages if necessary.

**Step 2**

**Conduct Family Education Sessions**

Organize regular educational sessions specifically designed for DMTII patients and their family members. Invite the healthcare professional team to deliver presentations on various aspects of DMTII management, including treatment plans, medication management, and lifestyle modifications.

Encourage open friendly discussions and address any concerns or misconceptions raised by family members during these sessions.

**Step 3**

**Facilitate Effective Communication**

Encourage open and honest communication among the patients and their family members. and health care teams create good nurse-client relationships with them.

Promote active listening and empathy to ensure that family members feel heard and understood.

Guide effective communication techniques, such as using statements, asking open-ended questions, and expressing support and encouragement.

**Step 4**

**Establish Support Groups**

Create support groups/ strengthen the existing ones or networks for patients and their family members to connect with others facing similar disorders. Allow them to share their bitter/ painful experiences or good examples following a successful event

Involve them in planning, have regular meetings where families can share experiences, exchange information, and provide emotional support to one another

Consider both in-person and virtual support group options to accommodate different preferences and accessibility needs. register the club if possible and connect them to the relevant authorities in a variety of settings for more support in different forms such as financial

**Step 5**

**Encourage Collaborative Decision Making**

Involve family members in the decision-making process regarding disease management. Encourage patients and their families to actively participate adhere to physician appointments, create a friendly conducive environment by allowing them to ask questions, give honest answers and seek clarifications when need be, discuss treatment options with the healthcare provider.do team building listen to each decision and conclude the same.

Emphasize on the importance of shared responsibility and encourage patients to make informed decisions about their self-care routines.

**Step 6**

**Utilize Technology**

Leverage technological advancements to support family involvement in DMTII self-care management. Provide access to mobile applications or web-based platforms that offer

educational resources including medication reminders, meal planning tools, and blood glucose tracking.

Utilize telemedicine options for virtual consultations, enabling family members to attend appointments and actively engage in discussions with healthcare professionals.

**Step 7**

**Assess and Address Barriers**

Identify potential barriers that hinder family participation, such as lack of awareness, cultural beliefs and practises, or logistical challenges.

Develop strategies to overcome these barriers, such as providing transportation assistance, translating materials into relevant languages, or offering flexible scheduling options for educational sessions.

**Step 8**

**Evaluate and Modify.**

Continuously assess the effectiveness of the implemented strategies. Gather feedback from DMTII patients and their families through surveys, focus groups, or interviews.

Use the collected data to identify areas for improvement and modify the model accordingly.

By implementing these strategies, healthcare professionals can foster an environment that encourages and empowers family members to actively participate in the self-care management of DMTII patients. Family involvement in DMTII management has the potential to enhance self-care practices, improve treatment outcomes, and promote overall well-being for individuals living with DMTII.

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

Type 2 diabetes, often known as adult-onset diabetes, is a major and growing threat to global public health,( IDF, 2021), Consequently, .the disorder is now reconized as among the top NCD with adverse health impact of lives of people.(Ramtahal et al., 2015)..Type 2 diabetes has reached epidemic proportions in recent years, putting pressure on healthcare systems around the world and affecting millions of people( Chan et, al., 2019). Self-care practices which is the core determinant in management of the disorder, as such activities are usually carried out by the sick people assisted by member of the family ( Anderson et al, 1995). The practice has in recent past shown to decline considerably ( Bukhsh, et al., 2018). With rapidi increase in number of diabetes cases and related complications, it is important to come up with ways that can help people with disorder live productive lives with full support by their families

This in-depth look is meant to cover all the bases, from the disease's origins and clinical manifestations to its risk factors, probable complications, management techniques, and preventative measures.

## 5.2 Summary

### 5.2.1 Determination of the routine self-care practices

The findings of this study indicate that a substantial number of patients with type two diabetes mellitus adhere to recommended self-care practices, such as healthy lifestyle medication adherence, blood glucose monitoring, maintenance of physical fitness, and routine check-ups. However, areas of improvement are identified, including dietary habits, physical activity, and consistent healthcare visitation. Strategies to enhance self-

care practices should focus on education, patient empowerment, behavioural change techniques, and tailored interventions addressing specific challenges such patients face.

A significant proportion of DMTII patients Out of the total sample size, 28 participants (representing 49.1%) reported monitoring their blood sugars daily. On the other hand, 29 participants (50.9% of the sample) indicated that they do not engage in this practice. These include monitoring overall health, reviewing medication plans, adjusting treatment as necessary, and receiving education on diabetes management. Consulting when unable to handle a task was reported by 61.4%, while 38.6% preferred not to seek help. Intentional alcohol consumption and smoking were reported by 57.9%, while 42.1% did not engage in these behaviours. Managing stress and daily diabetes care was reported by 64.9%, while 35.1% struggled with these aspects. Purchasing diabetes supplies and proper storage was reported by 45.6%, while 54.4% did not engage in these practices. These findings emphasise the importance of targeted interventions and education to improve self-care practices among individuals with DMTII and address areas lacking adherence.

### 5.2.2 Determination of patients' related factors influencing family participation self-care

The analysis of the survey data revealed important insights into various aspects related to self-care practices and family involvement in the management of Type 2 Diabetes Mellitus (DMTII). The severity of DMTII varied among the patients, with a considerable portion experiencing mild (33.3%), moderate (29.8%), or severe (36.8%) disease severity. Complications related to DMTII were reported by 38.6% of participants. The level of family involvement in self-care varied, with 44.4% expressing lower involvement and 24.5% indicating higher involvement. Family members were actively involved in assisting with medication management (21.1%), meal planning (31.6%), and supporting

exercise (47.4%). Patient knowledge and ability were perceived as low by 38.6%, medium by 28.1%, and high by 33.3% of respondents. Personal health goals (26.3%), family support (28.1%), and healthcare provider recommendations (45.6%) were identified as motivating factors for engaging in self-care. Communication between patients and family members regarding DMTII self-care was rated as low (36.8%), medium (38.6%), or high (24.6%). Decision-making regarding self-care was occasionally (35.1%) or frequently (40.4%) made collectively within the family. Cultural or social factors influencing family involvement in self-care were acknowledged by 49.1% of participants. The caregiver burden of assisting patients with self-care was reported by almost half of the respondents. The availability of family members to provide support for the patient's self-care activities varied, with "Agree" (24.6%) and "Strongly Agree" (22.8%) being the most common responses.

### 5.2.3 Determination of the Factors Influencing Family Participation in Self-Care

The study's findings indicate that educational levels did not significantly influence family participation in self-care activities, as reported by 52.6% of respondents. Similarly, knowledge of self-care activities did not significantly influence diabetes practices for 43.9% of participants. Age also did not significantly impact family participation in self-care practices, as indicated by 52.6% of respondents. However, family support positively impacted motivation and a sense of belonging, leading to improved self-care practices for 57.9% of participants.

According to 61.4% of respondents, cultural beliefs and practices did not play a significant role in family involvement in diabetes self-care management. Additionally, the perceived benefits of family participation in self-care management varied, with 45.6% of participants not recognizing any benefits. 50.9% of respondents provided recommendations for family participation in diabetes self-care management.

The ANOVA analysis showed a statistically significant relationship between the dependent and independent variables, indicating the efficiency of the model in explaining the data. This suggests that the model utilized in the study was effective in determining the factors influencing family participation in self-care management.

The study highlights the importance of social support and effective communication in facilitating family involvement in self-care. Cultural and individual beliefs can influence family participation and should be considered when designing interventions. Patient and family education plays a crucial role in promoting family participation by providing necessary information and training.

### 5.2.4 Establishmentof Intervention strategies to improve Family Participation inself-care

Possession ofadequate Knowledge among sick individuals and their families on self-care activities was found to positively influence daily diabetes practices for 56.1% of participants, while age did not have a significant impact on family participation according to 47.4% of respondents. The study revealed that family support made individuals feel a sense of belonging and not only motivated them but made them own the disease hence were able to take control of their health therefore improving their diabetes self-care practices (57.9%). However, challenges in coping with and accepting the chronic disorder were reported by 59.6% of participants. Cultural beliefs and practices did not have a significant influence on family participation in self-care (61.4%), and the perceived benefits of family involvement varied among participants. The majority of respondents (42.1%) reported receiving training or guidance on supporting the patient with self-care activities. The effectiveness of the training varied, with 31.6% finding it "Somewhat effective" and 26.3% finding it "Not effective at all." Behavioural change strategies were provided to 54.4% of participants to encourage their involvement in the patient's self-

care. The strategies were considered effective by different proportions of participants, with 28.1% finding them "Very well-tailored" and 17.5% finding them "Not tailored at all."

The statistical analysis indicated a significant relationship between the dependent and independent variables, suggesting that the model fit the data well. The study concluded that family-based interventions are crucial for enhancing diabetes self-care programs and emphasized the need to identify effective strategies to engage and involve family members in supporting adults with diabetes.

### 5.2.5 Evaluation of effectiveness of developed model on improving family Participation

Creating informative resources that highlight the importance of family involvement and provide guidance on DMTII self-care practices. Organizing regular educational sessions where healthcare professionals deliver presentations and address concerns raised by family members. Encouraging open and empathetic communication between patients and their family members. Creating spaces for families to connect, share experiences, and provide emotional support. Involving family members in the decision-making process regarding DMT11 management.

Leveraging mobile applications, web platforms, and telemedicine to support family involvement. Identifying and overcoming barriers that hinder family participation, such as lack of awareness or logistical challenges. Continuously assessing the effectiveness of the strategies and making necessary modifications based on feedback from patients and their families.

## 5.3 Conclusion

Diabetes is a chronic condition that arises either when the pancreas does not create enough insulin or when the body is unable to properly utilize the insulin it does produce,

as stated by the World Health Organization. This causes hyperglycemia (high blood sugar) because glucose levels in the blood rise.Lack of insulin production is the hallmark of Type I diabetes, also known as insulin-dependent or juvenile-onset diabetes.Diabetes type II, often known as adult-onset or non-insulin-dependent diabetes, results from insulin resistance. It's a common consequence of being overweight and sedentary.Gestational diabetes is hyperglycaemia that is initially identified during pregnancy. Educating people about diabetes and its rapidly increasing prevalence is crucial. This is why the World Health Organization and the International Diabetes Federation created this day. On November 14th, we honour Frederick Banting, who, along with Charles Best, discovered insulin, a therapy for diabetes that has saved countless lives since its introduction in 1922. (The information is available on the official website of WHO). Learning that you have diabetes is devastating news. The discovery of one's diabetes, however, is the first step on the road to improved health and a longer life for millions of people throughout the world. However, things aren't always hopeless. Lifestyle therapies like adjusted nutrition, increased physical activity, and weight loss are crucial for all diabetes patients. It is possible to delay the use of diabetes medication for three to six months with the use of lifestyle modifications in highly motivated patients whose diabetes is in its early stages. Treatments for diabetes mellitus might range from the tried and true to the experimental. Dietary changes and oral hypoglycemia medicine are two traditional methods. Insulin is only a band-aid for the problem. Serious problems, such as diabetic ketoacidosis, have been linked to insulin therapy. Incretin mimetics, chemicals produced in the stomach and intestines in reaction to food consumption, are used in the treatment of non-insulin-dependent diabetes. The pancreas is then instructed to start producing insulin. There are oral hypoglycemic medicines, such as sulphonylureas and similar (secretagogues), biguanides (sensitizers), thiazolidinediones, alpha-

glucosidase inhibitors, and incretin analogues/agonists. Metabolic surgery, such as gastric bypass, is an option for those looking to lose weight. Treatment of diabetes mellitus can be aided by biological medications as well. Most people with diabetes don't live as long as the average adult because of the increased risk of cardiovascular disease and stroke. Other problems of diabetes include vision loss, renal disease, nerve damage, infections, tooth decay, and difficulties during pregnancy. Additionally, it may result in limb loss. Patients with diabetes also have an increased risk of developing depression. Therefore, they must participate in psychotherapy, which will aid not only in their battle against depression but also in their control of diabetes. Patients with diabetes should have a nutritionist, a physical therapist, and a social worker as part of their healthcare team. This is because the developed world's population is ageing, and the prevalence of age-related metabolic and neurological disorders is rising. Both diabetes and Alzheimer's disease are on the rise as people live longer, and multiple studies have shown that those with diabetes have a higher risk of acquiring 44 Alzheimer's Disease than those without the condition. Both diseases are associated with enormous and escalating socio-economic impacts. These two illnesses coexisting in an ageing population are a major problem. However, conventional wisdom holds that the presence of two or more diseases in the same individual is merely a coincidence. We still don't fully understand the underlying molecular pathways that connect diabetes with Alzheimer's disease. Both conditions are characterized by problems in protein digestion, insulin signalling, glucose homeostasis, oxidative stress, AGP production, and the activation of inflammatory pathways. Hypercholesterolemia is another issue that has garnered attention, owing to its potential link with diabetes and Alzheimer's Disease. The pathways that may connect Type II Diabetes Mellitus with cognitive impairment, on the one hand, and Alzheimer's disease, on the other, have been the subject of extensive study. More than 115 million new cases

of Alzheimer's disease are expected to emerge worldwide during the next 40 years, making it one of the most frequent degenerative dementias. Both clinical and experimental evidence suggest that treating Alzheimer's disease with insulin or insulin sensitizers can improve cognitive function and, in some cases, help decrease the rate of cognitive decline. Alzheimer's disease and other neurodegenerative diseases are fatal because they cause irreversible brain damage. Understanding the factors that contribute to the progression and maintenance of neurodegeneration is crucial for developing effective treatments. This is especially true concerning the steady increase in brain insulin/IGF resistance.

### 5.3.1 Determination of the Routine Self-Care Practices Among DMTII Patients

This study provides valuable insights into the routine self-care practices among DMTII patients. While many individuals exhibit positive self-care behaviours, some areas require attention and improvement. Healthcare providers can utilize these findings to develop targeted interventions, patient education programs, and support systems to enhance self-care practices among DMTII patients. By promoting and facilitating optimal self-care activities, healthcare providers can help improve health outcomes and reduce the risk of complications for individuals living with DMTII.

### 5.3.2 Determination of the Patients' Related Factors Influencing Family Participation .

The findings indicate that self-care practices and family involvement in DMTII management are influenced by various factors. Disease severity varies among patients, highlighting the need for tailored interventions based on individual needs. Complications related to DMTII and the level of family involvement in self-care activities emphasize the importance of support systems and targeted interventions. Motivating factors for self-care, such as personal health goals, family support, and healthcare provider

recommendations, can be utilized to enhance patient engagement. Effective communication and collective decision-making within the family plays a vital role in promoting self-care practices. Understanding cultural and social factors and addressing caregiver burden is essential for optimizing family involvement. Overall, these findings provide valuable insights that can guide healthcare providers in developing interventions and support systems to improve self-care practices and outcomes for individuals with DMTII.

**5.3.3 Determination of the Factors Influencing Family Participation in Self-Care.**

In conclusion, while educational levels, age, and cultural beliefs may not significantly influence family participation in self-care, family support, motivation, and sense of belonging were found to be significant factors. Healthcare providers need to recognize and address these factors when designing interventions and educating patients and their families to enhance family participation in diabetes self-care management.

**5.3.4 Establishment of Interventional Strategies to Improve Family Participation**

Overall, the findings of this study highlight the importance of addressing individual and contextual factors in promoting family participation in self-care activities for individuals with DMTII. Strategies should be tailored to meet the unique needs and circumstances of families, provide effective training and education, and utilize behavioural change techniques to encourage active involvement and support.

**5.3.5 Evaluation of effectiveness Developed Model on Improving Family Participation.**

By implementing these strategies, healthcare professionals can create an environment that empowers and encourages family members to actively participate in the self-care management of DMTII patients. Family involvement has the potential to improve self-

care practices, enhance treatment outcomes, and promote overall well-being for individuals living with DMTII.

### 5.4 Recommendations

.Kitui county government in collaboration with hospital administration need to develop a comprehensive educational programs to improve dietary habits and encourage healthy eating practices among patients suffering from the disease within the hospital. National to formulate policies and guidelines on management of type two diabetes at family level.

(ii)Kitui county government to work with diabetes experts, community Nurses, patients and families to design a personalized exercise plans and promote physical activity as an integral part of diabetes self-care.

(Iii). Diabetes team including patients, family members, health care workers need to establish reminder systems in hospital Electronic medical records and adherence strategies to support medication adherence among DMTII patients.

Vi. County government under guidance of hospital demonstration to develop interventions to address barriers to regular healthcare check-ups and promote consistent engagement with healthcare providers for hospitals,

Iv) The diabetes department in Kitui referral Hospital need to employ technology-based solutions, such as mobile applications or telehealth services, to enhance self-care practices and facilitate remote monitoring and support.

(v).The sick people together with their supportive family members need to come up with self-care management plans to include eating, drugs taking timings, physician appointment marked calenders. This will help in solving problems such as forgetfulness that diar consequences.

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Epidemiology of Type 2 Diabetes - Global Burden of Disease and Forecasted Trends
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## APPENDICES

**Appendix I: Consent Explanation Form.**

**Participants Number……..**

**Study Tittle: Development of family based intervention model to improve family participation for patients with diabetes mellitus type 2 at Kitui County.**

**Principal Investigator:** my name is Mary Musembi. I am a lecturer at Umma University and a holder of Master's degree in Nursing. I am currently pursuing a PhD in Nursing at Mount Kenya University.

**Introduction:**

The purpose of this study is to give you information that will help you decide whether or not to participate in the study. You are free to ask any question regarding the study. Once you understand and agree to participate, you was required to sign on this form. Your decision to participate is purely voluntarily and therefore you may withdraw from the study at any time. Refusal to participate was not affect the services you are entitled to in all health facilities in the County.

May I proceed?

A Yes B. No ☐ ☐

**Main objective of the Study**

The Study aims at developing a family based diabetes intervention model to improve family participation in self-care management that was enable patients with diabetes mellitus type II and their family members acquire knowledge and necessary skills such as communication, problem and decision making to manage the disease at their homes by themselves.

**Participation in the study:**

Once you agree to participate in this study, you was given a questionnaire to fill in. A trained research assistant who was guide you were necessary. This was in a private area where you was feel comfortable when answering the questions. This was take approximately 15 minutes. The question was have key areas including socio-demographic information, common self-care practices that patients and their family members engage in on daily basis, patients and family factors influencing diabetes self-care management. After that you was provide telephone number which was used to contact you if need be , the contact information was only be used for the study and was not be shared to anyone.

**Risks**

One of the potential risk of being in this study is loss of privacy. The researcher was keep all information gathered as confidential as possible. A code number pass word was used to identify you in a password protected computer database and all paper records was kept in a locked cabinet. Answering questions can be uncomfortable for you and therefore if there are any questions you do not want to answer, you can skip them. You have the right to refuse to answer any questions asked if you don't want.

**Benefits**

By taking part in this study, you was educated on importance of diabetes self-care management that was help you in improving blood glucose control at home and .also the new information gained was help us come up with a model which can be used to teach patients with diabetes mellitus type II and their families on several self-care activities, hence help you in maintaining blood sugar levels at recommended levels and reduce fatal diabetes related complications.

**Cost**

You was not be required to make any payments to enable you participate in the study and nor payment was done to you.

For further information, questions or queries contact:

The principal Investigator; Mary Musembi

School of post graduate, Mount Kenya University

Cell Phone: **0722 465 272**

Email; musembi.meri@gmail.com

OR

**Professor:** Catherine Mwenda

South Eastern Kenya University

**Or Professor:** Ramani Ramalingham

: Mount Kenya University.

**Statement of the consent**

I have read the consent form or had the information read for me and understood all the risks and benefits have also been explained to me. I understand that my participation in the study is voluntary and I may choose to withdraw any time I feel like. I freely agree to participate in this study.

I agree to participate in this study;

A.YES ☐ O ☐

Respondent's signature / Thumb Stamp……

Date…….

**Researcher's Statement**

I the undersigned have fully explained the relevant details of this study to the participants and believe that he/she has understood and willingly and freely given the consent.

Researcher's name……

Signature……

Date ……

**Appendix II: Study Questionnaire**

**PATIENT'S QUESTIONNAIRE**

Questionnaire no……. Serial NO…….. Date……..

**PART A: SOCIO- DEMOGRAPHIC INFORMATION**

**1. Gender?** A. Male …….. B. Female ……

**2. Age in years;**

A.18-28….. B. 29-38……. C. 39-48…… D. 49-58…….. Above 58……..

**3. Residential Area**; A. Rural…….. B. Urban…….

**4. Marital Status;**

A. Married…. B. Divorced… C. Single…. D.Separated….E Widowed… F Other….

**5. Highest level of Education**

A; Primary….. B. Secondary……C. college……D. University…… E. Others……..

**6. Religion**

A. Catholic……B. Christian ….. C. Hinduism…….D. Muslim …….E. Others……..

**7. Occupation**

A. Employed….. B. Farming….. C. Business… D. Unemployed … E. Others (Specify……

**8. Income levels**

A. 0-5,000….. B. 6,000-11,000……. C. 12,000-17,000….. D. 18,000-23,000,

E. More than 24,000

9. Body mass index level

A. normal…….. B. Overweight…… C. Obese …….Any other…….

10. Current medication you are taking

A. insulin…….B. Oral……. C. Both …… D. Oral tablets ……..

11. Glycemic control status

A. controlled…….. B. Uncontrolled ……..

**12 . When were you diagnosed with diabetes mellitus type II?**

A. Below- 2 years ago… B. 3-5yrs ago.. ..C.6-8yrsago….D. More than 9 years ago…

**13. Where was the diagnosis made?**

A. Home…. B. Hospital….. C. Any other place (please specify)……..

Any disease related co-morbidity? Kindly specify in the space provided……..

…..……

14. **After knowing that you had DMTII, how did you take it?Indicate in the spaces provided**

…..……

**15.What was your feelings after knowing that your relative had been diagnosed with TIIDM? (indicate in the spaces provided …..**……

…..……

**PART B: ROUTINE SELF-CARE PRACTICE**

16. Do your family members routinely participate in supporting you to perform the following self-care practice? Put the tick as Yes or No in the following statements below

A. Develop healthy eating and activity plan.

B. Cook following nutritionist's instructions.

C. Feed as per doctors instructions with the right amount, time and consistency.

D. Monitor blood sugars on daily basis by myself

E. Recognize the signs of high or low blood glucose levels.

F. Know the action to take when blood sugar levels is low or high.

G. Take it as my responsibility to do exercise.

H. Take drugs as per doctors instructions without missing

I. Seek medical intervention when sick

J. Monitor my feet, eyes and skin to catch the problem early

K. Always put on closed shoes

L. Consult when unable to handle a particular task

M. Intentionally take alcohol and or smoke cigarette and other substances.

N. Manage stress and deal with daily diabetes care

O. Buy diabetes supplies and store them properly

***(Options with yes answer was regarded as good self-care practice)***

**SECTION I: SELF-MONITORING OF BLOOD GLUCOSE LEVELS**

17. when was your last fasting blood glucose level test

A. last 3 months ago

B. within last 6 months

C. 1-2 years ago

D. any other specify……

18. Did any of the family participate in any way?

If yes , indicate how ……..

17.How do you monitor your blood sugar levels?

A. Through signs and symptoms of either hyperglycaemia of hypoglycaemia

B. Going to near health facility for daily check-up

C. Check urine on daily basis

D. Any other (please specify)

18. Tell me do you have any warning sign in your blood glucose fluctuation?

A. Yes …..B. No…….. C. Do not know ……

19.( i).If your answer is yes what are the warning signs ? Indicate in the spaces provided)

i) when the blood glucose level is rising…….....

ii) When blood glucose level is declining ……

20.Do family members participate in any way in blood glucose regulation ?

A Yes……. B. No……

21. If your answer is yes, in which ways? (indicate in the spaces provided.)

B. Act as a reminder B. do the testing .. C. Accompany the patient.. D any other(specify)

**SECTION II: FOOT CARE**

22.Do you have any diabetes foot? A. Yes B. No

i) If your answer is No to question no 17 above kindly skip

ii) If yes, tell me how you routinely take care of your feet? ( indicate in the space provided)

A. Always putting on closed shoes……

B. Always cleaning in between the toes with warm salty water…

C. Avoiding areas with thorns……

D. Applying powder in the wound……

E. Always putting on open shoes to facilitate air circulation to the toes..

F. Any other (specify)……..

23.How many of the last 7 days did you check your feet?

24. how many of the last 7 days did you inspect your feet?

25. How many of the last 7 days did you inspect inside of your shoes?

**SECTION III: HEALTHFUL DIET**

26. Do you have a 24 hour meal planning?

27.Has any of your family member participated in helping you come up with meal plan?

A. Yes B. No

28.How many of the last 7 days have you followed a healthful eating plan?

A. 1-2…… B. 3-4…… C.5-6….. D. All the 7 days…….

29. Has any of the family members helped you to come up with healthful eating plan A Yes B No

30.If yes, in which ways……

A. Buying the types foods to mix
B. Calculation of amount of food to take
C. Participating in cooking food
D. Advising the amount to eat
E. Any other (specify…….)

31.On the last 7 days how many times have you eaten fruits?

A. 1-2…… B. 3-4…… C.5-6….. D. All the 7 days…….

i) Has any of the family members helped you in choosing the fruit to eat? A. Yes B.No

ii) If your answer is YES indicate in which ways……

32.How many of the last 7 days did you avoid high fatty foods such as red meat or dairy products?

A. 1-2…… B. 3-4…… C.5-6….. D. All the 7 days…….

33.Tell me about the challenges observed in regard to taking your diet if any? If none kindly skip…… go to the next question below.

**SECTION IV: DRUG ADHERENCE**

34. Are you taking any anti-diabetes drugs? A Yes ……. B, No……

i). If your answer to the above question is Yes, for the last 7 days, have you ever failed to take your medicine because of any reason? A. Yes B. No

ii). If yes to the above question, did any of the family member participate in any way in this exercise?

A. Yes B. No ( skip)

35.Any challenges faced in line of adhering to the prescribed medicine?( indicate in the spaces provided……

**SECTION V: PHYSICAL ACTIVITY (EXERCISE)**

36.Do you perform any physical activities aimed at controlling the blood glucose levels?

A, Yes …….. B. No……

37) If yes, indicate the types in the spaces provided; A. low B. Moderate C. High-intensity

ii).If your answer is No, what are the reasons (indicate in the spaces provided) ,,,,……

38.How confident are you in carrying out the self-care activities? Put your answer in the spaces

provided……

……

39.Do family members offer any form of support in physical activity? A. yes… B. No ……

If yes to the question above, what type? Specify in the space provided…….

*Those who performed such activities for 3 days and below was termed as poor while 4 days and above good*

**VII; LIFESTYLE BEHAVIUOR CHECKLIST QUESTIONS**

40.Did you smoke even a puff of cigarette?

A. users B. No non-users

Do you usually take Alcohol?

A. Consumers B. Non –consumers

Do you take appropriate diet?

A. Adherent B non-adherent

Self-monitoring of blood glucose levels

A. Done B. Not done

**VII. COPING STRATEGIES**

41.Is there any family member who participated in helping you cope and accept this disease? If yes in which ways indicate…….

41.In your own words, describe how you would integrate self-care practice into your daily life situation ***(indicate in the space provided )***……..

42.In your own opinion, suggest best ways that can be done to enhance family participation improve self-care among the sick individuals……

**PATIENTS RELATED FACTORS INFLUENCING FAMILY PARTICIPATION IN SELF-CARE MANAGEMENT.**

43.In which ways has your educational levels influenced your family in participating in self-care activities?

***Indicate in the spaces provided***……

44..Has your knowledge on self-care activities influenced your daily diabetes practices in any way? ***(Explain your answer in the spaces provided)***……

45.Has your age affected the family participation in daily self-care practice?

A. Yes…… B. No…….

46.If your answer is yes how ? Put your answer in the space provided?.....

**…….**

**…**

47.In your own words, describe your experience on reaction of family members on learning on diagnosis of the disease.

***(Indicate in the spaces provided)***……

48..Has the family support provided made you realize the sense of belonging hence motivated you in improving diabetes self-care practice ?

(i) If yes in which ways? (***Indicate your answer in the space provided)***……

……

49 What are some of the important measures would you take to enhance family participation ***( indicate in the spaces provided)***……

50. Since diagnosis of the disease, how have you been able to cope and accept this chronic disorder? ***(Indicate in the spaces provided)***……

51.Has your cultural beliefs and practices affected your family in participating in diabetes self-care management? in any way? ***Please indicate in the space provided***……

.(.i )If no skip and move to next question

52..Has your religious beliefs influenced your routine diabetes self-care management in any way……

A. Yes B. No

If your answer is yes, indicate in which ways?

53.In your own opinion, State the factors that you think;

A. Prevent family participation in self-care management

B. Positively influence family participation in self-care management

54..In your own opinion, what are some benefits in family participation in self-care management to the patient……

…..……

55. Would you recommend family participation in diabetes self-care management ?

A. Yes B.

If yes, what are the reasons? Indicate in the space provided.

**FAMILY RELATED FACTORS INFLUENCING THEIR PARTICIPATION TO DIABETES SELF-CARE**

56. Relationship to the patient ( indicate in the space provided)……..

57 **.** Tell me about how much do you know about diabetes mellitus TII ?

58. How did you react after learning that your relative had been diagnosed with diabetes

59. How has been your perception towards this disease made you change your effort in participating to diabetes self- care management? A. Yes B. No.

If yes indicate in which ways in the space provided. ( indicate in the space provided

……

60.. Have you ever helped your patient to execute any of the main self-care activities? ***Explain your response in the space provided***……

61.. At what areas do you actively participate in helping the patient practice to self-care management? ***Indicate in the space provided.***

62. Has your personal daily activities affected your participation in diabetes self-care activities in any way ?

A Yes……. B. No…….

(i ). If your answer is Yes in which ways ? indicate in the space provided……..

(ii).If your answer is no, what are the reasons ….……

63. Please tell me about the challenges you usually face in an effort to help your patient improve family participation in diabetes self-care practice. ( indicate in the spaces provided)……..

….……

…….

64.What are some of the benefits in family participation in self-care management ( indicate in the spaces provided……..…….

65.Has the sickness of your relative disrupted your daily activity in any way? A. Yes B.No

If yes, indicate in which ways ***indicate in the spaces provided***……

…..……

……

66. How do you handle patients Blood glucose problems when they arise at home ? indicate in the space provided……

67. Have you ever experienced mental fatigue in integrating patients problems with your own issues? Indicate how in the space provided……

68.Would you recommend family participation in supporting the patient in diabetes self-care practice? A. Yes …. B. No……

Give reasons for your answer……..

**Appendix III: Interview Guide Questionnaire**

**Interview schedule**

**Objective 1**

**Determination of the usual self-care practices among DMTII patients in Kitui county.**

1. What self-care practices do DMTII patients in Kitui County engage in to manage their condition on a daily basis?

……

……

……..

2. What is the frequency and duration of these self-care practices among DMTII patients in Kitui County?

……

……

……..

3. Are there any variations in self-care practices among different age groups of DMTII patients in Kitui County?

……

……

……..

4. How do DMTII patients in Kitui County access information on self-care practices for their condition?

……

……

……

5. What role do healthcare professionals play in promoting self-care practices among DMTII patients in Kitui County?

……

……

……..

6. What are the attitudes and beliefs of DMTII patients in Kitui County towards self-care practices and their perceived effectiveness?

……

……

……..

7. What are the main challenges that DMTII patients in Kitui County face in implementing self-care practices for their condition?

……

……

……..

8. How do DMTII patients in Kitui County integrate self-care practices into their daily routines and lifestyle?

……

……

……..

**Objective 2**

**Determination of the patients' related factors influencing family participation in self-care among DM TII patients at Kitui county.**

1. What is the level of family involvement in the self-care of patients with DMTII in Kitui County?

……

……

……..

2. What are the factors that influence family participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

3. What is the perception of patients with DMTII in Kitui County towards family involvement in their self-care?

……

……

……..

4. How does the level of education of patients with DMTII in Kitui County influence family participation in their self-care?

……

……

……..

5. What is the impact of the socio-economic status of patients with DMTII in Kitui County on family participation in their self-care?

……

……

……..

6. What is the role of cultural beliefs and practices in family involvement in the self-care of patients with DMTII in Kitui County?

……

……

……..

7. Are there any gender differences in family participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

8. How does the level of support from healthcare providers influence family participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

**Objective 3**

**Determination of factors influencing family participation in self-care among DMTII patients at Kitui county.**

1. What is the level of family involvement in the self-care of patients with DMTII in Kitui County?

Higher [ ] Average [ ] No participation [ ]

2. What are the factors that hinder or facilitate family participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

3. What are some of the cultural beliefs and practices influence family participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

4. How does the level of education of family members influence their participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

5. What is the impact of the socio-economic status of families on their participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

6. What is the role of gender in family participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

7. How does the level of support from healthcare providers influence family participation in the self-care of patients with DMTII in Kitui County?

……

……

……..

8. Are there any differences in family participation in the self-care of patients with DMTII in urban and rural areas of Kitui County?

……

……

……..

**Objective 4**

**To establish the best intervention strategies to improve family participation in self-care among DMTII at Kitui county.**

1. What are the most effective intervention strategies for improving family participation in self-care among individuals with DMTII in Kitui County?

……

……

……..

2. How does involving family members in diabetes self-care impact glycemic control among individuals with DMTII in Kitui County?

……

……

……..

3. What are the barriers to family participation in diabetes self-care among individuals with DMTII in Kitui County, and how can they be overcome?

……

……

……..

4. What is the relationship between family support and diabetes self-care behaviors among individuals with DMTII in Kitui County?

……

……

……..

5. How can health care providers effectively engage family members in diabetes education and self-care support in Kitui County?

……

……

……..

6. What role do cultural beliefs and practices play in family participation in diabetes self-care among individuals with DMTII in Kitui County?

……

……

……..

7. What is the impact of technology-based interventions on family participation in diabetes self-care among individuals with DMTII in Kitui County?

……

……

……..

8. How do socioeconomic factors, such as income and education, influence family participation in diabetes self-care among individuals with DMTII in Kitui County, and what interventions are effective in addressing these factors?

……

……

……..

**Objective 5**

**Evaluation of the effectiveness of the developed model on improving family participation in self-care management among DMTII patients at Kitui county.**

1. What is the baseline level of family participation in self-care management among DMTII patients in Kitui county?

……

……

……..

2. What are the factors that contribute to low levels of family participation in self-care management among DMTII patients in Kitui county?

……

……

……..

3. What are the challenges that DMTII patients and their families face in self-care management in Kitui county?

……

……

……..

4. What are some of challenges and barriers to family participation in self-care management among DMTII patients in Kitui county?

……

……

……..

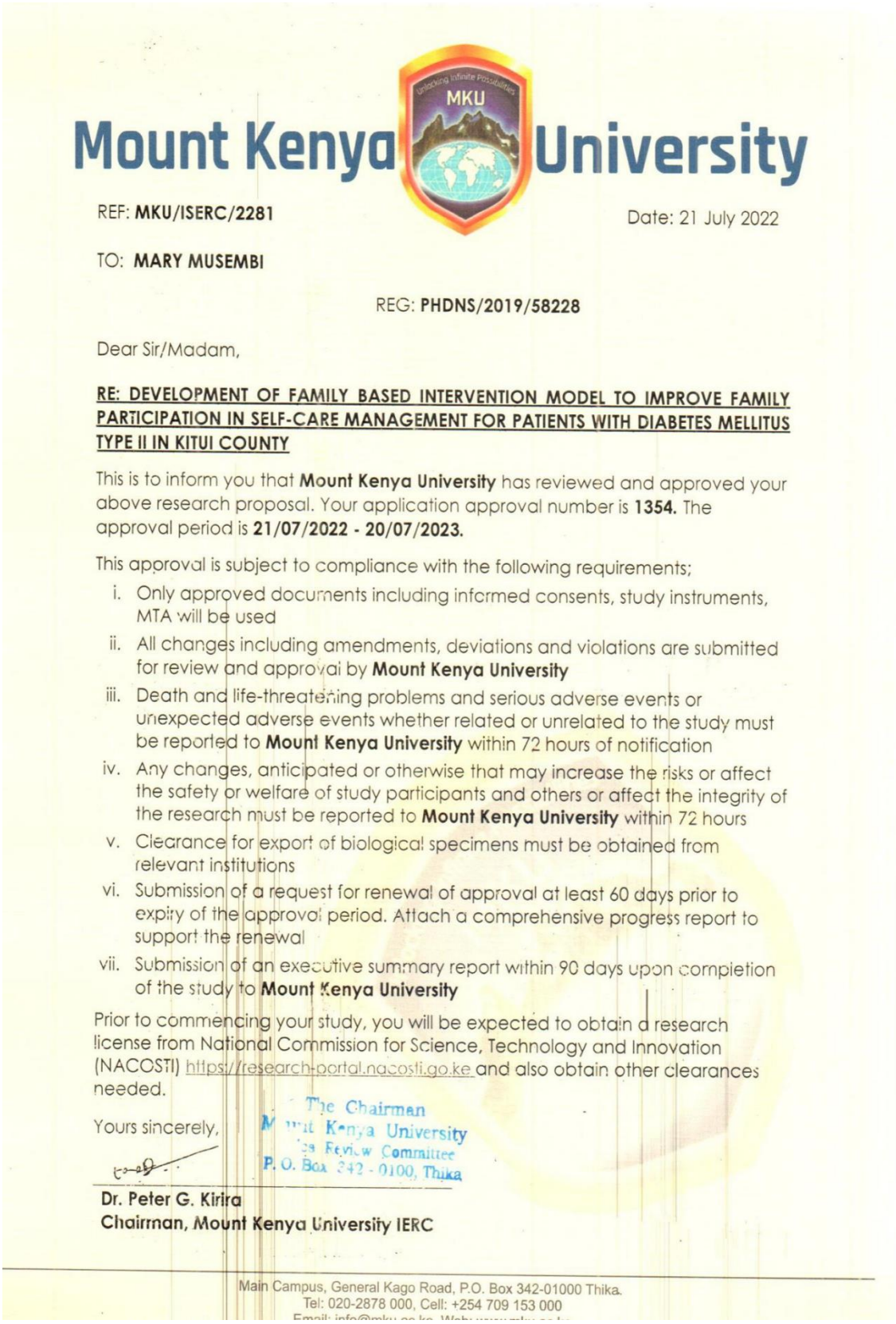
5. What is the impact of the developed model on glycemic control among DMTII patients in Kitui county?

……

……

……..

## Appendix IV: ERC Certificate



Mount Kenya University

REF: **MKU/ISERC/2281**

Date: 21 July 2022

TO: **MARY MUSEMBI**

REG: **PHDNS/2019/58228**

Dear Sir/Madam,

**RE: DEVELOPMENT OF FAMILY BASED INTERVENTION MODEL TO IMPROVE FAMILY PARTICIPATION IN SELF-CARE MANAGEMENT FOR PATIENTS WITH DIABETES MELLITUS TYPE II IN KITUI COUNTY**

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **1354.** The approval period is **21/07/2022 - 20/07/2023.**

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 **Mount Kenya University**
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 **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 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 **Mount Kenya University**

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

Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342 - 0100, Thika

**Dr. Peter G. Kirira**
**Chairman, Mount Kenya University IERC**

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Tel: 020-2878 000, Cell: +254 709 153 000

**Appendix V: Introductory Letter**

Mount Kenya University

## DIRECTORATE OF GRADUATE STUDIES

PHDNS/2019/58228

26th August, 2022

*The Director, Research Coordination Division*
*National Commission for Science, Technology & Innovation*
*Utalii House, 8th & 9th Floor*
*P.O Box 30623- 00100*
*NAIROBI*

Dear Sir/Madam,

RE: MARY MUSEMBI – REGISTRATION NO. PHDNS/2019/58228

The purpose of this letter is to introduce the above named student who is pursuing **Doctor of Philosophy in Nursing** in the **Department of Nursing** in the **School of Nursing.**

The title of her research is *"Development of Family Based Intervention Model to Improve Family Participation in Self-Care Management for Patients with Diabetes Mellitus Type in Kitui County."*

She has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data for her research between **August, 2022 and February, 2023.**

Any assistance accorded to her will be highly appreciated.

Thank you.

Mount Kenya University
P. O. Box 342 - 01000, THIKA
Office of the Director
Graduate Studies

Dr. Samuel M. Karenga, Ph.D.
Director, Graduate Studies
Enc.

## Appendix VI: Approval Permit from NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **824640**

Date of Issue: **17/October/2022**

**RESEARCH LICENSE**

**This is to Certify that Ms.. Mary MUsembi MUsembi of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kitui on the topic: DEVELOPMENT OF FAMILY BASED INTERVENTION MODEL TO IMPROVE FAMILY PARTICIPATION IN SELF-CARE MANAGEMENT FOR PATIENTS WITH DIABETES MELLITUS TYPE II IN KITUI COUNTY for the period ending : 17/October/2023.**

License No: **NACOSTI/P/22/20636**

**824640**

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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**See overleaf for conditions**

**Appendix VII: Similarity Index**

# DEVELOPMENT OF FAMILY BASED INTERVENTION MODEL TO IMPROVE FAMILY PARTICIPATION IN SELF-CARE MANAGEMENT FOR PATIENTS WITH DIABETES MELLITUS TYPE II IN KITUI COUNTY.

*by* Mary Musembi

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**Submission date:** 16-Apr-2024 02:19PM (UTC+0300)
**Submission ID:** 2351566735
**File name:** Mary_Musembi_Thesis_15.04.2024.docx (4.23M)
**Word count:** 52293
**Character count:** 308633

# DEVELOPMENT OF FAMILY BASED INTERVENTION MODEL TO IMPROVE FAMILY PARTICIPATION IN SELF-CARE MANAGEMENT FOR PATIENTS WITH DIABETES MELLITUS TYPE II IN KITUI COUNTY.

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"Socio-demographic and clinical determinants of self-care in Chinese adults with type 2 diabetes: a multicenter cross-sectional study", Research Square Platform LLC, 2024

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