

**MANAGEMENT OF PSYCHOSOCIAL COMPLICATIONS  
ASSOCIATED WITH DIABETES MELLITUS AMONG ADULT  
PATIENTS AT KENYATTA NATIONAL HOSPITAL**

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## **Declaration**

I, Catherine Musenya Nzau do declare that this research project is my original work and has not been submitted for award of credit to any other institution, college or university.

Signature .....

Date.....

## **Certificate of Approval**

This research project has been submitted for examination with our approval as the university supervisors.

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## **Dedication**

I dedicate this research to my mother Christine, my siblings, Joshua, Shedrack and James who were great source of inspiration, Wicky for his support and encouragement throughout the study, and to all KNH patients with diabetes mellitus to whom I am committed to their treatment, enhanced adherence and improved quality of life

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May the Almighty God bless you all abundantly

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## **List of Abbreviations and Acronyms**

**BMI-** Body mass index

**CDC-** Centre for Disease Control

**CHD-** Coronary heart disease

**CVD** –Cardiovascular disease

**DKA** –Diabetes ketoacidosis

**DM-** Diabetes Mellitus

**GDM-** Gestational Diabetes Mellitus

**HRQL-** Health related quality of life

**IFD-** International federation for diabetes

**NICE** –National Institute for Health and Care Excellence

**QOL-** Quality of life

**T1DM-** Type1 diabetes mellitus

**T2DM-** Type 11 diabetes mellitus

**WC-** Waist circumference

**WHO-** World Health Organization

**WHR-** Waist-to-hip-ratio

**WHtR-** Waist-to-height-ratio

## **Definition of terms**

**Adherence-** to treatment is the extent to which the patient's history of therapeutic drug-taking coincides with the prescribed treatment (WHO 2017)

**Compliance-** measurable response or observable successful outcome of treatment

**Complications-** a secondary disease or condition that develops in the course of a primary disease or condition and arises either as a result of it or from independent causes (Merriam-Webster 2017)

**Health-** the condition of well-being as reported by the individual and observed by practices for the sake of promoting it

**Management-** the specific treatment of a disease or condition (English Dictionary 2014)

**Nursing-** a caring profession practiced by an individual registered with the NCK to achieve or maintain health

**Therapy-** a treatment regime for diabetes control and management involving oral drugs, insulin injection, diet and lifestyle modification

## **Operational definitions of terms**

**Diabetes** –patients diagnosed with diabetes mellitus either Type 1 diabetes or Type 2 diabetes at Kenyatta National Hospital

**Holistic health care** –comprehensive approach to health care for the diabetic patients that treats the “whole” person including the psychosocial complications

**Incidence** –the number of newly diagnosed diabetic patients occurring within a period of time

**Prevalence** –diabetic patients who have developed psychosocial complications associated with the chronic illness, therapy regime e.g. daily injections, cost implications of the therapy, and storage of insulin challenges

**Psychosocial complications-** the implications of a diagnosis of diabetes mellitus and its management on the person and their family, experiencing various emotions including anxiety, depression, guilt among others

**Management of psychosocial complications-** the interventions that bring positive adjustment to the patient with diabetes mellitus to accept the diagnosis and the need for lifestyle change and also adopt coping strategies

## **Abstract**

**Introduction:** diabetes mellitus (DM) is a chronic illness that causes diverse psychosocial impact on the patients. Patients diagnosed with diabetes mellitus require psychosocial support right from the day when the diagnosis is made and throughout their life. This will enhance treatment adherence, improved quality of life, and decrease in long-term complications among others.

**Background:** management of psychosocial complications in diabetic patients is part of the comprehensive holistic care for diabetes mellitus. However psychosocial support for patients with diabetes mellitus is generally inadequate due to its increasing demand and the accompanying challenges of the healthcare professionals being unable to identify these psychosocial complications associated with diabetes mellitus. At Kenyatta National Hospital, major emphasis is put on the management of physical complications of diabetes mellitus leading to the inadequate care that these patients receive. Therefore the need to carry out this study in order to identify the gaps and provide a baseline for incorporation of the management of psychosocial complications associated with diabetes mellitus in to the holistic care of patients with diabetes mellitus.

**Study objective:** the study focused on management of psychosocial complications associated with diabetes mellitus among adult patients at Kenyatta National Hospital.

**Methodology:** the study adopted a descriptive cross-sectional study design with utilization of mixed research methods, both qualitative and quantitative approaches. Multistage sampling method was used for the participants. The participants were patients with diabetes mellitus drawn from the medical wards and those attending the medical (diabetes) out-patient clinic. Data collection methods included questionnaires and checklists for the patients for primary data collection. Key informant in-depth interviews were conducted for assistant chief nurses managing the medical wards and medical (diabetes) out-patient clinic. On ethical considerations, consent was obtained from every participant, they were allowed to participate voluntarily and the participants' anonymity and confidentiality were observed. Participants' names were not used; however Codes were utilized to maintain participants' anonymity. The collected data was computed and analyzed using SPSS (statistical package for social sciences) version 21. Results were presented by use of tables and charts for quantitative data and formation of themes for qualitative data. Study results can form a baseline for inclusion of management of psychosocial complications associated with diabetes mellitus and multidisciplinary approach in care of patients with diabetes mellitus can be incorporated.

**Results:** The common psychosocial complications associated with diabetes mellitus identified included weakness/fatigue (75.3%), eye problems (35.5%), sexual dysfunction (22.6%) and inability to work (22.6%), anxiety (68.8%), stress (78.2%) and depression



(61.3%). Anxiety, stress and depression were common among patients who were admitted to the hospital. The highest percentage of the respondents (45.2%) was within the age group of 41-60 years. Male patients were more (52.7%) than the female patients (47.3%).

**Conclusion:** The study findings demonstrate that identification of psychosocial complications associated with diabetes mellitus and their management were a major challenge to the health care professionals.

# CHAPTER ONE: INTRODUCTION

## 1.1 Back ground

Diabetes mellitus comprises a group of metabolic derangements that are characterized by chronic hyperglycemia and impaired protein, carbohydrates and lipid metabolism due to imbalance between insulin secretion and its action on the target cells. Insulin is one of the hormones produced by the pancreas, which regulates blood glucose level by causing body cells to absorb glucose from the blood (Katzung *et al.* 2012).

Diabetes mellitus is classified into three main types namely: Type1 diabetes mellitus (T1DM) which occur as a result of destruction of the beta cells of the pancreas. This destruction leads to an absolute lack of insulin, elevated blood glucose level and increased breakdown of body fats and proteins. It is often referred to as insulin dependent or juvenile-onset diabetes. It's common in children and young adults although it can also affect people of any age. Patients with T1DM require insulin injections daily to survive (Kelo *et al.* 2008). Type 2 diabetes mellitus (T2DM) where patient present with elevated blood glucose level as a result of insulin resistance and reduced insulin production. It's common in older and overweight persons although it might occur earlier. Metabolic derangements that lead to T2DM are; insulin resistance, impaired insulin secretion by the beta cells, and increased glucagon activity to produce more glucose from the liver. Gestational DM (GDM) refers to hyperglycemia with glucose intolerance that is detected for the first time during pregnancy (Matfin *et al.* 2009).

According to WHO (2016), the latest global prevalence of diabetes is 422 million patients by 2016 and this figure by 2035 may rise to 592 million, this demonstrates that diabetes has become a burden in the entire world. Studies have shown that countries in Europe and North America have DM incidences categorized as either high or intermediate. In Africa, the incidence of diabetes is generally intermediate however it is low in Asia. In Australia for instance, studies have shown that DM is one of the major health priorities with a very high health cost burden. Approximately 130,000 persons (0.4% of Australian population) have T1DM. About 47% of them are below 45 years of age and are female, thus T1DM is more prevalent among women of child bearing age and accounts for about 23,000 women in this age bracket (Rasmussen *et al.* 2013)

T2DM makes up about 85% to 90% of all cases and this reflects an increase in risk factors for T2DM especially overweight or obese. There is a high prevalence of diabetes (mostly T2DM) in the developed countries, this is due to the urbanization trends such as lifestyle changes like increased sedentary lifestyles, less physical demanding work and the enticing global nutrition, which is marked by increased intake of foods that are rich in energy but poor in nutrient content (rich in sugar and fats that are saturated). According to WHO 1.5 million deaths occurred in 2012 as a result of diabetes and in Kenya, about 1% of deaths were directly attributed to diabetes. Another study done by International Diabetes Federation (2014) revealed that 4.9 million deaths occurred worldwide due to diabetes alone in the year 2014, thus in a span of two years the number of deaths associated with diabetes worldwide increased by 3.4 million.

In Sub-Saharan Africa, T2DM accounts for over 90% of diabetes mellitus. T2DM prevalence, range from 1% in rural Uganda to about 12% in urban parts of Kenya. The Prevalence for T1DM was 4 per 100,000 in Mozambique to 12 per 100,000 in Zambia by 2011. According to international diabetes federation (IDF), Africa is leading with new infections of diabetes and Kenya has the highest prevalence rate (5.6%) of diabetes in sub-Saharan Africa. Prevalence is also differential based on ethnicity and regions (Nyawira 2016).

DM is associated with many complications which could be physical or psychosocial in nature. Physical complications include; diabetic retinopathy, a major cause of blindness which is associated with elevations in blood glucose level and hyperlipidemia due to uncontrolled diabetes; diabetic nephropathy, leading to renal disease as a result of increased work demands and micro albuminuria brought about by poorly controlled blood glucose level. DM is also associated with diabetic neuropathies which affect both somatic and autonomic nervous systems and its due to demyelination effects of long-term uncontrolled blood glucose levels; macro vascular disorders, for instance coronary heart disease, cerebrovascular accident (CVA) and peripheral vascular disease, all occurring as a result of unregulated blood glucose level combined with elevated blood pressure and hyperlipidemia; acute complications include, diabetes ketoacidosis common in T1DM patients, hypoglycemia and hyperosmolar hyperglycemic non-ketotic state common in T2DM patients (Matfin 2009)

In addition, DM is also associated with psychosocial complications including; depressive disorders (Anderson *et al.* 2009); anxiety and fear disorders, Diabetes distress, very common among the adolescents. Parents of children with T1DM are also prone to developing diabetes distress (American Diabetes Association 2014)

DM is also associated with stress which is common with adolescents although can occur in all ages and its due to the chronic illness; quality of life, studies have indicated that patients with good control of blood glucose levels as opposed to poor control have less DM –related symptoms, reduced anxiety and improved positive self-concept (Ashraff *et al.* 2013); family members' involvement and support, as well as adaptation to the treatment burden is a major challenge. Communication in the family, solving conflicts amicably and application of problem solving techniques are key components in management of T1DM in families (Ashraff *et al.* 2013); emotions are substantial effects on character when a trigger or a state is of personal or social significance to the individual.

The goal of management for DM is to maintain serum glucose level at near normal without subjecting a patient to hypoglycemia and improve the quality of life. Psychosocial management of DM is associated with good clinical patient outcome, treatment adherence, improved QOL, improved self-care and raised self-esteem. However in Kenya this aspect of care is not well documented in most health care institutions. Studies on management of psychosocial complications among DM patients are very minimal.

## **1.2 Problem statement**

DM is a global challenge causing immense suffering to individuals and families. DM is associated with both physical and psychosocial complications. Many times the management for physical complications contributes to psychosocial complications. For instance, a DM patient who is on insulin develops stress related to the daily injections and blood sugar monitoring. Psychosocial management of DM is associated with good patient outcome, treatment adherence, improved QOL, improved self-care and raised self-esteem and therefore the need of management of the psychosocial complications to be addressed with similar motivation and vigor as the physical complications. When addressed they have also been attributed to good clinical outcome and prevention of long-term complications.

It has been noted that at Kenyatta National Hospital, the main focus of DM care is usually on the physical complications management including diabetic wound care. A random check on 12 patients admitted with diabetes mellitus at the KNH medical wards demonstrated that DM patients received minimal psychosocial care. One of the DM patients with stress had frequent readmissions with diabetes ketoacidosis (DKA). Other patients had stress, depression and anxiety which had implications including non-adherence, decreased self-care, low mood, and poorly controlled blood glucose.

Therefore, addressing psychosocial effects of DM may result in good clinical outcome. However, there are minimal studies on management of psychosocial complications associated with diabetes mellitus in Kenya; therefore this study sought to determine the management interventions of psychosocial complications associated with diabetes mellitus among adult patients at Kenyatta National Hospital.

## **1.3 Study Questions**

1. What are the demographic characteristics of diabetic patients in the medical wards and diabetes mellitus clinic at KNH?
2. What are the anthropometric measurements for diabetic patients' monitoring in the medical wards and diabetes mellitus clinic at KNH?
3. What are the psychosocial effects associated with diabetes mellitus among adult diabetic patients at KNH medical wards and diabetes mellitus clinic?
4. Are there psychosocial management interventions for diabetic patients in the medical wards and diabetes mellitus clinic at KNH?

## **1.4 Research objectives**

### **1.4.1 Broad Objective**

To assess the management of psychosocial complications associated with diabetes mellitus among adult patients at Kenyatta National Hospital

### **1.4.2 Specific Objectives**

1. Determine the demographic characteristics of diabetic patients
2. Describe the anthropometric measurements for diabetic patients
3. Identify the psychosocial effects associated with diabetes mellitus among adult diabetic patients
4. Determine the psychosocial management interventions for diabetic patients

## **1.5 Null Hypothesis**

There are no established management interventions for psychosocial complications in patients with diabetes mellitus at KNH

## **1.6 Justification**

Most studies that have been done have focused on the management interventions for the physical complications of DM at Kenyatta National hospital. Management of psychosocial complications in diabetic patients play a major role in the patients' outcome, for instance, improved self-care management and quality of life and also adherence to treatment. Holistic care approach for DM patients provides a good clinical outcome and prevention of long term complications. Studies on management interventions of psychosocial complications associated with diabetes mellitus are minimal in Kenya; therefore this study sought to determine the management interventions of psychosocial complications associated with diabetes among adult patients at the Kenyatta National hospital. The findings of this study can be used by the policy makers to design policies and guidelines that can be used in management of psychosocial complications associated with DM to improve the quality of life and achieve a good clinical outcome.

## **1.7 Significance**

The study findings provided a baseline to the KNH management to develop policies to guide in management of psychosocial complications associated with diabetes mellitus and this can help reduce the burden of care for DM patients in the hospital. The study findings can also help in improving nursing care by including psychosocial complications management in the care plan

for diabetic patients, nurses can develop guidelines to follow during provision of care to the diabetic patients and the patients receive better holistic care hence have less long term complications of DM . The study provided a base for the need of multidisciplinary approach in caring for the DM patients

## **1.8 Identified Variables**

### **1.8.1 Independent variables**

Demographic- age, gender, marital status, occupation

Psychosocial complications- depression, stress, anxiety, poor adaptation, emotion, unemployment, family and relatives, stigma,

### **1.8.2 Dependent variables**

Management interventions- blood glucose monitoring, medications (oral and injectable), psychosocial care, health education, diet modification and physical exercise, Self-care practices, Anthropometrics- Body mass index (BMI), body weight, waist-to- hip- ratio, waist circumference, and waist-to-height-ratio

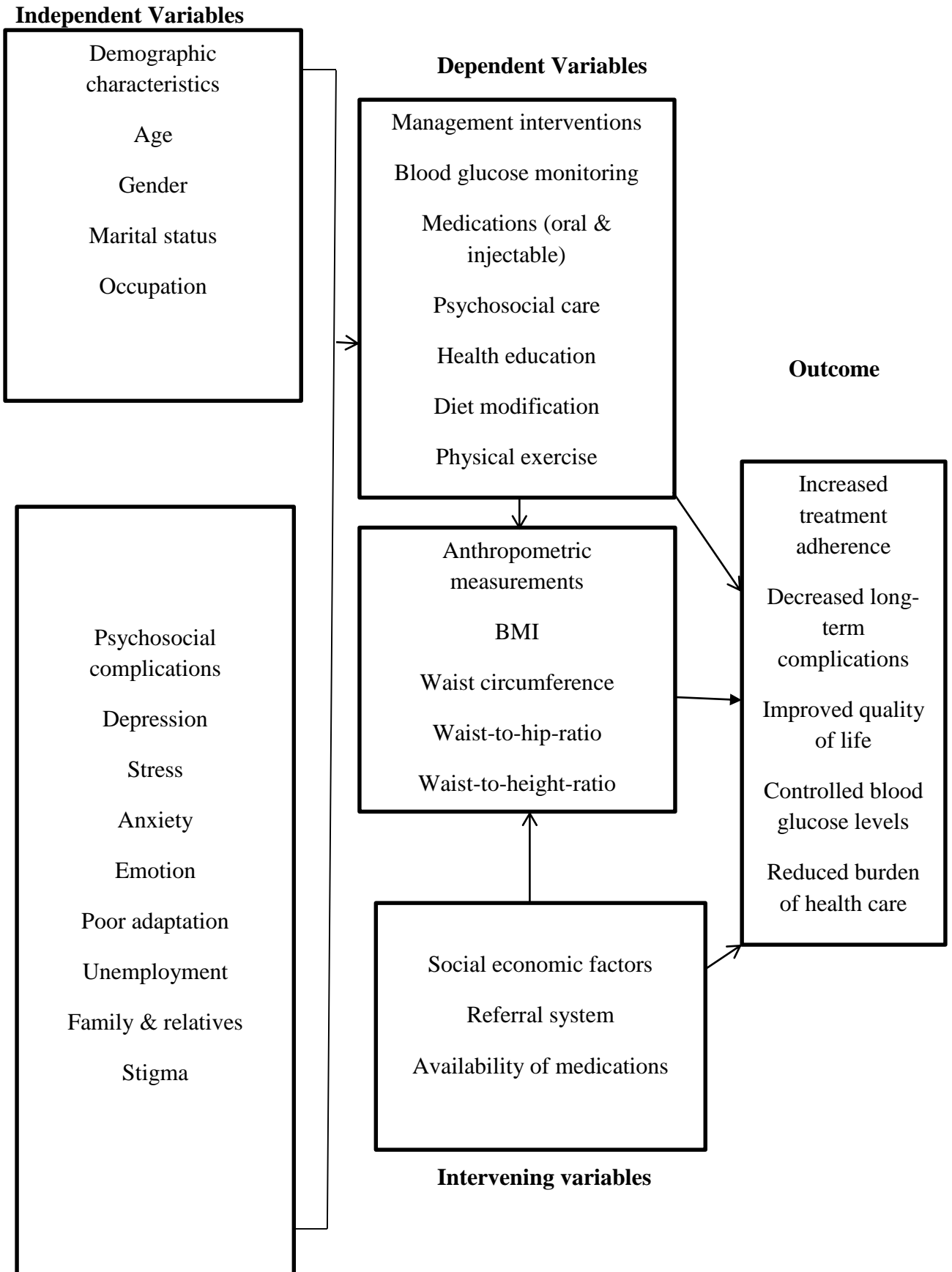
### **1.8.3 Outcome**

Increased treatment adherence, decreased long-term complications, improved quality of life

### **1.8.4 Intervening variables**

Social economic factors, referral system, availability of medications

## 1.9 Conceptual framework



## **1.10 Theoretical framework**

### **1.10 Theoretical Framework**

Hildegard Peplau's theory of interpersonal relations was used in this study on the management interventions associated with diabetes among adult patients at KNH. Peplau's theory of interpersonal relationship has four sequential phases. These are orientation, identification, exploitation and resolution. In Peplau's orientation phase, the psychosocial complications associated with patients with DM are defined. The nurse interacts with the DM patient and defines the psychosocial complications that the patient may have developed. Then the nurse identifies the services that the patient requires to resolve these complications. The patient also seeks assistance and tells the nurse what he/she needs to resolve the psychosocial complications that he/she has. The DM patient gets an opportunity to ask the nurse all the questions that he/she has and the nurse is able to respond and assess the patient's situation (AIPPG 2012)

During identification phase, Peplau outlines that the nurse selects the appropriate management interventions for the psychosocial complications that the patient has. This gives the DM patient the feeling of being accepted and he/she develops some confidence to deal with the psychosocial complications which decrease the feeling of helplessness and hopelessness. The nurse develops a nursing care plan based on the patient's psychosocial complications.

In the exploitation phase of the theory, the nurse assists in seeking problem-solving alternatives based on psychosocial complications and interests of the DM patient. The DM patient gets an opportunity to make requests or seek attention for his/her needs. Most of the time the psychosocial complications may not be identified in DM patients as the nurse concentrates majorly on the physical complications. In this phase, the nurse gets an opportunity to explore and understand the psychosocial complications and deal with them adequately. The nurse should have knowledge on different phases of communication so that he/she can understand when the DM patient is communicating at whichever phase so as to be able to identify all the psychosocial complications that the patient may be developing and provide the appropriate interventions.

In Peplau's resolution phase of terminating the nurse, patient relationship, the nurse evaluates the management interventions for the psychosocial complications to assess if the goals have been met and patient's problems solved (Petiprin 2016)

In this theory, Peplau believes that the person (DM patient) tries to minimize anxiety that is brought about by his/her needs. DM patients develop anxiety disorders during their course of disease which requires interventions to enhance glycemic control and improve quality of life. These patients also have other psychosocial complications and so they strive to reduce the tension generated by these psychosocial complications. The patient's culture should also be factored in during the plan of care.



Peplau calls health a symbol implying development of personality and other processes. She points out that a healthy person should be creative and productive. Peplau describes nursing as an interpersonal process which is significantly therapeutic (Gonzalo 2011). It is the relationship between a DM patient needing health care services and a professional nurse who is able to recognize the psychosocial complications that DM patients develop and the health care professionals provide the appropriate management interventions.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

The chapter highlights the demographic characteristics of diabetic patients, followed by the anthropometric measurements that are used in monitoring patients with diabetes mellitus, next are the psychosocial effects associated with diabetes mellitus, and the chapter ends with the psychosocial management interventions for diabetes mellitus.

### **2.2 Demographic characteristics**

#### **2.2.1 Age**

Age and gender significantly influences the psychosocial response to DM. Studies that have been conducted among the adolescents have demonstrated that there is a direct relationship between general psychological functioning and metabolic control (Ashraff *et al.* 2013). Another study carried out in Saudi Arabia showed that age affected significantly the level of worry among diabetic patients especially those under the age of 35 years (American Diabetes Association 2016).

#### **2.2.2 Gender**

According to Siddiqui *et al.* (2013), DM is more prevalent in males (2.3%) than in females, however another study conducted by Pond *et al* (2011), revealed that women have worse control of DM than the men of all ages. This could be attributed to the diagnosis of the chronic illness (DM) and the psychosocial complications that women are prone to suffer more than the men, for instance coping and adaptation challenges or family relationships.

A study carried out in Germany among T2DM patients revealed that there was significant gender- specific differences between therapy adherence and poor glycemic control. 37% of the men reported to have poor glycemic control while another 19% of the men had non-adherence. In contrast, 19% of women reported poor glycemic control while another 18% of the women had adherence. Another study done by William *et al* among 10 young women and 10 young men aged between 15years and 18 years showed that there was a difference in these teenagers on whether or not to assimilate DM in to their identities. Girls were found to have a high likelihood of hiding their non-adherence and developing maladaptation to therapy regime consequently developing a feeling of guilt and self-blame. The maladaptation also results to poor blood glucose control in teenage girls. Contrary boys may aim to disclose their illness publicly, however it may be difficult to have them adhere to the daily insulin injections because of fear of injecting themselves in public e.g. at school (American Diabetes Association 2016).

Female patients with diabetes suffer from anxiety more than the male DM patients hence men tend to cope with the disease more than the women

### **2.2.3 Marital status**

Studies have shown that marital status goes together with general satisfaction with DM and treatment regime. A married person with DM who gets support from the partner will cope better with the disease and may have less psychosocial complications as opposed to a single person with DM. Marital status plays a significant role in the outcome of DM management. There is dissatisfaction and unhappiness among single DM patients (Al-Hazmi *et al.* 2016).

### **2.2.4 Occupation**

Studies have shown that most of the unemployed or retired female DM patients have little or no support from family and friends. DM patients who are employed and have income that is sufficient to cater for their therapies have no challenges with therapy adherence and glycemic control (Tidy 2016).

## **2.3 Anthropometric measurements for diabetes mellitus**

### **2.3.1 Introduction**

Anthropometric measurements in diabetes include; body mass index (BMI), body weight, waist circumference (WC), waist-to-hip-ratio (WHR), waist-to-height-ratio (WHtR). The use of different combinations of anthropometric indices has been applied in monitoring patients and the people with increased health risk factors.

### **2.3.2 Body Mass Index (BMI)**

BMI is gotten by multiplying height and weight ( $\text{kg}/\text{m}^2$ ). An individual is said to be overweight if the BMI is  $25.0\text{kg}/\text{m}^2$  or more. A normal BMI ranges between 18.5 and  $24.9\text{kg}/\text{m}^2$  individuals at ages between 18 and 65 years (Canadian Diabetes Association 2017).

Obesity management in prediabetes delays progression to T2DM and is one of the key treatment modalities for T2DM. Weight loss has significantly shown improvement in glycemic control and delays the need for glucose lowering medications (Diabetes Care 2016). Weight loss also improves self-image and raises the self-esteem for DM patients. The health care professional should discuss with the patient the importance of weight loss and the intervention strategies including diet, physical activity, behavioral therapy and pharmacological therapy. It's recommended that BMI should be calculated and documented in the patient's medical records during each encounter. The health care professional should discuss with the patients if in the findings they are overweight or obese.

The Asian Americans have their BMI cut off point at lower rate, normal  $< 23\text{kg/m}^2$ , overweight  $23\text{-}27.4\text{kg/m}^2$ , obese  $\geq 37.5\text{kg/m}^2$ . Overweight and obese patients should be advised that higher BMI increase their risk for developing cardiovascular disease (CVD). The DM patients with a BMI of  $35\text{kg/m}^2$  or more may require higher dosages or increased number of medication to control their blood glucose. These patients are prone to psychological problems among other problems which require to be addressed (NICE Guidelines 2015).

### **2.3.3 Waist circumference**

It is known that waist circumference (WC) is a major indicator of health risk especially in individuals with excess fat around the waist. Men who have a WC of 102cm or more are susceptible to T2DM, cardiovascular diseases and high blood pressure as well as women with a WC of 88cm or more (Diabetes Canada 2017). Studies have shown that measuring abdominal obesity and central fat accumulation is a main tool in assessing risk of T2DM, heart and risk of death. A study conducted by the Canadian Diabetes Association for different countries/ ethnic groups showed some variations for instance, the European, sub-Saharan African, Eastern Mediterranean and Middle Eastern (Arab), the men had WC of 94cm or greater while the women had WC of 80cm or greater while in South Asian, Chinese, Japanese, South and Central American, the men had a WC of 90cm or greater while the women had a WC of 80cm or greater. This study demonstrated that the women had the same WC in all these countries while the WC for the men varied.

A study conducted by the International Day for the Evaluation of Abdominal Obesity (IDEA) revealed that diabetes is 3 times more prevalent among men with highest WC while in women the prevalence is even 6 times higher. As the WC increases so do the frequency of developing both cardiovascular diseases and diabetes.

### **2.3.4 Waist-to-hip-ratio (WHR)**

Studies have shown that WHR is the most accurate measurement predictor of CVD and mortality in patients with T2DM. A study conducted in Australia demonstrated that women have a high BMI and waist and hip circumferences, while on the contrary, men have a high WHR as well as total body weight (Hoy 2004).

### **2.3.5 Waist-to-height-ratio (WHtR)**

WHtR is a measurement indicator for abdominal obesity, with cardio-metabolic risk. WHtR has a great association with diabetes. A study conducted in the United Kingdom using a boundary value of 0.5 on waist-to-height-ratio revealed that some participants (35%) who had been classified as without increased risk had actually a WHtR of 0.5 and above while those participants who had a normal BMI and a WHtR of 0.5 and above, were at a higher risk for cardio-metabolic diseases including diabetes (Gibson s and Ashwell 2016). Studies have proven that BMI is not as reliable as is WHtR in predicting DM incidences. WC is more reliable in assessing for DM than other indicators of obesity.

## **2.4 psychosocial effects associated with patients with diabetes mellitus**

### **2.4.1 Introduction**

DM causes major psychosocial problems to the patients. Psychosocial support for DM patients is generally inadequate due to its increasing demand and challenges in ability to identify these particular problems (Shariff 2014).

### **2.4.2 Diabetes Attitudes, Wishes and Needs**

A study conducted revealed that while many DM patients attempt to stabilize their health status, about 60% of them end up being started on insulin therapy and this could be probably due to the patients failure to adhere to the treatment modalities recommended by the health care professionals (DAWN 2012). This contributes to the psychosocial problems the DM patients' experience

### **2.4.3 Quality of life**

According to WHO, quality of life (QOL) is what the individual perceives as his/her position in life, according to his/her culture and values in relation to his/her objectives, expected outcomes, set targets, and concerns. It involves the individual's wholistic health i.e. physical health, psychological fitness, ability to perform activities of daily living, ability to interact and develop relationships, individual beliefs and his/her surrounding (Clarke 2010).

Studies have shown that duration of DM is not associated with QOL (Forde 2009). The effects of daily management of DM have an impact on the patient's psychological well-being. DM involves a complex treatment plan that recommends all DM patients to adhere to diet and exercise schedules, monitoring of blood glucose level while at home and use of insulin injections or oral hypoglycemic medications. For DM patients to achieve success in this treatment modality plan of care, they should also incorporate their own objectives (Clarke 2010).

### **2.4.4 Depression**

Depression is usually undiagnosed in 50% -75% of DM patients (Kandyliis *et al.* 2012). Elevated depressive symptoms and depressive disorders affect one in four patients with DM and therefore routine screening for depressive symptoms is very important so as to provide optimum care (Anderson *et al.* 2009). Integrating mental and physical health care can improve outcomes. A study conducted in Ethiopia revealed that depression among diabetic patients had a prevalence of 15.4% (Balcha *et al.* 2016).

#### **2.4.5 Anxiety disorders**

DM patients' common concerns include fear related to elevated blood glucose level, inability to meet blood glucose targets and DM medications (oral medications and insulin therapy). General anxiety is related to insulin injection, anxiety and fear of developing hypoglycemia. Deficits in strength, attractiveness and sexual function contribute to anxiety disorders. The health care professionals should educate the DM patient on the disease process and its effects on the activities of daily living to promote treatment adherence, allay anxiety and prevent DM complications. The nurse should assess the patient during each visit for any unusual behavior for instance self-management behavior beyond the prescribed to achieve glycemic targets or thoughts and behaviors interfering with functions of daily living and take the appropriate action e.g. referring the patient to a psychiatrist (Jeffrey *et al.* 2012).

#### **2.4.6 Diabetes distress**

It is very common among the adolescents diagnosed to have DM and it's usually associated with decline in self-management behaviors and suboptimal blood glucose levels. Parents of children with T1DM are also prone to developing diabetes distress and this impacts negatively to their ability to provide adequate and effective psychological and DM management support for the child (American Diabetes Association 2016)

#### **2.4.7 Stress**

common with adolescents although can occur in all ages and its due to the chronic illness, the fact that the patient has to maintain self-care, take medications on a daily basis for the rest of his/her life, need for daily blood glucose monitoring, diet modification, effects on social interaction like with family members, peers, teachers (for those in school), and handling DM symptoms like hypoglycemia. Studies done on impact of stress on DM management adherence have shown that stress affects metabolic control indirectly, because it interferes with the person's ability to complete the self-care tasks, and metabolic control through its effects on cortisol and other catabolic hormones that influence insulin metabolism (Ashraff *et al* 2013). Health care professional should encourage peer support focused on the relationship between the DM patient and the family to help relieve stress in these patients. Studies have demonstrated that friends and peers are a major source of emotional support to DM patients. This support enhances adherence, metabolic control as well as well-being of the patients especially the adolescents.

#### **2.4.8 Family behavior and support**

Adaptation to the treatment burden is a major challenge. Studies have indicated that family communication, conflict resolution and problem solving skills are key elements of effective family management of T1DM. Patients with fewer conflicts with their family members have well controlled DM (Ashraff *et al.* 2013).

### **2.4.9 Emotions**

Are substantial effects on behavior when a stimulus or situation is of personal or social significance to the individual. Emotions are known to occur in different forms: a) basic emotions e.g. anger and fearfulness occurring in acute situations, and b) emotion schemas including cognitive components differing among individuals and cultures. These emotions have widely been interpreted by knowledge.

### **2.4.10 Effects of management of diabetes mellitus to patients**

The effects of daily management of DM have an impact on the patient's psychological well-being. DM involves a complex management plan that recommends daily adherence to dietary and exercise plans, home blood glucose monitoring and therapeutic modalities such as oral drugs and insulin injection. DM patients should incorporate their personal goals into the treatment plan to achieve success (Clarke 2010).

## **2.5 Management interventions of psychosocial complications associated with diabetes mellitus**

Current standards for DM management reflect the need to maintain glucose control as near normal as possible. Monitoring of blood glucose level and interpretation of the results is paramount in DM management. Drugs used in treatment of DM are calculated as per the results of blood glucose level in order to achieve metabolic control. Adequate education on insulin therapy, exercise and diet modification is of great importance to prevent DM complications.

Patients with DM require a lot of psychological support throughout their life from the first day of diagnosis. The implications of a diagnosis of DM on a patient and his/her family members are immense. Majority of the patients will experience various emotions like shock, anxiety, depression or even guilt (Forde 2009). Patients who fail to adhere to the effective therapies of DM present with increased diabetes related complications which lead to deterioration in quality of life (QOL) and this result to increased utilization and burden on health care systems (Shariff 2014).

Patients diagnosed with DM have decreased well-being and this is due to strained coping with changed life routine, for instance, relationship with family, workmates, friends, etc. A study conducted revealed that DM has a negative impact on many aspects of life ranging from e.g. relationship with family or friends (20.5%) and on physical health (62.5%). Majority of the patients report that medication interfere with their ability to live a normal life (World J Diabetes 2014). A positive psychological well-being may promote long term coping mechanisms and prevent patients from getting unwanted effects of emotional instability and disease perception, facilitating diabetes self- management behavior and better physical health (World J Diabetes 2014). Studies have shown that despite psychosocial support being very instrumental in adapting

self-care to DM patients, the integration of both psychosocial and pharmacological treatment modalities have not been incorporated in the management of psychosocial co-morbidities for instance, depression.

A positive outlook, sense of resilience and well-being in patients with DM can be instilled by developing psychosocial support systems through caring and demonstrating compassion in families, peers and the health care workers as well as other DM patients. Screening, evaluation and management of psychological disorders such as depression among others in diabetic patients in primary care are feasible (Pezzilli 2012). Studies have shown that positive emotional health (well-being, positive affect, resilience and gratitude) are linked to self- management (exercise, treatment adherence and frequency of blood glucose monitoring), health related outcomes (health status and improved quality of life) and lower risk of all-cause mortality in patients with DM. Daily self-care in the effective management of DM. psychosocial factors have a great influence in self-management of DM patients (American Diabetes Association 2015).

The disease (DM) demands a lot of the patient and family involvement for motivation and adaptation to be achieved. Challenges in adaptation occur as a result of the diagnoses, patient experiencing recurring episodes of hypoglycemia, patient being introduced to use of insulin injection or when complications develop (Oman Medical Journal). According to Richmond (2010), the biomedical model of DM does not meet the patients' psychosocial needs. DM has placed a continuous strain on the individuals to maintain their expected changes in lifestyle. It is believed that living with diabetes can mean loss of health, independence and freedom. DM patients feel 'victimized' by the health care workers when they are not able to achieve glycemic control, hence the health care workers should avoid fixing or victimizing the patients on glycemic control when they have failed and instead concentrate on the wider aspects of diabetic instability (Oman Medical Journal).

A study done by Diabetes Control and Complications Trial Research Group has proven that DM holistic management can prolong development of DM associated long term complications. While the benefits of treatment have been established, there is low rate of adherence to treatment in DM which leads to compromised health benefits and economic consequences (Bartels, 2014). DM patients should be provided with sufficient information about the illness, and support throughout their life. The health care professionals need to assess the patient's ability to cope with and managing their diabetes effectively. Patient assessment involves careful observation, paying attention to their questions and feelings, thoughts and expectations during the disease process. This enhances treatment adherence.



## **CHAPTER THREE: MATERIALS AND METHODS**

### **3.1 Introduction**

The chapter outlines the research design and methods that were applied in the study. The chapter begins by outlining the research design, followed by a description of the study area and the study population, and then the sample size determination and sampling procedure are discussed, next is an outline of the key variables that were applied in the study. Data collection instruments, data processing and analysis procedures are discussed in details. Finally the ethical considerations that were applied in this study and the limitations are described.

### **3.2 Study design**

The research adopted the descriptive cross sectional study design with utilization of mixed research methods, both quantitative and qualitative studies. Cross-sectional study analyzes data that is gathered from a given population or a subset representing the population at a particular time. Cross-sectional study can be applied to give a description in some feature of a population, for instance disease prevalence. The study can also be used in determining the frequency and distribution of a specific condition (disease) affecting a given study population (Barratt and Kirwan 2009).

Both quantitative and qualitative data were collected to describe the distribution and management interventions for psychosocial complications associated with diabetes mellitus among adult patients. The descriptive study enabled the researcher to identify the psychosocial complications associated with DM and the interventions applied in managing these complications and make judgments and gain more information about the study characteristics

### **3.3 Study area**

This study was conducted at the Kenyatta national hospital (KNH). The hospital has a bed capacity of 2000 with 4500 different members of staff. Among them, nurses are 1700. The hospital is divided in to two sections, surgical and medical units. The medical units include private wing, medicine department level seven and eight, pediatric wards and the specialized units. The medicine department has eight wards and each ward has 18 nurses. There are 10 nurses working at the medical (diabetic) outpatient clinic.

The study was carried out in the medical (diabetes) outpatient clinic and the medical wards, both levels 7 & 8 which admit both male and female patients with DM. The medical wards have a bed capacity of 55 per ward. Patients admitted with diabetes are estimated to be about 7 per week per ward apart from ward 8B which admits the highest number of DM patients estimated to be about 20 patients per week.

The medical (diabetes) main outpatient clinic is usually done every Friday from 8am to 1.30 pm. Each Friday, the estimated number of DM patients attended to is about 70 patients. Besides the main DM clinic every Friday, KNH has also a diabetes mini clinic where DM patients are seen on daily bases from Monday to Thursday. Each day the estimated number of DM patients seen is about 17. KNH surgical unit include the surgical wards which have a bed capacity of 45 per ward.

KNH is the largest referral hospital in east and central Africa. It is located five kilometers west of Nairobi county central business district with hospital road to its east, Ngong road to its north and Mbagathi road to its south. The hospital occupies a 45.7 hectare piece of land. KNH offers specialized care like critical care services, renal care services, cancer care, cardiac care, among other specialized care services and the hospital also offers general care services. The hospital serves patients from across Nairobi and other parts of the country and the neighboring countries across eastern and central African regions.

### **3.4 Study population**

The target population consisted of patients diagnosed with diabetes mellitus and admitted to the medical wards and diabetic patients attending the medical (diabetes) outpatient clinic. The assistant chief nurses (ACN) ward in charges for the medical wards, were included as key informants in the study.

### **3.5. Inclusion and exclusion criteria**

#### **3.5.1 Inclusion criteria**

All participants in this study fulfilled the inclusion criteria below

- All DM patients, aged 18 years and above, on follow-up for diabetes mellitus at the medical (diabetes) outpatient clinic at the time of study.
- All adult patients (18 years and above) with diabetes mellitus admitted to the medical wards as the study focused only on adult patients
- DM patients willing to participate and signed a written consent,

#### **3.5.2 Exclusion criteria**

All eligible participants who were found to have the following characteristics were excluded from the study

- Patients admitted to the medical wards with a diagnosis of DM and were not willing to participate or sign consent
- Patients with DM, aged below 18 years, attending medical (diabetes) outpatient clinic or admitted to the medical wards at the time of study

- DM patients attending the medical (diabetic) clinic and were not willing to sign consent
- Newly diagnosed patients with DM at the time of study
- DM patients who were very sick and unable to communicate

### 3.6 Sample size determination

The fisher's formula was applied to determine the sample size required (Mugenda & Mugenda 2003). The formula is as follows

$$n = \frac{Z^2 pq}{d^2}$$

Where

n = desired samples size (if the target population is greater than 10,000)

Z = standard normal deviate at 95% confidence level (1.96)

p = proportion in the target population estimated to have characteristics being measured

q = 1-p

d= level of precision (set at 0.05)

50% is recommended for use when there is no estimate available of the proportion.

$$\frac{1.96^2 \times 0.50 (1 - 0.50)}{0.05^2} = 384$$

Because the target population was less than 10,000, the sample size required was smaller than above. An estimate was made using the Yamane 1967, formula below

$$Nf = \frac{n}{(1+n)/N}$$

Where

nf = the desired sample size (when the population is less than 10,000)

n = desired sample size (when the population is more than 10,000)

N = estimate of the population size

In a week, the total number of patients seen in the medical (diabetes) outpatient clinic was estimated to be about 70 patients. The number of patients with DM admitted to the medical wards in a week was about 7 patients per each medical ward (7A, 7B, 7C, 7D, 8A, 8C & 8D) with an exception of ward 8B which admitted about 20 patients with DM in a week.

Therefore, the number of patients with DM who were admitted to the medical wards or seen in the main diabetes clinic per week was as follows:-

70 patients seen in clinic + 7patients per each of 7 medical wards (7x 7=49) + 20(8B patients) = 70+49+20=139

$$nf = \frac{384}{1 + (384/139)} = 102.07$$

The sample size was 102 respondents

**Number of participants selected from each ward/clinic:**

Ward/clinic		Number of participants
Medical out-patient clinic	70/139 x 102	51.3 □ 52
7A	7/139 x 102	5.1 □ 5
7B	7/139 x 102	5.1 □ 5
7C	7/139 x 102	5.1 □ 5
7D	7/139 x 102	5.1 □ 5
8A	7/139 x 102	5.1 □ 5
8B	20/139 x 102	14.6 □ 15
8C	7/139 x 102	5.1 □ 5
8D	7/139 x 102	5.1 □ 5
<b>TOTAL</b>		<b>102</b>

**3.7 Sampling procedure**

Multistage sampling method was used and this entailed use of the various sampling strategies. This sampling technique was preferred because it allowed the combination of both probability and non-probability sampling techniques. KNH was purposively selected for this particular study because it is a national referral hospital and receives a large population of the patients with diabetes mellitus. Being a national referral hospital, KNH receive most of the DM patients with various complications including the psychosocial complications from various county hospitals as well as from other countries. Purposive sampling technique was used because it allowed the researcher to choose a sample from the population which was able to provide the required information for this study in relation to the study objectives.

In the next stage, the various medical wards that take care of patients with DM were divided in to clusters. After determining the number of patients to be sampled in each of the clusters, simple random sampling technique was utilized to select the participants who participated in determining the management interventions for psychosocial complications associated with diabetes mellitus. This allowed a more representative sample size (Boyd, 2017).

In each of the medical wards and the diabetic medical outpatient clinic, the researcher used balloting strategy to select the participants. All patients who met the inclusion criteria had an equal chance of being selected. The researcher wrote **YES** and **NO** on small pieces of papers which were then folded and put in a basket and shaken vigorously to allow each of the patients an equal opportunity to select a **YES** or **NO** paper. The papers written **YES** represented the sample size required for the study to represent the entire population. The papers written **NO** represented the rest of the population that was not included in the study.

The researcher divided large clusters of the population in to smaller clusters for primary data collection. The multistage sampling method was selected because it is effective in primary data collection when face to face contact is required, it is cost effective and time effective, and it also has a high level of flexibility (Burns & Groove, 2005).

Adult Patients with DM are mainly admitted either in level 7 or level 8 at KNH. These two levels formed 2 large clusters. Each of these two large clusters was subdivided into four smaller clusters to form eight (8) clusters. The 8 smaller clusters included medical wards (7A, 7B, 7C, 7D, 8A, 8B, 8C and 8D). Each of the medical wards was a cluster. Up on discharge, DM patients are followed up in the medical (diabetes) out-patient clinic. The diabetes outpatient clinic formed another cluster getting a total of 9 clusters. The researcher selected randomly 7 clusters from the nine (9) clusters. One cluster was chosen purposefully that is diabetic-medical out-patient clinic because it receives large part of the population of this study and it is the only main diabetic outpatient clinic at KNH. Other 6 clusters were chosen randomly from the remaining 8 clusters. After selecting the 6 clusters randomly, the researcher selected the study participants. The selected clusters were used to collect both quantitative and qualitative data.

### **3.7.1 Participants for key Informant interview**

The in-depth interviews were conducted on seven (7) assistant chief nurses (ACN) from the medical wards and out-patient clinic admitting patients with DM. Each medical ward (including 7A, 7B, 7C, 7D, 8A, 8B, 8C and 8D) and the diabetic-medical out-patient clinic have an ACN. The ACNs were selected randomly to participate in the study.

### **3.8 Pre-testing of the study instruments**

The study instruments were pre-tested at the medical (diabetes) out-patient clinic at the Kenyatta National Hospital. The mini diabetic clinic that is usually carried out from Monday to Thursday was used. Patients with DM are attended to in this clinic on a daily basis from Monday to Thursday. 10% of the study sample size was used in pre-testing the study instruments. All ambiguous questions were rephrased after the pre-testing to enable clarity and achievement of the objectives.

### **3.9 Data collection procedures**

#### **3.9.1 Recruitment process**

The eligible participants included patients with DM admitted in the medical wards at KNH and the patients with DM attending the medical (diabetes) out-patient main clinic. A consent was sought from the participants and then questionnaires administered.

Key informant in-depth interviews' participants included assistant chief nurses (ACNs) who manage the medical wards and the diabetic clinic. The researcher booked appointments with the ACNs for the interviews.

#### **3.9.2 Consenting procedure**

The researcher and the research assistants provided approval evidence for carrying out the study to the ACNs. A self-introduction was done and the purpose of the study. The respondents were approached individually and explained to the purpose of the study. On agreeing to participate, the respondents were given consent to sign and then guided to a room within the clinic/ward. To ensure privacy of participants, a separate room was requested from the in-charges of the selected wards and clinic to be used for data collection. The researcher then used the questionnaire to ask questions to the respondent and filled in the responses.

The researcher booked appointments with the key informants and fixed date for the interview schedule. The researcher explained the purpose of the study to the key informants for consenting. The researcher also sought consent to audiotape the interview session. Key informant interview guide was used and the responses documented accordingly.

#### **3. 9.3 Method of collecting data**

Data was collected using a semi structured questionnaire with both open and closed ended questions. The tool was in four sessions. Session one gathered information on background demographics of respondents, session two gathered information on the anthropometrics of the diabetic patients, session three gathered information on psychosocial factors associated with DM, and session four gathered information on management interventions for psychosocial complications associated with DM. The questionnaire was researcher assisted. A check list was also used to assess for anxiety, stress and depression. Key informant in-depth interviews were conducted on the assistant chief nurses managing the wards that DM patients are admitted and the medical (diabetic) out-patient clinic where the DM patients are followed.

### **3.10 Research assistants**

Two research assistants were selected to assist in data collection. The assistants were trained on the purpose of study, how to use the data collection tools, interviewing skills, and the entire data collection process as well as the research ethical principles. The assistants assisted in administering the questionnaires and in filling in the questionnaires.

The main role of researcher as principal investigator was to coordinate all research activities and ensure that data collection was done appropriately with compliance to ethical principles without its violation. The main role of research assistants was to assist in carrying out data collection.

### **3.11 Data processing and analysis**

Both qualitative and quantitative data collected was analyzed. The main focus was on the psychosocial management interventions for DM patients. All completed questionnaires were scrutinized for completeness after the respondents had filled in. This was followed by coding for the non-structured responses and entry was made into the selected software for analysis. Data analysis was done through statistical software, the SPSS version 20. All variables were subjected to descriptive and inferential statistics. The closed ended questions were analyzed using the descriptive nominal scale. Data was presented in form of tables, charts and graphs as well as narrative text.

For the qualitative data, documents that collected data were prepared, coding and categories were used to explain the data collected, analysis of words, codes, themes and patterns were formed and conclusions generated

### **3.12 Dissemination plan**

Reports on the research findings were written and presented to the KNH management for interventions and application. A copy of the report was given to the college of health sciences, medical library at the University of Nairobi. The results were also published in the 5<sup>th</sup> Kenya Medical Training College scientific conference and presentation was done in May 2018 during the conference.

### **3.13 Study assumptions**

The researcher assumed that all respondents were honest with the information that they gave

### **3.14 Limitations**

Being a national public referral hospital, majority of the patients attended to at KNH are in the middle and low income earning categories, hence findings of this study could not be generalizable.

### **3.15 Delimitation**

A large study including low and middle levels and private hospitals was preferred to compare and generalize findings however due to time and financial constraints, the present study was limited to Kenyatta National Hospital.

### **4. Ethical consideration**

Ethical approval was sought from the Kenyatta National Hospital & University of Nairobi Ethics and Research Committee (KNH-UoN ERC) to carry out the study. Permission was also sought from the KNH administration to access the study population as well as patients' files.

The study population comprised the patients and nurse key informants. Ethical values on the study were observed ensuring that the respondents gave a written consent before participating in giving information. The respondents read the contents of the consent form and signed before being allowed to participate in the study.

Participation in this study for all respondents was voluntary and there was freedom to withdraw from the study at free own will. The study participants' (DM patients and ACNs) confidentiality and anonymity was highly observed. Codes were used to identify the respondents instead of names. The researcher presented the study findings to the KNH-UON ERC and the KNH management as well as ministry of health.

The researcher had no conflict of interest



## **CHAPTER FOUR: RESULTS**

### **4.1 Introduction**

This chapter presents the findings of the study. The findings are presented and interpreted based on the objectives of the study. These include the demographic characteristics of diabetic patients; anthropometric measurements for diabetic patients; the psychosocial effects associated with diabetes mellitus among diabetic patients, the psychosocial management interventions for diabetic patients and assessing the anxiety disorder, stress and depression status. The results are presented in frequency tables and graph forms.

### **4.2 Response rate**

A total of 102 diabetic patients were contacted over the study period. Of these, 5 (4.9%) declined to consent, while 4 (3.9%) withdrew from the study thus the response rate was 93 (91.2%).

### **4.3: Demographic characteristics of diabetic patients**

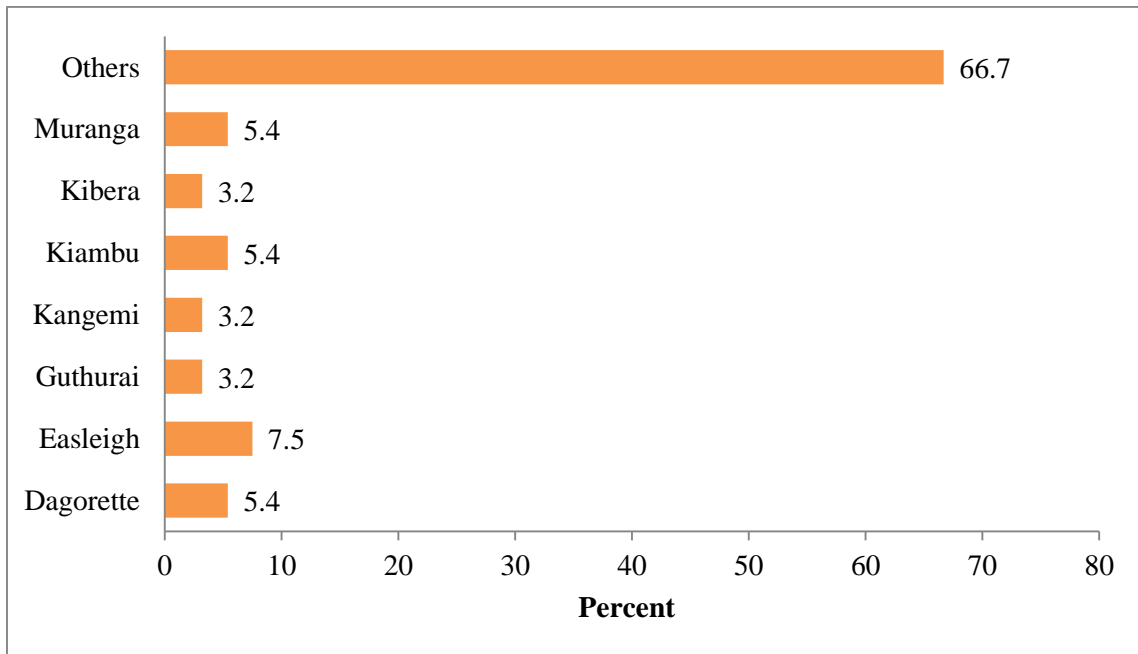
The distribution of selected socio-demographic characteristics among the respondents is shown in Table 1. The mean age of the respondents was 53.1 years with standard deviation of 14.8. 45.2% (n=42) of the respondents were within the age group of 41-60 years followed by 33.3% (n=31) who were aged 60 years and above. 52.7% (n=49) of the respondents were Males while 47.3% (n=44) were females. 78.5% (n=73) of the respondents were married. Regarding level of education, 41.9% (n=39) attained primary education followed by 33.3% (n=31) who attained secondary education whereas 7.5% (n=7) attained university education. The findings also showed that 73.1% (n=68) of the respondents were employed with different types of jobs.

**Table 1: Socio-demographic characteristics of diabetic patients**

<b>Variable</b>	<b>Category</b>	<b>N =93</b>	<b>%</b>
<b>Age in years</b>	18 to 40	20	21.5
	41 to 60	42	45.2
	> 60	31	33.3
	Mean = 53.1; standard deviation =14.8		
<b>Gender</b>	Male	49	52.7
	Female	44	47.3
<b>Level of education</b>	Never gone to school	5	5.4
	Primary	39	41.9
	Secondary	31	33.3
	Middle college	11	11.8
	University	7	7.5
<b>Marital status</b>	Married	73	78.5
	Single	13	14
	Divorced/widow/widower	7	7.5
<b>Occupation</b>	Employed	68	73.1
	Retired	16	17.2
	Housewife	6	6.5
	Unemployed	3	3.2

**4.3.1 Distribution of residence among the respondents**

As indicated in Figure 1, 7.5% (n=7) of the respondents were mainly from Eastleigh, while 5.4% (n=5) were from Dagoretti, 5.4% (n=5) of the respondents were from Kiambu, 5.4% (n=5) from Muranga, 3.2% (n=3) of the respondents were from Kibera, 3.2% (n=3) from Kangemi and 3.2% (n=3) of the respondents were from Guthurai. However 66.7 % (n=67) of the respondents were from different parts of the country and outside the country.



**Figure 1: Distribution of residence among the respondents**

### 4.3.2 Socio-demography of the respondents stratified according to sex

Table 2 presents socio-demographic characteristics of the respondents stratified by sex. There was significant difference between sex and level of education where middle college/university education was significantly higher among male (30.6%, n=15) compared to female respondents (6.8%, n=3) [ $\chi^2= 13.7$ ; df=3; p value = 0.003]. Moreover, there was significantly more divorced/widow/widower among females respondents (13.6%, n=6) than males (2.0%, n=1) [ $\chi^2= 11.06$ ; df=2; p value = 0.004].

**Table 2: Socio-demography of the respondents stratified according to sex**

Variables	Male		Female		$\chi^2$ value	df	P value
	n	%	n	%			
<b>Age in years</b>							
18 to 40	9	18.4%	11	25.0%			
41 to 60	24	49.0%	18	40.9%	0.82	2	0.663
> 60	16	32.7%	15	34.1%			
<b>Level of education</b>							
Never gone to school	0	0.0%	5	11.4%			
Primary	17	34.7%	22	50.0%	13.70	3	<b>0.003</b>
Secondary	17	34.7%	14	31.8%			
Middle college/University	15	30.6%	3	6.8%			
<b>Marital status</b>							
Married	45	91.8%	28	63.6%			
Single	3	6.1%	10	22.7%	11.06	2	<b>0.004</b>
Divorced/widow/widower	1	2.0%	6	13.6%			
<b>Occupation</b>							
Employed	38	77.6%	30	68.2%			
Retired	9	18.4%	7	15.9%	3.71	2	0.156
Unemployed	2	4.1%	7	15.9%			

### 4.4 Anthropometric measurements for the diabetic patients

The mean weight among the respondents was 71.9 kilogram (Kg). 40.9% (n=38) of the respondents weighed between 61 to 80 Kg and 31.0% (n=26) of the respondents took their weight between 2 to 4 months. However, 9.7% (n=9) of the respondents had never taken their weight. Similarly, 11.8% (n=11) of the respondents had height of 171 to 179 cm, among those who took the measurement, 54.2% (n=13) measured their height between 2 to 6 months. However, 74.2% (n=69) of the respondents had never measured their height (Table 3)

When the respondents were asked about any weight changes since the diagnosis of diabetes, 86.0% (n=80) indicated weight change and the main change was reduced weight (76.3%, n=61). 96.8% (n=90) of the respondents indicated that the body mass index was not done in the last 6 months. All the respondents reported that waist circumference, waist to hip ratio and waist to height ratio were not done in the last 6 months. 78.5% (n=73) of the respondents claimed that they had taken weight in the last 6 months. However, 81.7% (n=76) of the respondents did not take the height in the last 6 months. Among those who used to take measurements, almost half (50.5%, n=47) of the respondents used to take the measurements every 3-6 months (Table 3)

**Table 3: Anthropometric measurements for diabetic patients**

Variable	Category	N =93	%
Current/present weight	40 to 60	21	22.6
	61 to 80	38	40.9
	81 to 100	25	26.9
	Not taken	9	9.7
	Mean = 71.9; standard deviation =14.9		
Last weight measured (n=84)	A day ago	13	15.5
	A week ago	11	13.1
	A month ago	11	13.1
	2 to 4 months ago	26	31.0
	6 months	11	13.1
	A year ago	9	10.7
	Before 2 years	3	3.6
Present/current height)	151 to 159 cm	5	5.4
	160 to 169	4	4.3
	171 to 179 cm	11	11.8
	180 cm and above	4	4.3
	Not taken	69	74.2
Last height measured (n=24)	Within one month	3	12.5
	2 to 6 months	13	54.2
	A year ago	3	12.5
	Before 2 years	5	20.8
Experienced any weight changes since the diagnosis of diabetes	Yes	80	86.0
	No	13	14.0
Type of changes in weight after diagnosis	Increased weight	17	21.3
	Reduced weight	61	76.3
	Fluctuation	2	2.5
Whether body mass index was done in the last 6 months	Yes	3	3.2
	No	90	96.8
Whether waist circumference was done in the last 6 months	No	93	100.0
Whether waist to hip ratio was done in the last 6 months	No	93	100.0
Whether waist to height ratio was done in the last 6 months	No	93	100.0
Whether weight was taken in the last 6 months	Yes	73	78.5
	No	20	21.5
Whether height was taken in the last 6 months	Yes	17	18.3
	No	76	81.7
Frequency of check for the measurements	Monthly	15	16.1
	Every 2 months	13	14.0
	Every 3-6 months	47	50.5
	N/A	18	19.4
How do you check for the measurements	During returning date	70	75.3
	At staff clinic or streets	3	3.2
	Has a scale	2	2.2
	N/A	18	19.4

#### **4.5 The psychosocial complications associated with diabetes mellitus among adult diabetic patients**

The psychosocial effects associated with diabetes mellitus among adult diabetic patients is summarized in Table 4. The common problems occurring due to diabetes which were mentioned by the respondents were weakness/fatigue (75.3%, n=70), eye problems (35.5%, n=33), sexuality problem (22.6%, n=21) and unable to work (22.6%, n=21). 57.0% (n=53) of the respondents were supported by their parents or family members.

76.3% (n=71) of the respondents used emergency services in the last 12 months due to diabetes related complications and about 26.8% (n=19) used the service once followed by 23.9% (n=17) who used twice and 19.7% (n=14) used emergency services thrice . However, 7.0% (n=5) of the respondents had used the emergency services more than 20 times. The main reasons for using the emergency services were high blood sugar (45.1%, n=32), infections (33.8%, n=24) and low blood sugar (25.4%, n=18).

About 51.6% (n=48) were admitted to the hospital because of diabetes related problems in the last 12 months and the common reasons indicated were high blood sugar (64.6%, n=31), low blood sugar (22.9%, n=11) and diabetic foot (10.4%, n=5).

**Table 4: The psychosocial effects associated with diabetes mellitus among adult diabetic patients**

<b>Variable</b>	<b>Category</b>	<b>N =93</b>	<b>%</b>
<b>*How has diabetes affected your health</b>	Weakness/fatigue	70	75.3
	Eyes problems	33	35.5
	Sexuality problem	21	22.6
	Unable to work	21	22.6
	Diabetic foot	7	7.5
	Infections	5	5.4
	High BP	6	6.5
	Dizziness/numbness	7	7.5
	Others	29	31.2
<b>Who do you get support from for your health care</b>	Parents/Family	53	57.0
	Self	32	34.4
	Well wishers	3	3.2
	Insurance	5	5.4
<b>Whether used emergency services in the last 12 months due to diabetes</b>	Yes	71	76.3
	No	22	23.7
<b>If used emergency services how many times (n=71)</b>	Once	19	26.8
	Twice	17	23.9
	Thrice	14	19.7
	4 times	5	7.0
	5 times	3	4.2
	6 times	3	4.2
	10 times	5	7.0
	20 times and more	5	7.0
<b>*Reasons for using emergency care (n=71)</b>	High blood sugar	32	45.1
	Low blood sugar	18	25.4
	Infections	24	33.8
	Weakness	4	5.6
	Others	20	28.2
<b>Whether admitted to the hospital with a diabetes related problem in the last 12 months</b>	Yes	48	51.6
	No	45	48.4
<b>*Reasons for admission (n=48)</b>	High blood sugar	31	64.6
	Low blood sugar	11	22.9
	Diabetic foot	5	10.4
	Abdominal pain	3	6.3
	Renal insufficiency	2	4.2
	Others	7	14.6
<b>*Multiple response: the counts and percentage are more than the total</b>			



#### **4.6 Psychosocial management interventions for diabetic patients**

Table 5 below, shows the psychosocial management interventions for diabetic patients participated in the study. 53.8% (n=50) of the respondents were using oral medication followed by 43.0% (n=40) who were using insulin injection mode of treatment. However, 3.2% (n=3) of the respondents were using diet as mode of management. 57.7% (n=56) of the respondents indicated that they never missed medications while 10.3% (n=10) missed rarely or occasionally, 15.5% (n=15) missed once a week while 13.4% (n=13) of the respondents missed twice a week. Among those who missed to take medications as prescribed, forgetting (62.2%, n=23) and drug unavailability (21.6%, n=8) were the main reasons provided.

33.3% (n=31) of the respondents indicated that there were prescriptions for diabetes care that they had not fulfilled while the remaining (66.7%, n=62) indicated otherwise. The main types of prescriptions among those who did not fulfill the prescribed care were drugs (71.0%, n=22) and laboratory investigations (22.6%, n=7).

All of the respondents indicated that they had no meal plan for diabetes. 95.7% (n=89) of the respondents reported they check their blood sugar level and 31.2% (n=29) of the respondents checked their blood sugar monthly followed by those who were checking weekly (28.0%, n=26).

**Table 5: Psychosocial management interventions for diabetic patients**

<b>Variable</b>	<b>Category</b>	<b>N =93</b>	<b>%</b>
<b>*Current mode of treatment for diabetes</b>	Oral medication	50	53.8
	Insulin injection	40	43.0
	Both oral and injection	27	29.0
	Diet	3	3.2
<b>Frequency of missing medications to take as prescribed</b>	Not at all	56	57.7
	Rarely/occasionally	10	10.3
	Once a week	15	15.5
	Twice a week	13	13.4
	Thrice or 4 times a week	3	3.1
<b>*Reasons for missing the medications (n=37)</b>	Forgetting	23	62.2
	Drug unavailability	8	21.6
	Others	9	24.3
<b>Whether there are prescriptions for diabetes care that you have not fulfilled</b>	Yes	31	33.3
	No	62	66.7
<b>*Types of prescriptions for diabetes care that you have not fulfilled (n=31)</b>	Drugs	22	71.0
	Investigations	7	22.6
	Financial constraints	2	6.5
	Exercising	2	6.5
	Diet	3	9.7
	Eye care & management	1	3.2
<b>Whether having a meal plan for diabetes</b>	No	93	100.0
<b>How often do you follow the meal plan</b>	Never	93	100.0
<b>Checking the blood sugar</b>	Yes	89	95.7
	No	4	4.3
<b>Frequency of checking blood sugar</b>	Daily	10	10.8
	Twice a week	7	7.5
	Weekly	26	28.0
	Twice a month	4	4.3
	Monthly	29	31.2
	2 - 6 months	8	8.6
	Occasionally	5	5.4
	Never checks	4	4.3
<b>*Multiple response: the counts and percentage are more than the total</b>			

## 4.7 Levels of anxiety disorders, depression and stress

### 4.7.1 Assessment of depression status among the diabetic patients

41.9% (n=39) of the respondents indicated that they were feeling little interest or pleasure in doing things nearly every day whereas 38.7% (n=36) reported that do not feel at all. About 44.1% (n=41) of the respondents did not have trouble falling or staying asleep or sleeping too much followed by those who were feeling nearly every day (28.0%, n=26) Table 6

62.4% (n=58) of the respondents were feeling tired or having little energy nearly every day. 63.4% (n=59) did not feel at all bad in case of failure or have let the family down though considerable percentage (21.5%, n=20) felt bad nearly every day. 88.2% (n=82) did not have thoughts at all that they would be better off dead, or of hurting themselves. However, 59.1% (n=55) had poor appetite or overeating nearly every day. Table 6

54.8% (n=51) had no trouble at all concentrating on things such as reading e.g. newspaper or watching TV while the remaining indicated otherwise. 71.0% (n=66) of the respondents indicated that they did not move or speak so slowly at all. Table 6

**Table 6: Assessment of depression status among the diabetic patients**

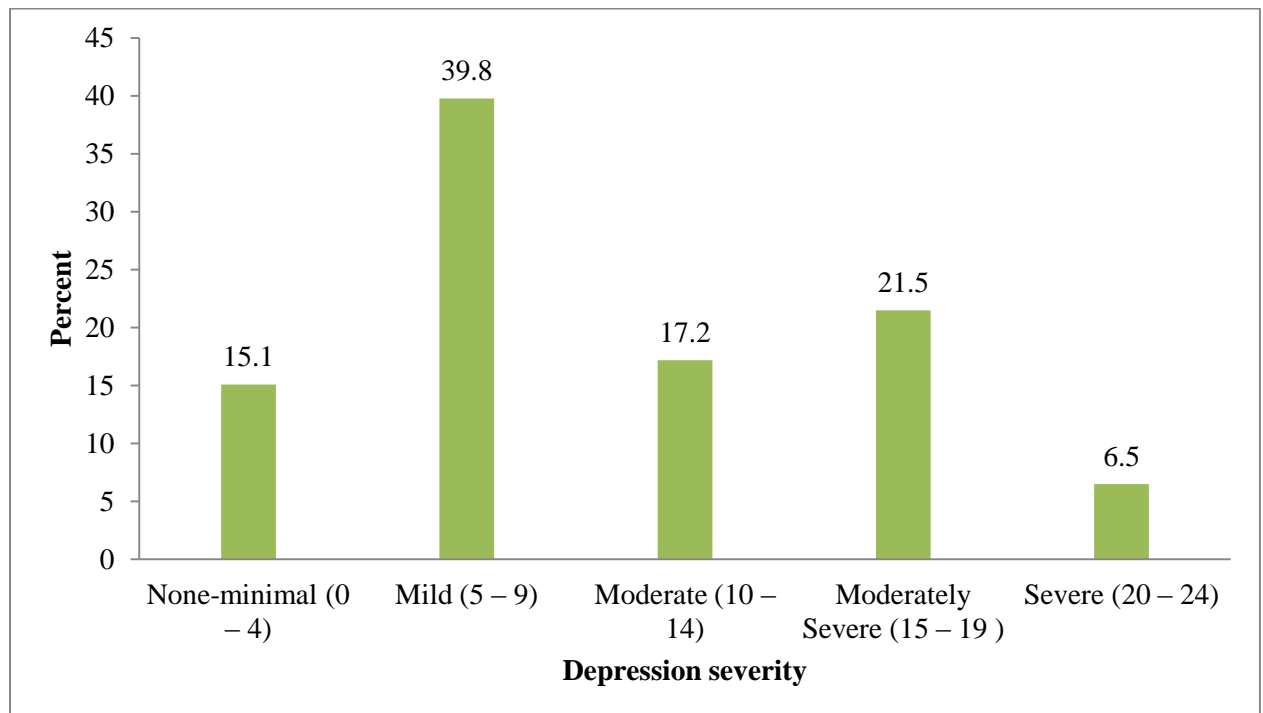
Statements	Not at all, n(%)	Several days, n(%)	More than half the days, n(%)	Nearly every day, n(%)
Feeling little interest or pleasure in doing things	<b>36(38.7)</b>	13(14.0)	5(5.4)	<b>39(41.9)</b>
Trouble in falling or staying asleep or sleeping too much	<b>41(44.1)</b>	12(12.9)	14(15.1)	26(28.0)
Feeling tired or having little energy	11(11.8)	13(14.0)	11(11.8)	<b>58(62.4)</b>
Feeling bad about yourself or that you are a failure or have let yourself or your family down	<b>59(63.4)</b>	7(7.5)	7(7.5)	20(21.5)
Have you had thoughts that you would be better off dead, or of hurting yourself?	<b>82(88.2)</b>	1(1.1)	2(2.2)	8(8.6)
Poor appetite or overeating	22(23.7)	14(15.1)	2(2.2)	<b>55(59.1)</b>
Have you had trouble concentrating on things such as reading e.g. newspaper or watching TV?	<b>51(54.8)</b>	9(9.7)	5(5.4)	28(30.1)
Moving or speaking so slowly that other people could have noticed, or being so fidgety or restless, moving around a lot more than usual	<b>66(71.0)</b>	11(11.8)	3(3.2)	13(14.0)

#### 4.7.1.1 Assessment of depression score

The overall depression score among the participants was assessed using the eight (8) statements presented in Table 6. This was calculated by assigning scores of 0, 1, 2, and 3, to the response categories of ‘not at all’, ‘several days’, ‘more than half the days’, and ‘nearly every day’, respectively

The overall score was generated by aggregating the scores. The maximum attainable score was 24 and the minimum score was 0. Aggregate score was generated and the severity of depression was classified as follows: None-minimal (0 – 4), Mild (5 – 9), Moderate (10 – 14), Moderately Severe (15 – 19) and Severe (20 – 24).

39.8% (n=40) of the respondents had mild depression followed by 21.5% (n=20) who had moderately severe depression while 15.1% (n=15) had either none or minimal and 6.5% (n=6) with severe depression (Figure 2)



**Figure 2: Depression severity score**

#### 4.7.1.2 Association between demographic characteristics and depression severity

Bivariate analysis of the association between socio-demographic characteristics and depression severity is shown in Table 7. 83.3% (5) of the respondents who had severe depression were females compared to 16.7% (n=1) male. However, this was not statistically significant [ $\chi^2= 7.7$ ; df= 4; p value = 0.101].

There was significant association between admission to the hospital and level of severity of depression where those who were admitted in the last 12 months had significantly more severe depression (100.0%) compared to those who were never admitted (0.0%) [ $\chi^2= 17.6$ ;  $df= 4$ ;  $p$  value = 0.001].

**Table 7: Association between demographic characteristics and depression severity**

Variables	Depression severity					$\chi^2$ value	df	P value
	None-minimal, n (%)	Mild, n (%)	Moderate, n (%)	Moderately Severe, n (%)	Severe, n (%)			
<b>Age in years</b>								
18 to 40	4(28.6)	8(21.6)	1(6.3)	4(20.0)	3(50.0)			
41 to 60	6(42.9)	18(48.6)	8(50.0)	9(45.0)	1(16.7)	6.4	8	0.603
> 60	4(28.6)	11(29.7)	7(43.8)	7(35.0)	2(33.3)			
<b>Gender</b>								
Male	8(57.1)	20(54.1)	12(75.0)	8(40.0)	1(16.7)	7.7	4	0.101
Female	6(42.9)	17(45.9)	4(25.0)	12(60.0)	5(83.3)			
<b>Level of education</b>								
Never gone to school	0(0.0)	3(8.1)	0(0.0)	2(10.0)	0(0.0)			
Primary	3(21.4)	15(40.5)	7(43.8)	10(50.0)	4(66.7)	11.1	12	0.520
Secondary	6(42.9)	11(29.7)	7(43.8)	5(25.0)	2(33.3)			
Middle college/University	5(35.7)	8(21.6)	2(12.5)	3(15.0)	0(0.0)			
<b>Marital status</b>								
Married	11(78.6)	30(81.1)	13(81.3)	15(75.0)	4(66.7)			
Single	3(21.4)	5(13.5)	1(6.3)	3(15.0)	1(16.7)	4.1	8	0.847
Divorced/widow/widower	0(0.0)	2(5.4)	2(12.5)	2(10.0)	1(16.7)			
<b>Occupation</b>								
Employed	9(64.3)	29(78.4)	9(56.3)	16(80.0)	5(83.3)			
Retired	4(28.6)	5(13.5)	5(31.3)	2(10.0)	0(0.0)	6.6	8	0.584
Unemployed	1(7.1)	3(8.1)	2(12.5)	2(10.0)	1(16.7)			
<b>Whether used emergency services in the last 12 months due you diabetes</b>								
Yes	9(64.3)	26(70.3)	14(87.5)	17(85.0)	5(83.3)	4.0	4	0.409
No	5(35.7)	11(29.7)	2(12.5)	3(15.0)	1(16.7)			
<b>Whether admitted to the hospital with a diabetes related problem in the last 12 months</b>								
Yes	5(35.7)	12(32.4)	10(62.5)	15(75.0)	6(100.0)	17.6	4	<b>0.001</b>
No	9(64.3)	25(67.6)	6(37.5)	5(25.0)	0(0.0)			

#### 4.7.2 Assessment of stress status among the diabetic patients

46.2% (n=43) of the respondents indicated they had never had headaches. However, 17.2% (n=16) claimed they had headache once per month. 23.7% (n=22) of the respondents reported that they had anxiety/worry/phobias almost all day, 21.5% (n=20) had anxiety/worry/phobias once or twice daily but 23.7% (n=22) had never had anxiety/worry/phobias. About half of the respondents had no difficulty falling asleep (44.1%, n=41) and had not any insomnia (45.2%,

n=42) however, the remaining indicated otherwise. 24.7% (n=23) of the respondents indicate that they had bouts of anger/hostility almost all day, 23.7% (n=22) had bouts of anger/hostility once or twice daily but 24.7% (n=23) had never had bouts of anger/hostility (Table 8).

58.1% (n=54) of the respondents were either eating too much or too little almost all day. 30.1% (n=28) of the respondents had diarrhea/gas/constipation. Even though about half (44.1%, n=41) had not experienced restlessness/itching/tics, 26.9% (n=25) indicated almost all day had restlessness/itching/tics (Table 8).

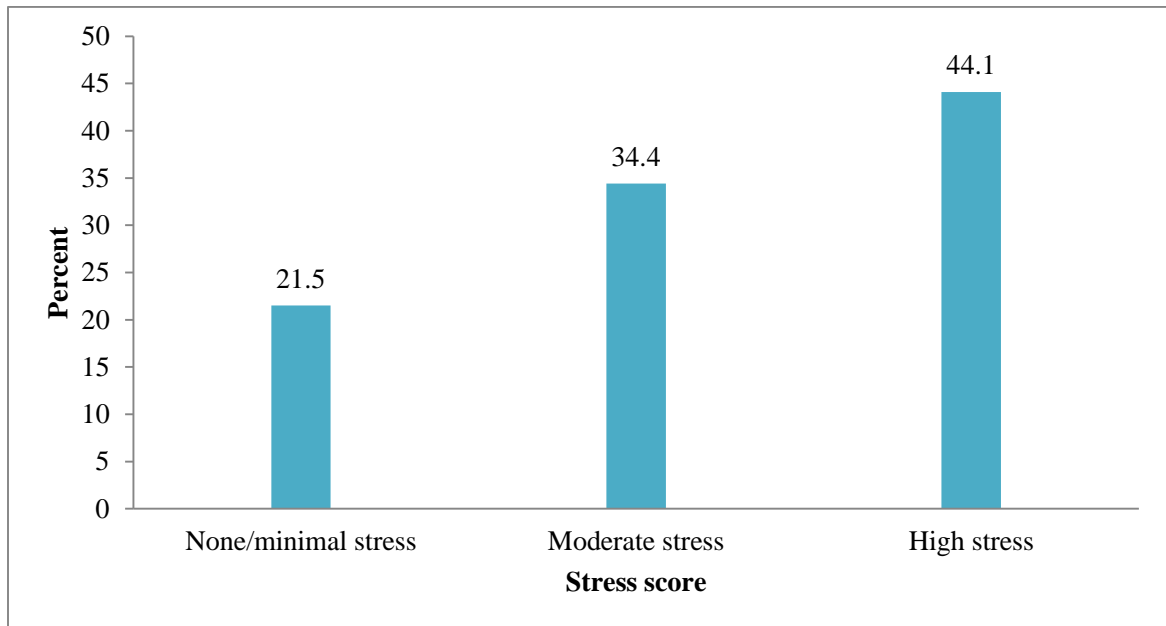
**Table 8: Assessment of stress status among the diabetic patients**

Symptoms	Almost all day, n(%)	Once or twice daily, n(%)	Every night or day, n(%)	2-3 times per week, n(%)	Once a week, n(%)	Once a month, n(%)	Never, n(%)
Headaches	5(5.4)	4(4.3)	0(0.0)	14(15.1)	11(11.8)	16(17.2)	<b>43(46.2)</b>
Anxiety, worry, phobias	<b>22(23.7)</b>	<b>20(21.5)</b>	6(6.5)	13(14.0)	4(4.3)	6(6.5)	<b>22(23.7)</b>
Difficulty falling asleep	11(11.8)	9(9.7)	1(1.1)	20(21.5)	4(4.3)	7(7.5)	<b>41(44.1)</b>
Insomnia	11(11.8)	9(9.7)	1(1.1)	20(21.5)	5(5.4)	5(5.4)	<b>42(45.2)</b>
Bouts of anger, hostility	<b>23(24.7)</b>	<b>22(23.7)</b>	8(8.6)	10(10.8)	6(6.5)	1(1.1)	<b>23(24.7)</b>
Boredom	17(18.3)	11(11.8)	5(5.4)	20(21.5)	7(7.5)	3(3.2)	<b>30(32.3)</b>
Eating too much or too little	<b>54(58.1)</b>	11(11.8)	2(2.2)	9(9.7)	1(1.1)	1(1.1)	15(16.1)
Diarrhea, gas, constipation	<b>28(30.1)</b>	12(12.9)	1(1.1)	11(11.8)	2(2.2)	4(4.3)	<b>35(37.6)</b>
Restlessness, itching, tics	<b>25(26.9)</b>	8(8.6)	2(2.2)	7(7.5)	6(6.5)	4(4.3)	<b>41(44.1)</b>

#### 4.7.2.1 Assessment of stress score

The overall stress score among the participants was assessed using the nine (9) statements presented in Table 8. This was calculated by assigning scores of 0, 1, 2, 3, 4, 5 and 6 to the response categories of ‘never’, ‘once a month’, ‘once a week’, and ‘2-3 times per week’, ‘every night or day’, ‘once or twice daily’ and ‘almost all day/every day’ respectively

The overall score was generated by aggregating the scores. The maximum attainable score was 54 and the minimum score was 0. Aggregate score was generated and the stress was classified as follows: None-minimal (0 – 13), Moderate (14 – 26), and high (27 – 54). As indicated in Figure 3, about half of the respondents had high level of stress (44.1%, n=44) followed by 34.4% (n=34) who had moderate stress.



**Figure 3: Stress score among the diabetic patients**

#### 4.7.2.2 Association between demographic characteristics and stress

There was significant association between level of education and stress [ $\chi^2= 21.26$ ;  $df= 6$ ;  $p$  value = 0.002]. There was significant association between admission to the hospital and stress where the high stress was significantly more among respondent who were admitted in the last 12 months (75.6%,  $n=31$ ) compared to those who were never admitted (24.4%,  $n=10$ ) [ $\chi^2= 16.98$ ;  $df= 2$ ;  $p$  value = 0.000] (Table 9)

**Table 9: Association between demographic characteristics and stress**

Variables	None/minimal stress		Moderate stress		High stress		$\chi^2$ value	df	P value
	n	%	n	%	n	%			
<b>Age in years</b>									
18 to 40	5	25.0 %	4	12.5%	11	26.8 %			
41 to 60	8	40.0 %	16	50.0%	18	43.9 %	2.55	4	0.637
> 60	7	35.0 %	12	37.5%	12	29.3 %			
<b>Gender</b>									
Male	12	60.0 %	20	62.5%	17	41.5 %	3.74	2	0.154
Female	8	40.0 %	12	37.5%	24	58.5 %			
<b>Level of education</b>									



Never gone to school	0	0.0%	3	9.4%	2	4.9%			
Primary	4	20.0%	11	34.4%	24	58.5%	21.26	6	<b>0.002</b>
Secondary	6	30.0%	13	40.6%	12	29.3%			
Middle college/University	10	50.0%	5	15.6%	3	7.3%			
<b>Marital status</b>									
Married	17	85.0%	26	81.3%	30	73.2%			
Single	3	15.0%	5	15.6%	5	12.2%	5.54	4	0.236
Divorced/widow/widower	0	0.0%	1	3.1%	6	14.6%			
<b>Occupation</b>									
Employed	13	65.0%	25	78.1%	30	73.2%			
Retired	6	30.0%	4	12.5%	6	14.6%	3.49	4	0.480
Unemployed	1	5.0%	3	9.4%	5	12.2%			
<b>Whether used emergency services in the last 12 months due you diabetes</b>									
Yes	13	65.0%	24	75.0%	34	82.9%	2.44	2	0.295
No	7	35.0%	8	25.0%	7	17.1%			
<b>Whether admitted to the hospital with a diabetes related problem in the last 12 months</b>									
Yes	7	35.0%	10	31.3%	31	75.6%	16.98	2	<b>0.000</b>
No	13	65.0%	22	68.8%	10	24.4%			

#### 4.7.3 Assessment of anxiety disorders among the diabetic patients

Table 10 presents anxiety disorders among the diabetic patients according to the Diagnostic and Statistical Manual of Mental disorders (DSM-5). 73.1% (n=68) of the respondents claimed that they were troubled by unreasonable worry about events or activities like work or their health. Similarly, 66.7% (n=62) were unable to control the worry. 88.2% (n=82) of the respondents indicated getting tired easily. 59.1% (n=55) had also problems with concentration. When the respondents were asked about irritability, 80.6% (n=75) reported feeling irritable. Considerable numbers of the respondents (44.1%, n=41) were feeling worthless or guilty more days while the remaining 55.9% (n=52) indicated otherwise

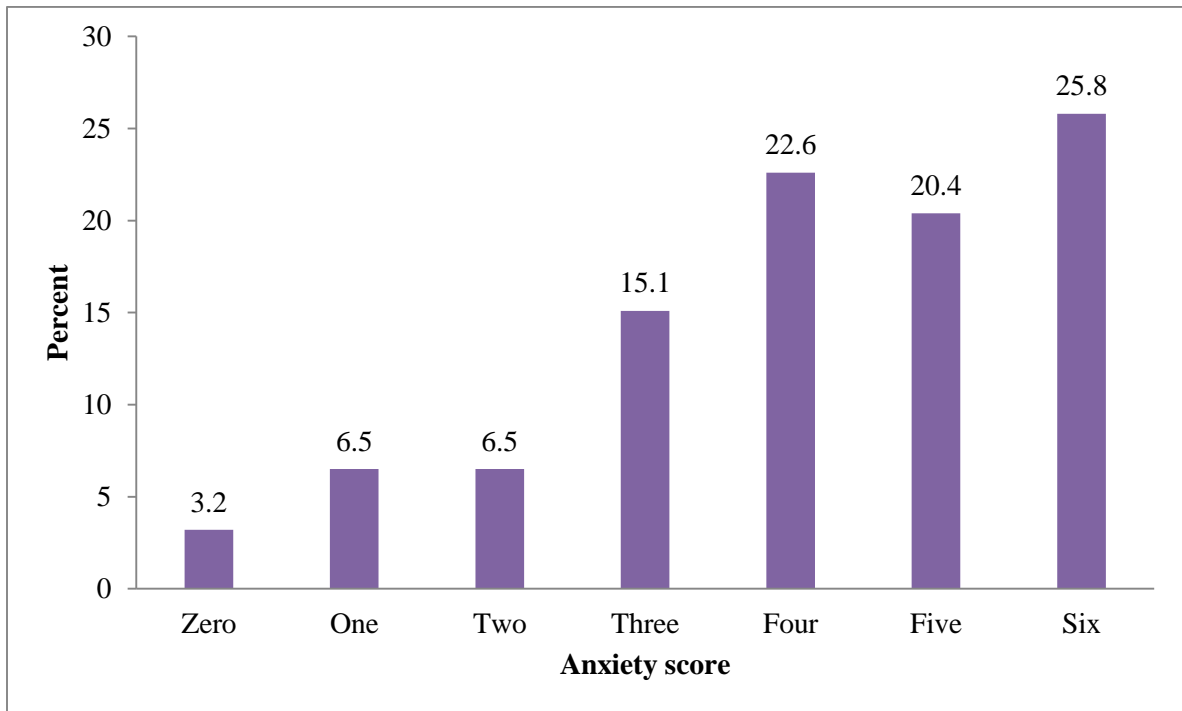
**Table 10: Anxiety disorders among the diabetic patients**

<b>Variable</b>	<b>N =93</b>	<b>%</b>
<b>Troubled by unreasonable worry about events or activities like work or health</b>		
No	25	26.9
Yes	68	73.1
<b>Troubled by the inability to control the worry</b>		
No	31	33.3
Yes	62	66.7
<b>Getting tired easily</b>		
No	11	11.8
Yes	82	88.2
<b>Having problems with concentration</b>		
No	38	40.9
Yes	55	59.1
<b>Feeling irritable</b>		
No	18	19.4
Yes	75	80.6
<b>Feeling worthless or guilty more days</b>		
No	52	55.9
Yes	41	44.1

#### **4.7.3.1: Anxiety disorder score**

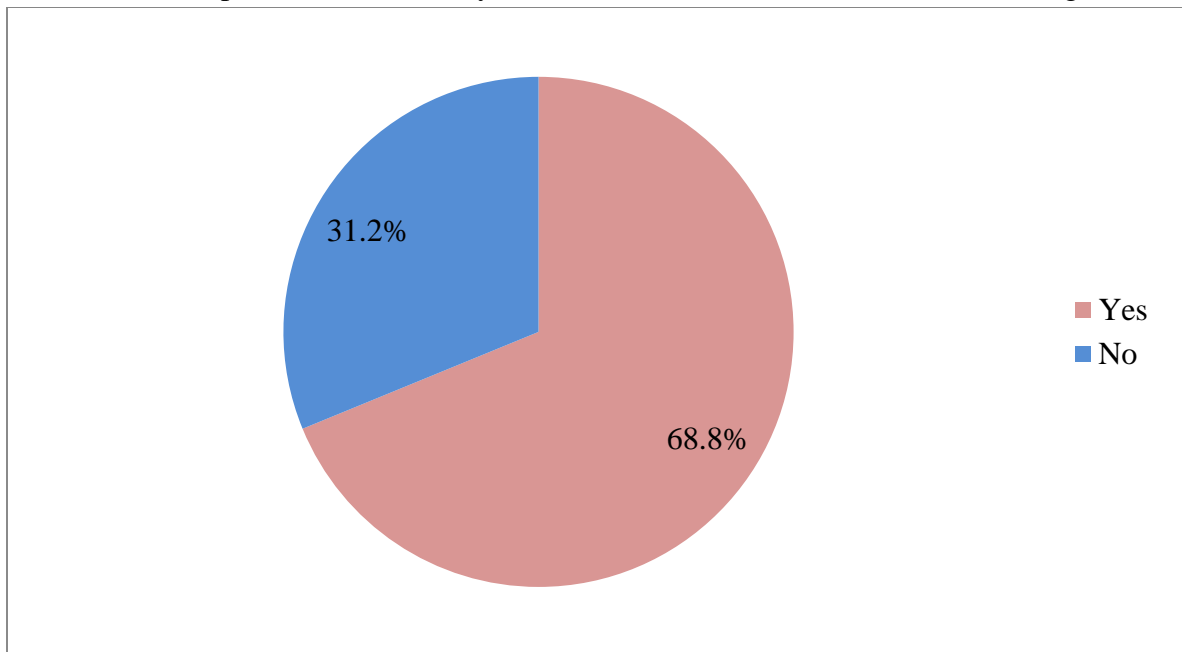
The overall anxiety disorder score among the participants was assessed using the six (6) statements presented in Table 10. This was calculated by assigning scores of '0' and '1' to the response categories of 'No' and 'Yes' respectively

The overall anxiety disorder scores ranged from 0 to 6 and the percentages for the scores are presented in Figure 4. 25.8% (n=26) of the respondents had score of six which is the maximum followed by score five (20.4%, n=20) and score four (22.6%, n=23). However, 3.2% (n=3) of the respondents had a zero score.



**Figure 4: Anxiety disorder score**

The overall score was generated by aggregating the scores. The maximum attainable score was 6 and the minimum score was 0. An aggregate score was generated and classified as having anxiety disorder (scores 4, 5 and 6) and without anxiety disorder (score 3 and below). 68.8% (n=69) of the respondents had anxiety disorder (score 4, 5 and 6) as indicated in Figure 5



**Figure 5: Level of anxiety disorder**

#### **4.7.1.2 Association between socio-demographic characteristics and anxiety disorder**

Bivariate analysis of the association between socio-demographic characteristics and anxiety disorder is shown in Table 11. There was significant association between level of education and level of anxiety disorder where the anxiety disorder was significantly higher among respondents with secondary school (74.2%, n=23), primary school (79.5%, n=31) and never gone to school (60.0%, n=3) compared to those who attended Middle college/University (38.9%, n=7) [ $\chi^2= 10.18$ ; df= 3; p value = 0.017]. However, there was no statistically significant association between the other variables.

There was significant association between the admission in the last 12 months and anxiety disorder. Respondents who were admitted to the hospital with a diabetes related problem in the last 12 months were significantly more to have anxiety disorder (85.4%,n=41) than those who indicated otherwise (51.1%, n=23) [ $\chi^2= 12.74$ ; df= 1; p value = 0.000].

**Table 11: Association between socio-demographic characteristics and anxiety disorder**

Variables	Anxiety disorder				$\chi^2$ value	df	P value
	Yes		No				
	n	%	n	%			
<b>Age in years</b>							
18 to 40	16	80.0%	4	20.0%			
41 to 60	26	61.9%	16	38.1%	2.17	2	0.338
> 60	22	71.0%	9	29.0%			
<b>Gender</b>							
Male	32	65.3%	17	34.7%	0.60	1	0.441
Female	32	72.7%	12	27.3%			
<b>Level of education</b>							
Never gone to school	3	60.0%	2	40.0%			
Primary	31	79.5%	8	20.5%	10.18	3	<b>0.017</b>
Secondary	23	74.2%	8	25.8%			
Middle college/University	7	38.9%	11	61.1%			
<b>Marital status</b>							
Married	50	68.5%	23	31.5%			
Single	9	69.2%	4	30.8%	0.03	2	0.987
Divorced/widow/widower	5	71.4%	2	28.6%			
<b>Occupation</b>							
Employed	47	69.1%	21	30.9%			
Retired	10	62.5%	6	37.5%	1.67	3	0.643
Housewife	4	66.7%	2	33.3%			
Unemployed	3	100.0%	0	0.0%			
<b>Current/present weight</b>							
40 to 60	18	85.7%	3	14.3%			
61 to 80	25	65.8%	13	34.2%	3.88	2	0.144
81 to 100	15	60.0%	10	40.0%			
<b>Whether used emergency services in the last 12 months due you diabetes</b>							
Yes	50	70.4%	21	29.6%	0.36	1	0.548
No	14	63.6%	8	36.4%			
<b>Whether admitted to the hospital with a diabetes related problem in the last 12 months</b>							
Yes	41	85.4%	7	14.6%	12.74	1	<b>0.000</b>
No	23	51.1%	22	48.9%			
<b>Whether there are prescriptions for diabetes care that you have not fulfilled</b>							
Yes	24	77.4%	7	22.6%	1.60	1	0.205
No	40	64.5%	22	35.5%			

#### 4.8 Correlation among anxiety disorder score, stress score and depression score

##### Descriptive statistics

The mean score of anxiety disorder, stress and depression were 4.12, 25.03 and 9.89 respectively. The range and standard deviation are also shown in Table 12.

**Table 12: Descriptive statistics**

	Mean	Std. Deviation	N	Range
Anxiety disorder score	4.12	1.66	93	0-6
Stress score	25.03	12.74	93	0-54
Depression score	9.87	5.69	93	0-24

##### Correlation among anxiety disorder score, stress score and depression score

Table 13 shows the correlation among anxiety disorder score, stress score and depression score. There was positive correlation between anxiety disorder score and stress score (Pearson correlation = 0.632; p=0.000) as well as anxiety disorder score and depression (Pearson correlation =0.47; p=0.000. Similarly, There was positive correlation between stress score and depression (Pearson correlation = 0.717; p=0.000).

**Table 13: Correlation among anxiety disorder score, stress score and depression score**

		Anxiety disorder score	Stress score	Depression score
Anxiety disorder score	Pearson Correlation	1		
	Sig. (2-tailed)			
Stress score	Pearson Correlation	.632**	1	
	Sig. (2-tailed)	<b>0.000</b>		
Depression score	Pearson Correlation	.547**	.717**	1
	Sig. (2-tailed)	<b>0.000</b>	<b>0.000</b>	
** Correlation is significant at the 0.01 level (2-tailed).				

### **Assessment of anxiety disorder score**

The overall anxiety disorder score among the participants was assessed using the six (6) statements whose responses and scores were structured as follows:

- Troubled by unreasonable worry about events or activities like work or your health (Yes=1, No=0)
- Troubled by the inability to control the worry (Yes=1, No=0)
- Getting tired easily (Yes=1, No=0)
- Having problems with concentration (Yes=1, No=0)
- Feeling irritable (Yes=1, No=0)
- Feeling worthless or guilty more days (Yes=1, No=0)

The overall score was generated by aggregating the scores. The maximum attainable score was 6 and the minimum score was 0. An aggregate score was generated and classified as having anxiety disorder (score 4, 5 and 6) and without anxiety disorder (score 3 and below).

### **Assessment of depression score**

The overall depression score among the participants was assessed using the eight (8) statements whose responses and scores were structured as follows:

- Have you been feeling little interest or pleasure in doing things? (not at all =0; several days = 1; more than half the days = 2; and early every day = 3)
- Do you have trouble in falling or staying asleep or sleeping too much? (not at all =0; several days = 1; more than half the days = 2; and early every day = 3)
- Have you been feeling tired or having little energy? (not at all =0; several days = 1; more than half the days = 2; and early every day = 3)
- Have you been feeling bad about yourself or that you are a failure or have let yourself or your family down? (not at all =0; several days = 1; more than half the days = 2; and early every day = 3)
- Have you had thoughts that you would be better off dead, or of hurting yourself? (not at all =0; several days = 1; more than half the days = 2; and early every day = 3)
- Poor appetite or overeating (not at all =0; several days = 1; more than half the days = 2; and early every day = 3)
- Have you had trouble concentrating on things such as reading e.g. newspaper or watching TV? (not at all =0; several days = 1; more than half the days = 2; and early every day = 3)
- Moving or speaking so slowly that other people could have noticed, or being so fidgety or restless, moving around a lot more than usual (not at all =0; several days = 1; more than half the days = 2; and early every day = 3)

The overall score was generated by aggregating the scores. The maximum attainable score was 24 and the minimum score was 0. Aggregate score was generated and the severity of depression was classified as follows: None-minimal (0 – 4), Mild (5 – 9), Moderate (10 – 14), Moderately Severe (15 – 19) and Severe (20 – 24).

### **Assessment of stress score**

The overall stress score among the participants was assessed using the nine (9) statements whose responses and scores were structured as follows:

- Headaches (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)
- Anxiety, worry, phobias (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)
- Difficulty falling asleep (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)
- Insomnia (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)
- Bouts of anger, hostility (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)
- Boredom (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)
- Eating too much or too little (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)
- Diarrhoea, gas, constipation (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)
- Restlessness, itching, tics (never =0; once a month =1; once a week= 2; 2-3 times per week =3; every night or day= 4; once or twice daily= 5 and almost all day/every day =6)

The overall score was generated by aggregating the scores. The maximum attainable score was 54 and the minimum score was 0. Aggregate score was generated and the stress was classified as follows: None-minimal (0 – 13), Moderate (14 – 26), and high (27 – 54).



## **CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATION**

### **5.1 Introduction**

This chapter presents discussion of the study findings. The researcher made comparisons between the findings and other similar studies that were done earlier.

### **5.2 Demographic characteristics of diabetic patients**

The highest percentage of the respondents (45.2%) was within the age group of 41-60 years followed by those aged greater than 60 years (33.3%). This demonstrated that diabetes prevalence increased with age. These findings were in agreement with a study that was done by Crandall (2010) that showed that the advanced the age, the greater the risk of developing diabetes mellitus. Males were more (52.7%) than the females (47.3%). This was in agreement with a study conducted by Salam (2013) that found male patients were more than female patients. The study also found that male patients were more committed to follow-up care than the female patients and this could explain why in this study, the male patients were more than the female patients. 78% of the respondents were married.

On education, the highest percentage (41.9%) attained primary school followed by secondary school (33.3%) whereas respondent who had university education were only 7.5%. The DM patients who attended middle level colleges and university education were found to have lesser psychosocial complications; this could have been due to their increased ability to adapt to the lifestyle changes. Salam (2013) found that education status significantly determined compliance to DM care, patients who had university education complied more than the other patients. The level of education played a significant role in understanding the healthcare worker's advice. In this study majority (41.9%) of the patients had primary level of education and there was also a smaller number of them that had never gone to school.

On occupation, the findings showed that most of the respondents (73.1%) were employed with different types of jobs, however some patients had lost their initial jobs following illness and had to look for alternative jobs. This increased challenges in sustaining their medical care. A study done in the U.S found that there was significant productivity loss due to DM illness and this lead to termination of jobs for the nonproductive workers (Tunceli (2005),

On residence, the respondents were mainly from Eastleigh (7.5%), Dagorette (5.4%), Kiambu (5.4%), Muranga (5.4%), Kibera (3.2%), Kangemi (3.2%), and Guthurai (3.2%). However, the remaining respondents were from different parts of the country and outside the country.

### **5.3 Anthropometric measurements**

The mean weight among the respondents was 71.9 kilogram (Kg). The highest percentage of the respondents (40.9%) weighed between 61 to 80 Kg and the highest percentage (31.0%) took the weight before 2 to 4 months. However, 9.7% had never taken their weight. Similarly, the highest percentage (11.8%) had 171 to 179 cm height and among those who took the measurement more than half (54.2%) measured their height between 2 to 6 months. However, 74.2% of the respondents had never measured their height. Most of DM patients (86.0%) indicated weight change and the main change was reduced weight (76.3%). This is in agreement with a study done by Wilding (2014) that found that weight loss was important in in DM patients and it increased glycemic control and improved cardiovascular function.

96.8% of the patients had never had their BMI measured. BMI is an important anthropometric parameter in monitoring DM patients' progress. All patients reported that waist circumference, waist to hip ratio and waist to height ratio were not done in the last 6 months. Probably this may have been due to lack of knowledge on the importance of monitoring the DM patients' progress among the health care professionals. Poor monitoring of the patients may have contributed to the complications that patients presented with.

### **5.4 Psychosocial complications associated with diabetes mellitus**

The common psychosocial complications associated with diabetes which were mentioned by the respondents included weakness/fatigue (75.3%), eye problems (35.5%), sexuality problem (22.6%) and inability to work (22.6%). This was in agreement with the first key informant interviewee who also pointed out that many DM patients had complained of sexual dysfunction, others had depression, while others had lost their jobs due to the illness. Some patients had also been abandoned by their families terming them as a burden. Inability to provide for their families was also pointed out as a major problem.

On the other hand, the second and fourth key informant interviewees pointed out that lack of acceptance or poor adaptation and denial were major problems in patients. The third, fifth, sixth and seventh key informant interviewees pointed out that patients presented with psychosis, stress, long standing high blood sugar, as well as poor adaptation, and depression. This was also in agreement with studies by Shariff G (2014) and Ashraff S (2013) which found that DM patients developed psychosocial complications like stress, depression, distress, emotions, coping behaviors among others.

More than half (57.0%) of the respondents were supported by their parents or family members.

Majority (76.3%) used emergency services in the last 12 months due to diabetes related complications and about a quarter (26.8%) used the service once followed by those who used twice (23.9%) and thrice (19.7%). However, considerable number (7.0%) used the emergency services more than 20 times. The main reasons for using the emergency services were high blood sugar (45.1%), infections (33.8%) and low blood sugar (25.4%). About half (51.6%) were

admitted to the hospital because of diabetes related problems in the last 12 months and the common reasons indicated were high blood sugar (64.6%), low blood sugar (22.9%) and diabetic foot (10.4%).

The key informant interviews brought out that majority of the health care workers were not able to identify the psychosocial complications that patients presented with hence rarely was any care provided to these complications.

### **5.5 Management Interventions for psychosocial complications associated with diabetes mellitus**

About half of the respondents (53.8%) were using oral medication followed by insulin injection mode of treatment (43.0%). However, there were only 3.2% using diet as mode of management. More than half (57.7%) indicated that they never missed taking their medications as prescribed while 10.3% missed rarely or occasionally, 15.5% missed once a week, 13.4% missed twice a week. Among those who missed medications to take as prescribed, forgetting (62.2%) and drug unavailability (21.6%) were the main reasons provided. The unavailability of the drugs was due to lack of money to purchase.

One third (33.3%) of the respondents indicated that there were prescriptions for diabetes care that were not fulfilled while the remaining (66.7%) indicated otherwise. The main types of prescriptions among those who did not fulfill the prescribed care were drugs (71.0%) and laboratory investigations (22.6%). The main reason for not fulfilling the prescribed care that the respondents gave was financial constraints.

All of the respondents indicated that they had no meal plan for diabetes. They pointed out that they were taking normal diet which most of the time was not balanced and some patients maintained the portions they were taught by the health care professionals. A study by Gray A (2015) concluded that developing a meal plan and maintaining it was a major challenge in DM patients, due to vast dietary information from diverse sources of information to the patients and the health care professionals.

The report from key informant interviewees pointed out that those health care professionals who were able to identify the psychosocial complications, called the counselors or the psychologist to attend to patients, one key informant interviewee involved a nutritionist in provision of care. The management interventions provided by the key informants were counseling, referral and involving the family in caring for the patients. This demonstrated that the psychosocial complications that DM patients presented with were not adequately addressed. The findings of this study clearly demonstrated that there were no established management intervention plans for psychosocial complications associated with diabetes mellitus. Most of the respondents (95.7%) reported that they check their blood sugar level and the highest percentage (31.2%) checked monthly followed by those who were checking weekly (28.0%).

## **5.6 Anxiety, Depression and Stress**

### **5.6.1 Assessment of depression in DM patients**

The highest percentage of the respondents had mild depression (39.8%) followed by 21.5% who had moderately severe depression while 15.1% had either none or minimal and 6.5% with severe depression. Admission to the hospital increased the severity of depression. According to Siddiqui M (2013), male DM patients lived more effectively with the disease hence experiencing depression and anxiety less. This contributed to their positive wellbeing.

### **5.6.2 Assessment of stress in DM patients**

Majority of the respondents had high level of stress (44.1%) followed by 34.4% who had moderate stress. High level of stress was observed among patients who had been admitted to the hospital within 12 months.

### **5.6.3 Assessment of anxiety in DM patients**

Majority (68.8%) of the respondents had anxiety disorder. There was significant relationship between education status and level of anxiety. Patients with education status from secondary level and below had higher level of anxiety compared to those who attended middle college level or university colleges. A study by Sriram (2013) found that women had higher score on anxiety while men had lesser worries and stress associated with DM. This lead to male patients adapting to change of lifestyle with ease than the female patients

## 5.7 Conclusion

Diabetes mellitus comprises a group of metabolic derangements that are characterized by chronic hyperglycemia and impaired protein, carbohydrates and lipid metabolism due to imbalance between insulin secretion and its action on the target cells. Diabetes mellitus is classified in to different categories, Type 1 DM occurring due to failure of the beta cells of the pancreas to produce insulin, Type 2 DM occurring due to insulin resistance and reduced insulin production, Gestational DM which occur for the first time during pregnancy (Matfin *et al.* 2009).

DM is associated with many complications which can be physical or psychosocial in nature. Physical complications include diabetic retinopathy, a major cause of blindness, hyperlipidemia due to uncontrolled diabetes; diabetic nephropathy, leading to renal disease. Diabetic neuropathies which affect both somatic and autonomic nervous systems, macro vascular disorders, for instance coronary heart disease, cerebrovascular accident (CVA) and peripheral vascular disease; acute complications include, diabetes ketoacidosis common in T1DM patients, hypoglycemia and hyperosmolar hyperglycemic non-ketotic state common in T2DM patients (Matfin 2009)

Psychosocial complications include depressive disorders (Anderson *et al.* 2009); anxiety and fear disorders, Diabetes distress, very common among the adolescents. Parents of children with T1DM are also prone to developing diabetes distress (American Diabetes Association 2014). Stress which is common with adolescents although can occur in all ages and its due to the chronic illness; quality of life; family members' involvement and support, as well as adaptation to the treatment burden is a major challenge. Communication in the family and emotions

The goal of management for DM is to maintain serum glucose level at near normal without subjecting a patient to hypoglycemia and improve the quality of life. Psychosocial management of DM is associated with good clinical outcome, treatment adherence, improved QOL, improved self-care and raised self-esteem.

A total of 102 diabetic patients were contacted over the study period. Of these, 5 (4.9%) declined to consent, while 4 (3.9%) withdrew thus the response rate was (93) 91.2%.

The mean age of the respondents was 53.1 years. The highest percentage of the respondents (45.2%) was within the age group of 41-60 years followed by those aged over 60 years (33.3%). Male were more (52.7%) than the female (47.3%). The highest percentage of the respondents (40.9%) weighed between 61 to 80 Kg. Height and BMI monitoring were rarely done while waist circumference, waist-to-hip ratio, and waist-to-height ratio were never monitored.

The common psychosocial complications that were identified include, stress, depression, emotions, poor adaptation, denial, anxiety, sexual dysfunction, loss of jobs and quality of life. Majority of the health care professionals were not able to identify these psychosocial complications that DM patients presented with, which when identified and managed effectively would improve the quality of life, reduce emergency visits or hospital admissions and reduce the burden of care.

Majority of the patients (53.8%) were using oral medication followed by insulin injection mode of treatment (43.0%). All patients had no meal plan however some patients adhered to meal portions that they were taught by the health care professionals. Occasionally a counselor or a psychologist was called to talk to the patients. The findings of this study demonstrated that there were no established management intervention plans for psychosocial complications associated with diabetes mellitus.

## **5.8 Recommendations**

1. Health care professionals to health educate patients with diabetes mellitus the importance of meal plans as part of their management
2. Stake holders in health to emphasize involvement of management of psychosocial complications associated with diabetes mellitus in the plan of care
3. Health care professionals to improve on close monitoring of diabetic patients to prevent complications

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## APPENDICES

### Appendix IA: Informed Consent Information Sheet for the Study Participant

**Title:** Management of psychosocial complications associated with diabetes mellitus among adult patients at KNH

**Investigator:** Catherine Musenya Nzau Tel. 0721872511  
School of Nursing Sciences,  
University of Nairobi  
Po Box 19676, Nairobi.

**Introduction:** I am a student at the School of Nursing Sciences, University of Nairobi pursuing a Master of Science Degree in Nursing. I am conducting a study titled: management of psychosocial complications associated with diabetes mellitus among adult patients at KNH, a descriptive study at the Kenyatta National Hospital. This study is being conducted at Kenyatta national hospital medical (diabetic) outpatient clinic and the medical wards.

The purpose of this information is to give you details pertaining to the study that will enable you make an informed decision regarding participation. You are free to ask questions to clarify any of the aspects we will discuss in this information and consent form. I will also ask you questions regarding the study before you sign the consent form to ascertain your comprehension of the information provided.

**Background and objective:** The purpose of this study is to determine the management interventions of psychosocial complications associated with diabetes mellitus among adult patients at KNH. This will identify gaps in the care provided to this patients with a view of coming up with suggestions to improve quality of life and prevent long-term complications .The findings from this study could be used to come up with strategies to provide holistic care to patients with diabetes increasing adherence to management.

**Participation:** Participation in the study will involve responding to questions which will be filled in by the researcher or the research assistant in the semi-structured questionnaire and a key informant guide will be used to gather more information from key informants on the management interventions of psychosocial complications associated with diabetes mellitus. You will not be subjected to any invasive procedure. The research involves participation of approximately 102 patients.

**Benefits:** There is no direct monetary benefit in participating in this study. However, the results of the study will be useful in providing information on the available management interventions of psychosocial complications associated with diabetes mellitus and how they can be controlled and prepare guidelines to aid in provision of care to these patients. The findings will be availed to the hospital, other relevant decision makers and stakeholders to aid in putting in place measures that will improve the care given to the diabetic patients in order to prevent them from suffering long-term complications and improve quality of life.

**Risks:** There are no economic or physical risks to participating in the study. However, due to the time taken in responding to question, you will take a longer time than usual at the hospital. Also during the interview, some questions will require you to disclose some personal information that might trigger some negative feelings and possibly anxiety. If this happens, the researcher will refer you to the hospital counselor. The researcher will also endeavor to spend approximately 25 minutes with you.

**Confidentiality:** Confidentiality will be maintained and the information you provide will only be used for the intended purpose of the study. In addition, your name will not be required on any forms or used during publication of the final report thus ensuring your anonymity. All materials used during the study will be under lock and key and only the personnel involved in this study will have access to them. Electronic files will be saved on password and fire-wall protected computers.

**Voluntary participation:** Participation in this study is voluntary. Refusal to take part will not attract any penalty. You retain the right to withdraw from the study without any consequences. You are free not to answer any question during the interview.

**Compensation:** There is no compensation for participating in the study.

**Conflict of interest:** The research and the supervisors confirm that there is no conflict of interest among them.

## Consent form for the study participant

If you Consent to Participate in the study please sign below:

I hereby consent to participate in this study. I have been informed of the nature of the study being undertaken and potential risks explained to me. I also understand that my participation in the study is voluntary and the decision to participate or not to participate will not affect my care at this facility in any way whatsoever. I may also choose to discontinue my involvement in the study at any stage without any explanation or consequences. I have also been reassured that my personal details and the information I will relay will be kept confidential. I confirm that all my concerns about my participation in the study have been adequately addressed by the investigator and the investigator have asked me questions to ascertain my comprehension of the information provided.

Participant's Signature (or thumbprint).....Date.....

I confirm that I have clearly explained to the participant the nature of the study and the contents of this consent form in detail and the participant has decided to participate voluntarily without any coercion or undue pressure.

Investigator's/Research Assistant's Signature..... Date .....

For any Clarification, please contact

Catherine Musenya Nzau

Researcher Mobile Number: 0721872511 Email: [nzauc@yahoo.com](mailto:nzauc@yahoo.com)

### Supervisors:

Dr. Irene Mageto

Tel. 0724205419

Dr. Samuel Kimani

Tel. 0722384917

For further inquiries you can contact, the Kenyatta National Hospital-University of Nairobi Ethics and Research Committee through the Chairperson of the **KNH-UoN ERC** through the contacts below:

Tell No: 020-2726300 extension 44102

P.O.Box 20723 Nairobi

Email: [uonknh\\_erc@uonbi.ac.ke](mailto:uonknh_erc@uonbi.ac.ke)

## **Appendix 1B: Fomu ya Maelezo Kuhusu Idhini Kushiriki**

Mtafiti: Catherine Musenya Nzau

Namba ya simu: 0721872511

Mwanafunzi katika shule ya wauguzi

Chuo kikuu cha Nairobi

Sanduku la posta, 19676, Nairobi

**Utangulizi:** Jina langu ni Catherine Musenya Nzau mwanafunzi katika chuo kikuu cha Nairobi. Ninafanya utafiti kuhusu jinsi wagonjwa walio na ugonjwa wa kisukari wanavyohudumiwa wanapopatwa na shida zinazo tatiza maisha yao ya kila siku wakati wanapoendelea na matibabu ya kisukari katika hosipitali kuu ya Kenyatta. Umekaribishwa katika utafiti huu.

Maelezo yafuatayo yatakusaidia kumakinika unapotoa idhini kushiriki katika utafiti huu. Lengo la utafiti huu ni kutambua jinsi wagonjwa wa kisukari wanavyohudumia wakipata shida zingine za kiafya wakati wanaendelea na matibabu ya kisukari katika hosipitali ya Kenyatta. Utafiti huu unafanywa kwa wagonja wa kisukari peke yake. Unakaribishwa kushiriki.

### **Faida za utafiti**

Majibu utakayopeana yatasaidia kutambua changamoto ambazo wagonjwa wa kisukari wanapitia na pia kutambua kama kuna upunguvu wowote katika kuwahudumia wagonjwa wa kisukari. Utafiti huu pia utasaidia kuimarisha huduma kwa wagonjwa hawa wa kisukari.

Matokeo ya utafiti huu yataweza kutumika kuimarisha huduma kwa wagonjwa wa kisukari katika hosipitali kuu ya Kenyatta na pia kusaidia usimamizi wa hosipitali katika kuweka mikakati ya kutoa huduma bora kwa wagonjwa wa kisukari.

### **Kuhusika/kushiriki.**

Kushiriki ni kwa hiari yako.

Utaulizwa maswali ulipo kuhusu unapoishi na maswali mengine. Kujibu maswali kutachukua muda wa dakika 15 hadi 20.

Habari utakazopeana zitalindwa zisiweze kupatikana na watu wasiohusika kwa utafiti na habari yako haitaweza kutambulishwa nawe wala jina lako halitaandikwa popote katika utafiti huu.

Unao uhuru wa:

1. Kushiriki au kutoshiriki.
2. Kujibu maswali uko sawa kwayo.
3. Kusitisha kushiriki wakati wowote na habari yako italindwa na kuharibiwa.

Kwa habari na maelezo zaidi, una uhuru wakuniuliza mimi au walimu wangu pia.

**Walimu wangu:** DR. Irene Mageto-0724205419

DR. Samuel Kimani-0722384917

**KNH-UoN ERC**

Tell No: 020-2726300 extension 44102

P.O.Box 20723 Nairobi

Email: uonknh\_erc@uonbi.ac.ke



## **Fomu ya kutoa idhini kushiriki**

Mimi ..... nambari ya siri .....natoa idhini yangu kwa hiari kushiriki katika utafiti ambao nimeelezewa lengo, faida na madhara yake. Nimeelezewa ya kwamba kushiriki kwangu ni kwa hiari na hakuna faida zozite za kifedha nitapokea. Nimejulishwa kwamba jumbe zote nitakazotoa zitawekwa kisiri na hazitaweza kunitambulishwa name. nimefahamishwa ya kwamba naweza kusitisha kushiriki kama itafaa kwa wakati wowote nah ii haitaadhiri matibabu yangu.  
Hivyo basi natoa idhini yangu kushiriki katika utafiti huu kwa hiari yangu.

Sahihi ya mshiriki ..... tarehe .....  
Jina la mtafiti/Msaidizi.....sahihi ..... tarehe .....  
Nambari ya simu 0721872511

### **Supervisors:**

Dr. Irene Mageto  
Tel. 0724205419

Dr. Samuel Kimani  
Tel. 0722384917

### **KNH-UoN ERC**

Tell No: 020-2726300 extension 44102  
P.O.Box 20723 Nairobi  
Email: uonknh\_erc@uonbi.ac.ke

## **Appendix IC: Key Informant Interview Consent Form for Health Care Professional**

Hello! My name is Catherine Nzau. I am a postgraduate student pursuing Master of Science in Nursing (Medical Surgical Nursing) at the School of Nursing Sciences, of the University of Nairobi.

I am carrying out a study on “Management of psychosocial complications associated with diabetes mellitus among adult patients at KNH” I am inviting you to participate in this study.

The main purpose of this study is to investigate the management interventions of psychosocial complications associated with diabetes mellitus among adult patients at KNH. The findings from this study are expected to provide baseline information on the interventions of psychosocial complications associated with diabetes mellitus among adult patients in Kenya and this may help in designing strategies and policies to improve the care provided to patients with diabetes and reduce long term complications as well as improve the quality of life.

If you agree to participate, I will have an interview session with you which will take about 15-20 minutes. I will ask you questions about your experience concerning the psychosocial care provided to patients with diabetes.

This study involves the audio-taping of your interview with the researcher. The information you will provide will not be linked to you. Neither your name nor any other identifying information will be associated with the audiotape or the transcript. Whatever you say during this discussion will be kept confidential. At the end of interview, the audio-recorded information will be replayed to you for confirmation.

Only the researcher will be able to listen to the audio-taped records. The tapes will be transcribed by the researcher and erased once the transcriptions are checked for accuracy. Transcripts of your interview may be reproduced in whole or in part for use in presentations or written reports that result from this study. Neither your name nor any other identifying information (such as your voice) will be used in presentations or in written reports resulting from the study.

The audiotaped records will be kept in safe custody in a cabinet under lock and key and only the researcher will be able access the cabinet. Once their use is completed, they will be erased completely.

If you wish to withdraw your consent to taping or participation in this study, immediately following the interview, you will be given the opportunity to have the tape erased.

If you accept to participate in this study, please sign your name.

By signing this form, I am allowing the researcher to audio tape me as part of this research study

I, \_\_\_\_\_, agree to participate in this research study.

(Signature) \_\_\_\_\_ (Date) \_\_\_\_\_

**If you have questions about the study, please contact:**

**Researcher:** Catherine Nzau

Tell No. 0721872511

**My Supervisors:**

Dr. Irene Mageto

Tel. 0724205419

Dr. Samuel Kimani

Tel. 0722384917

**KNH-UoN ERC**

Tell No: 020-2726300 extension 44102

P.O. Box 20723 Nairobi

Email: uonknh\_erc@uonbi.ac.ke

## Appendix IIA: Research Questionnaire

Questionnaire no: ..... Facility KNH Ward/ Unit .....

### Instructions

- Please do not write your name anywhere in this questionnaire
- Put a tick (✓) against the correct response in the space provided
- Where there is no response provided, please write the response in the space provided

### Part A

#### Demographic characteristics

1. Date of interview .....
2. What is your age in years? .....
3. Gender Male ..... Female.....
4. What is your level of education
  - a) Primary level .....
  - b) Secondary level.....
  - c) Middle college level.....
  - d) University level .....
  - e) Others, specify .....
5. What is your marital status .....
6. What is your occupation .....
7. What is your area of residence .....

### PART B

#### Anthropometric measurements

1. Participant's weight ..... height .....
2. When did you last check your weight ..... height .....
3. Have you experienced any weight changes since the diagnosis of diabetes?  
Yes ..... No .....  
Please explain .....
4. Which of the following body measurements have you checked in the last 6 months?
  - a) Body mass index .....
  - b) Waist circumference .....
  - c) Waist-to-hip-ratio .....
  - d) Waist-to-height-ratio.....
  - e) Weight .....
  - f) Height .....

How often do you check these measurements? .....  
Please explain .....

**PART C**

**Psychosocial complications**

1. How has diabetes affected your health? .....
2. Who do you get support from for your health care? .....
3. a) In the last 12 months, have you used the emergency services due to diabetes related problems?  
Yes ..... No .....  
How many times? .....  
Please explain .....

- b) In the last 12 months, have you been admitted to the hospital with a diabetes related problem?  
Yes ..... No .....  
Please explain .....

**PART D**

**Management interventions**

1. What is your current treatment for diabetes?
  - a) Oral medication .....
  - b) Insulin injection .....
  - c) Diet .....
  - d) Physical exercise .....
  - e) Others ..... please explain .....
2. How often do you miss taking your medications as prescribed .....  
Please explain .....
3. Are there prescriptions for diabetes care that you have not fulfilled?  
Yes ..... No .....  
Please explain .....
4. Do you have a meal plan for diabetes?  
Yes ..... No .....  
Please explain .....
5. How often do you follow the meal plan?
  - a) Always .....
  - b) Sometimes .....
  - c) Rarely .....
  - d) Never .....
6. Do you check your blood sugar?  
Yes ..... No .....  
How often do you check your blood sugar? .....  
What is your blood sugar range? .....

## **Appendix IIB: Checklists for Assessment of Anxiety Disorders, Depression and Stress**

### **Assessment of Anxiety disorders checklist**

Adopted from diagnostic and statistical manual of mental disorders 5<sup>th</sup> edition

1. Are you troubled by unreasonable worry about events or activities like work or your health?      Yes .....      No .....
2. Are you troubled by the inability to control the worry?      Yes .....      No .....
3. Are you getting tired easily?      Yes .....      No .....
4. Do you have problems with concentration?      Yes .....      No .....
5. Have you been feeling irritable?      Yes .....      No .....
6. Do you feel worthless or guilty more days?      Yes .....      No .....

American Psychiatric Association (2013), Diagnostic and Statistical Manual of Mental disorders, DSM-5

## Assessment of stress

Adopted from NYSUT Social Services

Symptoms	Almost all day, every day	Once or twice daily	Every night or day	2-3 times per week	Once a week	Once a month	Never
Headaches							
Anxiety, worry, phobias							
Difficulty falling asleep							
Insomnia							
Bouts of anger, hostility							
Boredom							
Eating too much or too little							
Diarrhea, gas, constipation							
Restlessness, itching, tics							

Matheny (2000), Stress Assessment-NYSUT social services,

[https://www.nysut.org/~---/nysut/---/social-services/socialservices\\_stressassessments](https://www.nysut.org/~---/nysut/---/social-services/socialservices_stressassessments)

## Assessment of depression

Adopted from Pfizer Inc. (2005)

In the last two weeks have you been experiencing the following?

	Not at all	Several days	More than half the days	Nearly everyday
Have you been feeling little interest or pleasure in doing things?				
Do you have trouble in falling or staying asleep or sleeping too much?				
Have you been feeling tired or having little energy?				
Have you been feeling bad about yourself or that you are a failure or have let yourself or your family down?				
Have you had thoughts that you would be better off dead, or of hurting yourself?				
Poor appetite or overeating				
Have you had trouble concentrating on things such as reading e.g. newspaper or watching TV?				
Moving or speaking so slowly that other people could have noticed, or being so fidgety or restless, moving around a lot more than usual				

Neese (2005), Mental Health Assessment Tools: [www.pfizer.com](http://www.pfizer.com)



### **Appendix III: Key Informant Guide**

1. How many DM patients have comorbidities with psychosocial complications?
2. Are the healthcare professionals able to identify the psychosocial complications that diabetic patients present with?
3. What are the experiences and perceptions of healthcare workers in solving the psychosocial complications that DM patients develop?
4. What are the common psychosocial complications that patients with diabetes present with?
5. What are the management interventions for these psychosocial complications?
6. Who do you call to see the patients when they have these psychosocial complications?

#### Appendix IV: Budget of the Study

	Item	Unit of measurement	Unit cost (KSH)	Total (KSH)
Stationeries	Ruled papers	2 reams	@250	500
	Printing papers	2 reams	@500	1000
	A4 note books	5	@100	500
	Pens	5	@20	100
Subtotal				2100
Pretesting	Proposal typing	300	@200	600
	Proposal printing	200	@5	1000
Questionnaire	Proposal photocopying	400	@2	800
Data processing and analysis				30000
Sub total				32400
KNH Ethics Committee				4000
KNH request for data				500
Biostatitian allowances				30000
Allowances for research assistants				40000
Research assistants training		3 days	@2000	6000
Allowance for pretesting research assistants				1500
Binding of report		4 copies	@ 2000	8000
Sub total				90000
Grant total				124500

## Appendix V: Ghant Chart and Time Frame

ACTIVITY	FEBR – MAY 2017	JUNE 2017	JULY 2017	AUG 2017	SEPT 2017	OCT 2017	NOV 2017
Proposal Writing							
Ethics Clearance							
Printing questionnaires & testing							
Pre-test field work							
Pretest analysis & evaluation							
Printing the research instruments							
Collection of data							
Editing, coding, & validation of data							
Data analysis and writing of the report							
Project report defense							
Report dissemination & publication							

## **Appendix VI: Request for Approval to Carry Out Study**

Catherine Musenya Nzau

University of Nairobi

School of Nursing Sciences

Telephone No: 0721872511

Email: nzauc@yahoo.com

The Chairperson,

Ethics and Research Committee-University of Nairobi and Kenyatta national Hospital,

Dear sir/ madam,

### **RE: REQUEST FOR PERMISSION TO CARRY OUT RESEARCH STUDY:**

I am a post-graduate student pursuing Master of Science in Nursing (Medical-surgical nursing) at the University of Nairobi. I wish to undertake a study on management of psychosocial complications associated with diabetes mellitus among adult patients at Kenyatta National Hospital.

I am kindly requesting for your approval to undertake the said study. I am committed to observe and adhere to the ethical principles of respect for persons, justice and beneficence.

I look forward to your favorable response.

Yours faithfully,

Catherine Musenya Nzau

## **Appendix VII: Request for Permission to Carry Out Study**

Catherine Musenya Nzau

University of Nairobi,

School of Nursing Sciences

Telephone No: 0721872511

Email: nzauc@yahoo.com

The Chairperson,

Ethics and Research Committee-Kenyatta national Hospital,

Dear sir/ madam,

### **RE: REQUEST FOR PERMISSION TO CARRY OUT RESEARCH STUDY**

I am a post-graduate student pursuing Master of Science in Nursing (Medical-surgical nursing) at the University of Nairobi. I wish to undertake a study on management of psychosocial complications associated with diabetes mellitus among adult patients at Kenyatta National Hospital.

I am kindly requesting for your approval to undertake the said study in your institution. Attached is a copy of the letter of approval from the University of Nairobi and Kenyatta National Hospital Ethics and Research Committee.

I look forward to a positive response.

Yours faithfully,

Catherine Musenya Nzau

## Appendix VIII: Map of Nairobi - Kenya



<http://ictville.com/wp-content/uploads/2012/09/googlemaps-nairobi.gif>

## Appendix IX: Map of Kenyatta National Hospital



<https://www.google.com/maps/place/Kenyatta+National+Hospital>