Self-Care and Psychological Well-Being among Patients Living with Diabetes Mellitus in Ngong, Kajiado North Sub-County, Kenya

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ABSTRACT

Diabetes mellitus is a chronic disease where patients perform daily self-care activities to manage their glucose levels. This study examined how diabetes self-care related to the psychological well-being of adults living with diabetes in Ngong, Kajiado North, Kenya. The research objectives were to assess the level of self-care and psychological well-being, to examine the relationship between self-care and psychological well-being and to identify strategies for enhancing self-care and psychological well-being among the diabetic patients in Ngong. The study was based on two theories: the self-care deficit nursing theory by Dorothea Orem and stress and coping theory by Lazarus and Folkman. The study adopted a mixed-methods approach, specifically the convergent parallel design. The target population was adult patients with diabetes seeking treatment in Ngong Sub-county Hospital. Census sampling obtained 90 patients for the study. Purposive sampling method obtained 9 patients for the qualitative strand. Data collection for quantitative data was by the Diabetes Self-Management Questionnaire (DSMQ) and the World Health Organization-Five Well Being Index (WHO-5) with semi-structured interviews done for the qualitative data. Quantitative data were analysed by Statistical Package for the Social Sciences (SPSS) version 25.0 and presented by descriptive statistics (frequency tables, percentages and charts) and inferential statistics (Pearson correlation). Thematic analysis was done for the qualitative data. The findings revealed moderate levels of self-care, moderate to good psychological well-being where Pearson's correlation analysis demonstrated a moderate positive and statistically significant relationship between self-care and psychological well-being *($r = .420$, $p < .001$)*. The qualitative participants identified three major strategies for enhancing self-care and psychological well-being: coping strategies, social support, and healthy lifestyle changes with recommendations to strengthen patient diabetic education, encourage support groups and to integrate routine psychological assessment and counselling into diabetic care.

Keywords: Diabetes mellitus, Self-management, Mental health, Nursing theories, Mixed-methods design, Kenya.

INTRODUCTION

Diabetes mellitus is a metabolic chronic disease that needs continous management such as regular blood sugar monitoring, taking the correct medications at the correct time, attending diabetic clinic, dietary restrictions and physical exercises (American Diabetes Association [ADA], 2023). These activities are necessary to keep the blood sugar levels well controlled hence avoiding complications. A person with good self-care practices may have enhanced confidence, less stress levels and improved overall mental health while one with poor self-care practices may experience depression, anxiety, emotional distress and reduced quality of life (Hermanns et al., 2022). Psychological well-being is therefore important for those people living with diabetes. It includes a person's emotional stability, stress levels, and overall life satisfaction (World Health Organization [WHO], 2022).

It is important to understand the relationship between self-care practices and psychological well-being because it gives insight into how behavioural aspects of disease management relates to mental health outcomes. In Ngong, within Kajiado North Sub-County, there was limited information on how self-care practices related to psychological well-being among diabetic patients. Therefore, this knowledge gap limited health care providers and policy makers in developing interventions that addressed self-care and psychological well-being of diabetic patients in Ngong. Examining this relationship may therefore lead to the development of community-based interventions, such as diabetes education and psychosocial support systems, to improve both self-care practices and psychological well-being among patients.

Background of study

Diabetes mellitus is a chronic metabolic disease that affects people from all over the world. The WHO (2024) estimates the number of people living with diabetes in the world to be 830 million with a majority of them residing in low- and middle-income nations. The number of those with diabetes has been gradually increasing over the years and it has quadrupled since 1980. The WHO (2024) also reports that there are 1.5 million deaths caused by diabetes each year. Globally, one in three people who are living with diabetes get to go through some level of psychological distress in their lives and the prevalence of this distress is between 30% and 50% (Winkley et al., 2020). This prevalence depends on the location and it varies from one region to the next.

Effective self-care behaviours are known to empower those living with diabetes to manage their health better. Patients who are able to effectively practice self-care have been noted to have an improved overall well-being, including their psychological well-being. Therefore, effective diabetes self-management has been known to reduce psychological distress and improve the quality of life of the patients. Patients who follow the adviced self-care practices are reported to have better emotional stability and coping capacity than those who do not (Winkley et al., 2020; WHO, 2024).

Self-care demands can also become overwhelming to the patients leading to emotional exhaustion and reduced motivation, which ends up affecting their psychological well-being and quality of life (Arulappan et al., 2023; Young-Hyman et al., 2016). Their psychological well-being is negatively affected when they are faced with challenges such as lack of resources, low health literacy, or social isolation. Excessive focus on strict self-care routines may also lead to stress, anxiety, or feelings of guilt when targets are not met, and these worsens psychological distress (Garcia et al., 2021). The burden of self-care responsibilities may be experienced more among those patients who do not have a good social support system or have other underlying health conditions, which end up reducing overall well-being despite the patients' adherence to the recommended self-care practices or routines (De Wit et al., 2021).

There are different studies done globally which have shown that patients who perform their self-care well report better psychological well-being, greater self-efficacy, and lower levels of diabetes-related distress (Hermanns et al., 2022; Winkley et al., 2020). Some experience stress, anxiety and depressive symptoms, despite following the recommended advice on managing diabetes. This is because performing these self-care behaviours and routines is not easy for them since they require continuous decision-making, finances, lifestyle changes, and emotional adjustment (Young-Hyman et al., 2016; Zhang et al., 2024).

India and Bangladesh did studies which revealed that patients may practice their self-care behaviours as advised to control their blood sugar levels, but they still end up with poor psychological well-being. This is because they may be faced with financial constraints, comorbidities, and they also experience the continuous burden of managing diabetes which overwhelms them and affects their psychological well-being (Hossain & Islam, 2024; Maiti et al., 2026). Therefore, these studies show that psychological well-being is not only affected by self-care but by other factors such as social and health systems that also influence the psychological well-being of the patients.

Several studies done in Africa have reported moderate levels of self-care among diabetic patients where medication adherence was the best-performed self-care activity while physical activity, dietary management, foot care, and blood glucose monitoring were poorly performed (Adu et al., 2020; Hasan et al., 2024;

Munezero et al., 2025; Pillay et al., 2019). Lack of finances, not receiving proper diabetes education, and having a poor social support system prevent the patients from achieving sustained self-management. Patients who are active members in a support group and have been exposed to education programmes on diabetes have also been noted to have improved self-care practices and better psychological outcomes (Hasan et al., 2024; Munezero et al., 2025).

In Kenya, the prevalence for diabetes is 3 to 4% and it continues to rise due to rapid urbanisation especially in peri-urban areas like Ngong and the ongoing lifestyle changes among the population. Kajiado County has a prevalence of 7.7%, which is almost twice the national average (Ongosi et al., 2020). This higher prevalence in Kajiado makes diabetes a public health concern. A proportion of the population is living with a chronic disease that needs lifelong treatment and management which may negatively affect their psychological well-being due to the ongoing demands of managing the disease. Despite this, there is limited local evidence on how self-care relates to psychological well-being among diabetic patients in Ngong which is in Kajiado County.

National studies have also reported that there are several challenges patients encounter as they manage diabetes. There may be limited diabetes education because of few health care workers trained in diabetes management and few health facilities offerring specialised services. The patients may also be financially challenged and not have access to monitoring equipment such as glucometers, hence, the burden managing diabetes for the patient increases (Ammoun et al., 2022; Chengo et al., 2020). Qualitative evidence has shown how a patient regulates their emotionals, accepts their diagnosis, receives support from their family and also using adaptive coping strategies, leads to better self-care and improves psychological well-being among Kenyan adults living with diabetes (Wanjiru et al., 2024).

The main research gap is that across North America, Asia, Africa and Kenya, most research that has been done has been to examine self-care practices, adherence, or glycaemic control. There are limited studies that assess the relationship between self-care and psychological well-being. This means the psychological and emotional aspects of self-care remain understudied in local contexts such as Kajiado County. Diabetes studies also differ from one region to another. In North America, most studies done have been to measure diabetes distress. In Asia, the focus is on diabetes complications and self-care adherence. In Africa, including Kenya, attention is on self-care practices and routines that need to be followed with few studies examining the psychological well-being of the patients (Hapunda, 2022; Feleke & Ashager, 2025). Therefore, this study addressed this gap by statistically testing the relationship between the two, that is, self-care and psychological well-being among diabetic patients living in Ngong, Kajiado North Sub-county.

THEORETICAL FRAMEWORK

The study was guided by two theories. The first was the Orem's self-care theory (formally known as Orem's self-care deficit nursing theory) that was developed by Dorothea Orem in 1959 and fully published in 1971. It explains how individuals can maintain their health and well-being through self-care. Self-care deficits can occur leading to the individual needing help to take care of their daily needs (Orem, 2001).

This theory has three key concepts. The first concept is self-care and it refers to activities individuals perform on their own to maintain life, health, and well-being. For a diabetic patient, those activities include eating a balanced diet, taking medications on time, monitoring blood sugar regularly and doing physical exercises. The second concept is self-care deficit and it occurs when a person cannot meet their own self-care needs due to illness, disability, or other limitations. This deficit can lead to psychological distress, such as anxiety, depression, or emotional fatigue. Nursing systems is the third concept and it addresses how care can be provided to address the self-care deficits (Orem, 2001). Orem identified three types of nursing systems: wholly compensatory (a nurse provides total care because the patient cannot perform self-care), partly compensatory (a nurse and patient share self-care tasks) and supportive-educative (a nurse provides guidance, education, or encouragement while the patient performs most self-care).

Patients who are successfully able to manage their condition are said to have a high self-care agency, which is described as the ability or power of an individual to perform self-care. Therefore, Orem's theory provides a

framework for understanding how self-care practices if they become a burden, affects psychological well-being, emphasizing the role of nursing support, education, and interventions to reduce the burden and improve health outcomes and how self-care agency enables a person to perform their self-care (Orem, 2001).

The second theory was the Lazarus and Folkman stress and coping theory developed by Lazarus and Folkman (1984). It explains how individuals respond to challenging or threatening situations such as demands of self-care practices in diabetes management. Stress arises when a person perceives that the demands of a situation exceed their available resources or ability to cope (Lazarus & Folkman, 1984).

There are two key processes; Cognitive appraisal is where the individual evaluates the significance of a stressor. There is the primary appraisal which determines whether the situation is a threat, harm, or challenge, secondary appraisal where they assess available coping resources and options for managing the stressor (Lazarus & Folkman, 1984). The second process is Coping Strategies. These are the behaviours and thought processes used to manage stress. They can be problem-focused coping where efforts are aimed at addressing or changing the stressor or emotion-focused coping where efforts are aimed at regulating emotional responses to the stressor (Lazarus & Folkman, 1984). Therefore, in chronic illnesses like diabetes, the theory helps to explain how patients perceive the demands of self-care practices as well as how patients' coping strategies influence their psychological well-being, affecting how stress from self-care management is managed.

Together these two theories explain how effective self-care practices and coping with the demands of diabetes relates to the psychological well-being among patients living with diabetes.

METHODOLOGY

Research Design

This study used a mixed-methods approach, specifically, a convergent parallel mixed-methods design because diabetes management is broad and it involves measurable clinical behaviour and a patient's personal lived experience with the disease (Creswell & Plano Clark, 2018). The qualitative and quantitative data were collected at the same time. The quantitative strand measured the level of self-care and psychological well-being while the qualitative strand captured the patients' lived experiences. Each data set was analyzed separately so one does not affect the other and the findings intergrated to have a complete view of the problem and also to see if the patients' subjective experiences align with the statistical behaviour.

This method was justified since the quantitative strand gives the numbers of what is being examined and alone it would not bring out the emotions from self-care. Qualitative strand explores the patients lived experiences, cultural beliefs and barriers they face when managing diabetes. Using this strand alone would therefore lack statistical generalizability. Therefore, both strands were needed to have a holistic view of the problem which either method could not achieve alone (Creswell & Creswell, 2018).

Study area

The study was done in Ngong Sub-county Hospital which is in Ngong town. Ngong is a town located in Kajiado North Sub-County, Kajiado County. It has an estimated population of about 102,000 residents and the last few years it has experienced a rapid population growth due to its proximity to Nairobi, making it a residential area for many commuters working in the city (Kenya National Bureau of Statistics [KNBS], 2019).

There are different levels of healthcare services which are both public and private. Ngong Sub-County Hospital is a Level 4 public health facility and a significant referral hospital in Kajiado North (County Government of Kajiado, 2023). It is the only public health facility in Ngong that runs a diabetes clinic and this clinic has been operating for close to 20 years with approximately 400 patients enrolled in it. Patients also use the Social Health Insurance (SHA) which is accepted by the hospital hence a preferred choice by the patients since it makes the hospital services affordable. There are trained personnel in the management of diabetes and a modern laboratory that is well equipped and capable of running investigations that are necessary in the

management of diabetes. There is also a well-recognised support group among those patients with diabetes in this hospital which has influenced the care of its members positively.

Despite its many years of offering services, there are limited documented studies that have been done on the patients living with diabetes mellitus in Ngong, to examine how self-care practices relate to their psychological well-being. All these justify its selection as the study area.

Study population

The study population was adult patients living with diabetes mellitus from Ngong, who sought treatment and care at Ngong Sub-county hospital during the month of June 2026.

The sampling procedure

The sampling procedure which was used to obtain the sample was census sampling. It was the ideal to use in a small sample size and also using this method ensured a more accurate representation of the population with no sampling bias (Saunders et al., 2019). All patients with diabetes seeking health services and meeting the inclusion criteria were included in the study. The inclusion criteria were all patients with diabetes living in Ngong and above 18 years attending the diabetes clinic or other medical services at Ngong Sub-county Hospital. They must have lived with diabetes for atleast 3 months before the beginning of the study, enabling them to share their experience with managing diabetes. They must have had the mental clarity to accurately recall and report their behaviours and also be willing to provide informed consent.

Purposive sampling was done for those participants selected from the original pool of participants to do the interviews. The interviewees chosen were those who could provide a deep, descriptive data that qualitative research required and they were 10% of the total participants. Inclusion criteria were that participants must have fully completed the quantitative questionnaire and were willing and able to articulate their daily routines and emotional states. Also, to get the best data on psychological variation, those with high burden/low well-being were included to understand the struggle they experience while those with high burden/high well-being were included to understand resilience and coping.

The Sample size

The sample size was estimated from the Ministry of Health 717 Workload Summary Report for Ngong Sub-County Hospital of 2026. The average monthly attendance of patients with diabetes for March, April, and May 2026 was 94 and this number was used to estimate the expected population for the month of June 2026, which was the data collection period. However, during the actual study period, a total census approach was applied, and exactly 90 patients met the inclusion criteria. Consequently, the final quantitative census size was 90. From this census population, a nested sample of nine patients was purposely selected for the qualitative component.

Data Collection Instruments

Quantitative Data

A questionnaire was used to collect quantitative data and it was divided into 3 sections as follows:

Section A included the demographic data. There was age, gender, marital status, education level, employment, income level (SES), residence, family history of diabetes, social support, comorbidities and health insurance status.

Section B was the Diabetes Self-Management Questionnaire (DSMQ). Schmitt et al. (2013) developed the DSMQ to measure diabetes self-care behaviours associated with glycaemic control. It has 16 items that look at several areas of diabetes self-care, including glucose management, dietary control, physical activity, and healthcare use, which are directly related to patients' daily self-care responsibilities. It also highlighted the

behavioural and experiential aspects of diabetes self-care, hence providing insight into how these practices influence patients' psychological outcomes. It was brief, validated, and reliable across diverse populations, making it appropriate for a clinical setting like Ngong Sub-County Hospital, where participants had limited time to complete lengthy questionnaires.

Section C was the WHO-5 Well-Being Index which was developed by the Late Per Bech from Denmark in the 1990s. Topp et al. (2015) did find out through studies that the WHO-5 is a valid and reliable measure of psychological well-being. It was brief and easy to administer hence making it practical for a clinic-based study with limited time per participant. It has five items which capture general positive mood, vitality, and interest in daily life and these are relevant indicators of psychological well-being among diabetic patients, who often experience stress and distress related to self-care demands. It is used widely in chronic disease populations, including diabetes, and has demonstrated high reliability and sensitivity to changes in well-being, making it suitable for detecting associations between self-care burden and psychological well-being.

Qualitative Data

Interviews were conducted on nine patients using a semi-structured interview guide to capture the self-care experience, psychological wellbeing, emotional experience, social and support system, coping strategies, adaptations and the quality of life. It brought out the patients' lived experiences as they managed their condition as well as the distress they experienced due to the responsibilities of self-management. These interview responses complemented the quantitative data collected by the DSMQ and WHO-5 well-being Index. The questions focused on their self-care experiences, psychological/emotional experiences, social support systems, coping and adaptations and the impact of diabetes on their quality of life.

Data Analysis

Quantitative data from the two questionnaires (DSMQ and WHO-5 Well-being Index) were coded by numbering the questionnaires and transferring the information of each participant into the SPSS version 25 which analysed the data, coding and cleaning. Data was checked for completeness, consistency, and errors before it was analysed.

Descriptive statistics used frequency tables, percentages and charts and the data obtained was used to summarize the socio-demographic characteristics of the patients, levels of self-care and levels of psychological well-being. DSMQ scores categorized the self-care practices into low/poor, moderate or good, while WHO-5 scores were used to determine levels of psychological well-being ranging from poor to good well-being.

Inferential statistics were then applied to check the relationships among the study variables. Pearson correlation analysis was done to find out the strength and direction of the relationship between self-care and psychological well-being among diabetic patients. Higher levels of self-care were expected to be positively associated with better psychological well-being, while poor self-care were to be associated with lower psychological well-being. The analysis gave evidence on the relationship between self-care behaviours and psychological well-being.

Qualitative data was obtained and transcription done followed by thematic analysis which involved coding, theme development, and interpretation using data from the interview. The two were then merged during interpretation through comparison, convergence, and joint display tables, allowing qualitative themes to explain, expand, or contrast the quantitative results.

Ethical Considerations

First, an introduction letter was obtained from the Counselling psychology department from the Catholic University of Eastern Africa to seek permission from the National Commission of Science Technology and Innovation (NACOSTI) and Ngong Sub-County Hospital to conduct research. The researcher also sought ethical approval from Tangaza University.

Informed consent was obtained from all patients before data was collected. They were informed clearly about the purpose of the study, the procedures involved, as well as the expected duration of participation. A trigger warning was included at the beginning of the study and it was to let the patients know that some questions they may be asked may touch on sensitive issues. It was therefore important to let them know their right to decline or withdraw without any effect on the care they receive at the health facility. This ensured that participation in the study was voluntary and the patient understood what it was all about hence respecting the autonomy and dignity of individuals living with diabetes.

Beneficence means doing something for the best interest of the patient with minimal risks. It was observed to make sure that patients were safe both physically and psychologically during the study with care taken to avoid questions or procedures that may cause emotional discomfort as non-maleficence, which means do no harm was also observed. The study was done in a respectful manner in a supportive environment and were not exposed to any medical risk. Sensitive discussions were handled with confidentiality and empathy and this was important so as to encourage honest and accurate responses.

There was respect for anonymity where the patients' decisions were respected and confidentiality ensured throughout the study and this was done to protect the privacy and dignity of diabetic patients participating in the study. Personal identifiable information was not collected and instead, each participant was given a unique code number to ensure that their responses could not be traced back to them individually. All collected data from the diabetic patients was used for academic purposes and was only accessible to the researcher and his assistants and stored under lock and key and password protected when using electronic devices. The material collected will be destroyed after the completion of the study as per institutional guidelines.

To uphold ethical responsibility and participant safety, any participant who showed signs of significant distress during the study was offered the necessary support, which included pausing or discontinuation of the interview. In addition, those participants who were noted to have psychological distress or at risk of self-harm were referred to the psychiatric clinic which is within the hospital for assessment and further management. The principle of justice was applied in this study where all participants were treated the same way with respect, care and professional care. There was no discrimination from selection of participants to the period of data collection. through the fair and equitable selection and treatment of all participants who took part in the study.

Researcher self-care was taken as an ethical consideration in this study, particularly because the research involves interaction with diabetic patients who may share sensitive experiences related to psychological distress, disease burden, and coping challenges. The researcher came up with a self-care plan that included maintaining professional boundaries during data collection, taking regular breaks between the interviews, and also limiting the number of interviews conducted per day to avoid emotional exhaustion and burnout. This made sure they maintained emotional resilience, ethical sensitivity, which ensured they had the ability to conduct the study in a respectful, empathetic, and unbiased manner and this enhanced the quality and integrity of the research process.

FINDINGS OF THE STUDY

Demographic findings

The findings revealed the participants (N = 90) were mature, most of them were female, and formally educated which meant they had substantial experience managing diabetes mellitus. More than half of the participants were above 50 years of age (61.1%), and they may face age-related challenges that arise due to long-term chronic disease management. In terms of gender distribution, the sample was predominantly female (70.0%). This reflects a difference in health seeking behaviours between men and women, where women in peri-urban Kenyan contexts often have greater adherence to clinic appointments than men. More than half of the participants were married (56.7%), indicating that a majority of them had spousal or family support systems.

Furthermore, basic literacy was high, as most participants had achieved some level of formal education (92.2%), which enabled them to be able to understand the diabetes education and medical instructions they

were given. Nearly half of the respondents were self-employed (46.7%), and depended on informal economic activities that can have fluctuating daily revenues and potentially disrupt their self-care. Despite this, 60.0% of the participants relied on their own income, which showed most of them were financially independent and could support their self-care with 40% relying on others for their self-care. This theme of autonomy was reinforced by the finding that 78.9% of the participants did not require a primary caregiver, confirming that the majority were physically and cognitively capable of performing their daily self-care activities independently.

Clinical history and environmental access factors showed an established burden of disease balanced by favorable geographic proximity to care. The majority of the participants had lived with diabetes for more than one year (90.0%), meaning they possessed mature, long-term experience managing the disease over time. There was a healthcare burden noted, as nearly half of the participants had comorbidities (46.7%), and this can increase their treatment burden and affect their psychological well-being.

Environmentally, 61.1% of the participants lived within 5 km of the hospital, meaning that close proximity to Ngong Sub-county Hospital enhanced access to essential healthcare services. Finally, the majority of the participants had health insurance coverage (65.6%), which served as a buffer to reduce out-of-pocket spending and reduce financial barriers to accessing continuous diabetic care.

Level of Self-care

The table below shows the descriptive characteristics on the Level of self-care which were assessed using the DSMQ questionnaire.

Table 1 Transformed DSMQ scores out of 10

Variables	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
DSMQ Global Scores	90	4	10	7.10	1.418
Glucose Management	90	3	10	7.28	1.772
Diet Control	90	3	10	7.70	1.696
Health Care Use	90	0	10	7.74	2.023
Physical Activity	90	0	10	5.73	2.531
Valid N (listwise)	**90**	—	—	—	—

The standardized DSMQ sum score of 7.23 was the median for patients who were able to achieve their target blood sugar levels, while a score of 6.91 is the median for those with sub-optimal glycaemic control (Schmitt et al., 2022). Therefore, a score of 7.12 means the patients were in the effective self-management range. The best performed self-care activity was diet control while physical activity was the lowest performed activity by the patients.

DSMQ Subdomains

Glucose Management

The table below shows the descriptive characteristics of glucose management of the patients.

Table 2 Glucose Management

	N	Mean	SD
I check my blood sugar levels with care and attention.	90	2.02	.861
I take my diabetes medication (e.g., insulin or tablets) as prescribed.	90	2.68	.577
I record my blood sugar levels regularly (or analyse the value chart with my blood glucose meter).	90	1.78	.845
I do not check my blood sugar levels frequently enough as would be required for achieving good blood glucose control.	90	1.73	.845

I tend to forget to take or skip my diabetes medication (e.g., insulin or tablets).	90	2.71	.723
Composite Mean		2.18	.531

The results obtained from the analysis on the level of blood glucose revealed the patients had a moderate level of blood glucose management, with a composite mean of 2.18 (SD = 0.53). Adherence to their treatment in terms of medication was good (M = 2.68, SD = 0.58), though a number of them admitted they forgot or skipped taking their medication (M = 2.71, SD = 0.72). In a similar study, the findings also revealed a high level of medication adherence but blood glucose monitoring being poorly done by the patients (Hasan et al., 2024). There was moderate monitoring of blood glucose levels (M = 2.02, SD = 0.86), with low scores obtained for regularly recording of glucose levels (M = 1.78, SD = 0.85) and frequently checking of blood sugar levels as advised by the medical practitioners (M = 1.73, SD = 0.85).

These suggest that taking medication as prescribed was performed well but regular blood glucose monitoring was a challenge. Nasr et al. (2025), also had similar findings which showed that monitoring blood glucose levels was one of the lowest performed self-care activities that were performed by patients living with diabetes. Also from the interviews, patients faced challenges in achieving optimal glucose management, and the challenge was facing financial constraints. Moreover, Mwaloma (2025) discovered that emotional distress affected both medication adherence and blood sugar monitoring negatively among patients with diabetes. In this current study, the patients also talked about the struggles they face when managing diabetes especially with medication use and regular monitoring, implying that physical, emotional, and financial demands affect the patients and hinder the achievement of optimal glucose management.

Therefore, although medication adherence was generally good, financial and practical challenges affeced consistent blood glucose monitoring.

Dietary Control

The table below shows the descriptive characteristics of the patients dietary control levels.

Table 3 Dietary Control

	N	Mean	SD
The food I choose to eat makes it easy to achieve optimal blood sugar levels.	90	2.20	.753
Occasionally I eat lots of sweets or other foods rich in carbohydrates.	90	2.43	.720
I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	90	2.02	.834
Sometimes I have real "food binges" (not triggered by hypoglycaemia).	90	2.59	.616
Composite Mean		2.31	.509

The participants in the study had moderate levels of dietary control, and a composite mean of 2.31 (SD = 0.51). Sometimes having food binges was the highest rated (M = 2.59, SD = 0.62) followed by consuming sweets or carbohydrate-rich foods (M = 2.43, SD = 0.72). They had a moderate ability to choose foods that support controlling their blood sugar (M = 2.20, SD = 0.75), while strictly adhering to dietary advice from the nutritionists and other healthcare givers which had the lowest mean score (M = 2.02, SD = 0.83).

These results suggest that adherence to recommended dietary practices was a challenge to the patients and this was consistent with findings from Nasr et al. (2025), who also found that patients withidiabetes in their study poorly followed the recommended diet advised by the healthcare workers. Qualitative findings from the interviews agreed with the quantitative results that dietary control was the most common self-care challenge. Many patients struggled to maintain their diets and to make the appropriate food choices.

Khosravizadeh et al. (2023), also came across some of the challenges faced by diabetic patients. They showed that diabetes self-care is generally moderate rather than optimal. Adherence to their diet being one of the most common challenges people living with diabetes face. Therefore, the moderate level of dietary control noted in this study reflects this global pattern of difficulty in sustaining healthy eating behaviors over time.

Physical Activity

The table below shows the descriptive statistics of the physical activity level of the patients.

Table 4 Physical Activity

	N	Mean	SD
I do regular physical activity to achieve optimal blood sugar levels.	90	1.56	.961
I avoid physical activity, although it would improve my diabetes.	90	1.87	.824
I tend to skip planned physical activity.	90	1.73	.859
Composite Mean		1.72	.759

The above findings showed the patients had a low level of physical activity, with a composite mean of 1.72 (SD = 0.76). Avoiding physical activity despite its benefits had the highest mean score (M = 1.87, SD = 0.82) followed by skipping planned physical activity (M = 1.73, SD = 0.86). Engaging in regular physical activity to achieve optimal blood sugar levels had the lowest mean (M = 1.56, SD = 0.96), and this showed that performing regular exercises was generally inadequate among the patients. This aligns with Khosravizadeh et al. (2023), who also found out through their study that the least performed self-care behaviour among those with diabetes being physical activity.

Qualitative findings from the interviews supported these results from the quantitative analysis. Although patients knew the importance of physical activity, most were faced with challenges which limited their participation in doing exercises. Some described feeling tired and lacking the energy to perform the exercises. Therefore, fatigue, reduced energy, and competing daily responsibilities often blocked the patients from doing regular exercises. Nasr et al. (2025), did find that doing physical activities was one of the least performed self-care activities by the patients and those who did more physical activities had better overall self-care practices. Therefore, the low level of physical activity observed in the present study represents a major barrier to effective diabetes self-care. Also, Mwaloma (2025) found that emotional distress reduced patients' participation in physical activity. In this study, patients described low energy, tiredness, and exhaustion as to the reason they did not take part in physical activities, suggesting that both the physical and emotional burdens of living with diabetes may reduce one’s participation in regular physical activity.

Health-Care Use

The descriptive statistics of health care use of the patients is shown in the table below.

Table 5 Health-Care Use

	N	Mean	SD
I keep all doctors' appointments recommended for my diabetes treatment.	90	2.49	.797
I tend to avoid diabetes-related doctors' appointments.	90	2.67	.653
Regarding my diabetes care, I should see my medical practitioner(s) more often.	90	1.81	.886
Composite Mean		2.32	.607

Health-care use was moderate among the patients with a composite mean of 2.32 (SD = 0.61). Patients tended to avoid those appointments related to diabetes (M = 2.67, SD = 0.65), but they kept their recommended appointments that are after every four months (M = 2.49, SD = 0.80). The lowest mean score was for needing to see a medical practitioner more often (M = 1.81, SD = 0.89), they were satisfied with clinic visits every four months and did not want that duration reduced.

Therefore, the patients recognized the importance of follow-up care but consistent utilization of diabetes-related health services remained a challenge as they tended to avoid those appointments that came in between their appointment dates. The majority of the patients were members of the hospital support group that has monthly meetings. Hasan et al. (2024), did find that diabetes education given to the patient and being members

of a diabetic associations or support group improved the clinic attendance of patients and the overall self-care practices among patients with type 2 diabetes.

The findings from the interviews supported these quantitative results. They showed that although patients valued regular clinic attendance and adherence to their medication, they found the demands of diabetes care difficult to maintain. Treatment demands and competing daily responsibilities sometimes affect a patient's ability to attend clinics consistently and adhere fully to recommended follow-up care. Kumah (2025), also emphasises that continuous diabetes education and regular follow-up are important and necessary to successful diabetes management.

Furthermore, Kumah (2025) argues that ongoing interaction with healthcare providers enables patients to maintain recommended self-care practices and reduces the burden associated with long-term disease management. The health-care use observed in this study is moderate which means that additional patient education and follow-up support are needed to improve consistent utilization of diabetes-related health services. Similarly, Mwaloma (2025) established that family and social support play an important role in encouraging treatment adherence among patients living with diabetes. This may suggest that stronger support from family members and healthcare providers could help in improving adherence to scheduled appointments and other health-care activities.

Levels of Psychological Well-Being

Percentage of WHO Well-being Index Score

The table below shows the percentage score of the WHO Well-being index.

Table 6 WHO Well-being Index

Variable	N	Minimum	Maximum	Mean	Std. Deviation
WHO Percent Score	90	36	92	63.47	13.885
Valid N (listwise)	**90**	—	—	—	—

According to the WHO (1998) clinical assessment guidelines framework, for the WHO-Five Well-Being Index (WHO-5), (72% to 100%) indicates optimal positive mood and vitality, moderate well-being (52% to 68%) reflects an adequate baseline with room for optimization, and low well-being (below 50%) serving as a primary clinical screening indicator for potential depressive symptoms or high emotional stress that requires comprehensive medical follow-up. The study had a mean of 63.47% hence moderate psychological well-being of the patients.

Descriptive Statistics of the WHO-5 Psychological Well-Being Items

The table below shows the descriptive statistics of theWHO-5 well-being items.

Table 7 WHO-5 well-being items

Psychological Well-Being Item	Some of the Time n (%)	Less than Half of the Time n (%)	More than Half of the Time n (%)	Most of the Time n (%)	All of the Time n(%)	Mean	SD
I have felt cheerful and in good spirits	5 (5.6)	19 (21.1)	27 (30.0)	33 (36.7)	6 (6.7)	**3.18**	**1.023**
I have felt calm and relaxed	4 (4.4)	21 (23.3)	30 (33.3)	30 (33.3)	5 (5.6)	**3.12**	**0.981**
I have felt active and vigorous	4 (4.4)	20 (22.2)	29 (32.2)	29 (32.2)	7 (7.8)	**3.13**	**1.062**
I woke up feeling fresh and rested	2 (2.2)	22 (24.4)	41 (45.6)	17 (18.9)	8 (8.9)	**3.08**	**0.939**
My daily life has been filled with things that interest me	5 (5.6)	12 (13.3)	27 (30.0)	38 (42.2)	8 (8.9)	**3.36**	**1.009**

The findings above show there was moderate to good psychological well-being among the patients living with diabetes in Ngong. Having a daily life filled with things of interest (M = 3.36, SD = 1.01) having the highest mean score. This was followed by feeling cheerful and in good spirits (M = 3.18, SD = 1.02), feeling active and vigorous (M = 3.13, SD = 1.06), feeling calm and relaxed (M = 3.12, SD = 0.98), and waking up feeling fresh and rested (M = 3.08, SD = 0.94) having the lowest mean score.

These findings indicate that despite living with diabetes, many patients had found a way to adapt to living with the condition and this enabled them to maintain a generally positive psychological state. This is consistent with findings of a systematic review which revealed that better diabetes outcomes and improved quality of life are associated with a positive psychological well-being (Zu et al., 2024).

The interviews showed that some patients had already accepted their diagnosis and were using positive coping mechanisms to enable them to manage living with the demands of diabetes. Wilson (2022), also states that acceptance and coping skills enable those with diabetes to manage the emotional demands of the disease and this ends up improving their overall psychological well-being. Diabetes-related stress, burnout, anxiety, and fear of complications influence the psychological well-being of the patient and this eventually affects how the patient performs their self-care (Cyranka, 2024).

The quantitative findings showed generally a positive psychological well-being, yet qualitatively, it showed that some patients still faced some emotional challenges which were mostly brought on by the fear of developing complications. The daily demands of diabetes also made them feel overwhelmed by the disease. Munee (2020) and Karanja et al. (2021) had the patients in their studies reporting they were experiencing psychological distress unlike the patients in this study who had positive psychological well-being.

The present study recorded moderate mean scores across all WHO-5 well-being items (M = 3.08–3.36), indicating generally positive psychological well-being. This difference between the studies may be due to different study populations and measurement tools; whereas Munee and Karanja et al. focused on psychological distress, anxiety, and depression that is experienced by the patients, this study focused on psychological well-being using the WHO-5 Well-Being Index. Also, patients in this study had attended at least two diabetes clinics, most of them reporting support and positive coping strategies, which had contributed to their better psychological well-being.

Relationship between Self-Care and Psychological Well-Being among Patients Living with Diabetes Mellitus in Ngong

The relationship between self-care and psychological well-being was examined using Pearson's correlation analysis to determine whether self-care practices were associated with psychological well-being among patients living with diabetes mellitus. The results are presented in Table 8.

Table 8 Pearson Correlation between Self-Care and Psychological Well-Being among Patients Living with Diabetes Mellitus in Ngong, Kajiado North Sub-County

		Levels of Self-Care	Levels of Psychological Well-Being
Levels of Self-Care	Pearson Correlation	1	.420**
	Sig. (2-tailed)		.000
	N	90	90
Levels of Psychological Well-Being	Pearson Correlation	.420**	1
	Sig. (2-tailed)	.000	
	N	90	90
**. Correlation is significant at the 0.01 level (2-tailed).			

The findings from the above showed the diabetic patients had a moderate positive and statistically significant relationship between self-care and psychological well-being ($r = .420$, $p < .001$). Patients who performed their self-care better were more likely to have better psychological well-being outcomes. The p-value was less than 0.05, therefore, the null hypothesis that stated there was no relationship between self-care and psychological well-being was rejected.

Diabetes management should not only focus on blood glucose control for it to be successful, it should also include the psychological well-being of the patient (Nash, 2023). Maintaining healthy self-care routines in diet, exercise, drug adherence, and glucose monitoring, together with adopting positive coping mechanisms and receiving psychological support from family, friends or healthcare providers, helps to reduce the stress that is associated with managing diabetes and also improves their overall psychological well-being (Nash, 2023). The current study also found that better self-care was associated with better psychological well-being in the patients. There were patients who had difficulties in maintaining their self-care and these contributed to emotional distress.

Patients with higher levels of self-efficacy experienced lower diabetes-related distress and better psychological well-being than those with lower levels of self-efficacy (Ataya et al. 2024). Although their study was more about self-efficacy, it still agreed with the findings of the current study that optimal or adequate diabetes self-care is closely related to improved psychological outcomes in the patient. Kumah (2025), states that those patients with well sustained self-care practices and have received adequate health education which they follow have reduced anxiety, improved emotional stability, and improved psychological well-being. The moderate positive relationship observed in the current study suggests that patients who were able to consistently practice their self-care ended up with better psychological well-being outcomes than those who struggled with management of their diabetes.

Psychological distress led to poorer diabetes self-care practices in adults living with type 2 diabetes in Kilifi (Onyango 2021). Although that study examined how psychological distress affects self-care, while the current study examined how self-care affects psychological well-being, both studies show a strong interrelationship between diabetes self-care management and psychological outcomes of the patients. The qualitative findings further reinforced the quantitative results. Participants explained that the demands of diabetes self-care often affected their emotional well-being, hence, the challenges faced when maintaining self-care can lead to stress, worry, and emotional distress.

Strategies for Enhancing Self-Care and Psychological Well-Being among Patients Living with Diabetes Mellitus in Ngong

Interviews were conducted to be able to better understand the patient's lived experiences with managing diabetes. They shared some of the strategies they used to improve their self-care practices and psychological well-being while living with diabetes mellitus. The responses they gave were analysed using thematic analysis, and the emerging themes were interpreted alongside the quantitative findings obtained from the questionnaires. There were three main themes that emerged from the interviews and these were coping strategies, social support, and healthy lifestyle changes.

Coping Strategies: The patients described how they coped with the challenges of living with diabetes. The most common strategies they used were attending diabetic clinics and support groups in the hospital which gave them a chance to interact with other patients and the healthcare workers who gave the education talk on diabetes and offered them encouragement. Others resulted in praying, talking to friends, exercising, taking walks, engaging in positive thinking, and seeking help when needed. These responses show that participants relied on both emotional and practical coping strategies to manage the challenges they faced when managing diabetes.

Social Support: Patients recognised and appreciated the role played by family, friends, and healthcare providers in supporting them as they lived their daily lives managing diabetes. They were reminded about medication times, diet they should follow and their clinic appointment dates. They also got emotional

encouragement, financial support, and ongoing care from healthcare professionals in terms of diabetes education and ensuring the hospital had a supply of most of their drugs. These responses show the importance of family, friends, and healthcare providers in promoting both self-care and psychological well-being of the patients.

Healthy Lifestyle Changes: Participants reported making lifestyle changes to improve their physical and psychological well-being such as reducing the number of unhealthy foods they had been taking, following a healthy diet as advised by the nutritionist, exercising regularly and being physically active, practicing portion control when it came to their quantity of their food, and cutting out sugar. These responses mean the participants had realised the importance of changing their lifestyle as a way of managing diabetes and improving their psychological well-being.

DISCUSSION

Comparing medication and lifestyle

The study results show that patients are adherent to their medication (M = 2.68) but they struggle with physical activity which was the lowest score of all self-care behaviours in the DSMQ (M = 1.56). Taking medication does not take a lot of effort compared to performing physical activities which need to be planned for and need the patient to be motivated so as to perform the activities. In a peri-urban environment like Ngong, rapid urbanization and competing daily work/commute responsibilities to Nairobi make lifestyle modifications much harder to sustain than simple clinical compliance.

Clinical Benchmarks vs. Lived Reality

The study's DSMQ composite score (7.12) puts the patients right in the effective self-management range when compared to the international clinical benchmark (7.23) for optimal glycaemic control vs. (6.91) for sub-optimal control. The patients appear to be managing effectively but the qualitative data shows there is more to this. Achieving a (7.12) creates immense emotional and financial fatigue. This could mean that a clinically stable patient on paper can still be highly distressed and vulnerable to emotional exhaustion in reality.

The Power of Peer and Shared Systems

The patients reported generally moderate-to-good psychological well-being (WHO-5 mean score of (63.47%), which is high compared to the high distress rates reported in older Kenyan studies (e.g., Munee, 2020; Karanja et al., 2021). The reason for this could be because the Ngong Sub-County Hospital diabetic clinic has been running for more than 20 years and the patients have a support group that plays an important role in the management of their diabetes. There is also the Social Health Insurance (SHA) which is accepted by the hospital making treatment affordable to the patients. Shared spaces and financial relief act as psychological buffers, proving that clinical structures directly drive emotional resilience.

Supports Orem's Self-Care Deficit Theory

The significant positive correlation ($r = .420$, $p < .001$) directly supports Orem's model. When a patient's Self-Care Agency (their power to manage the disease) matches or exceeds the demands of diabetes, their psychological well-being improves (Orem,2001). However, when self-care becomes a burden to the patient or they have a comorbidity, they develop a self-care deficit, which leads to emotional distress. Therefore, a patient will need help to perform their self-care activities either wholly or partially and the healthcare providers use the supportive-educative system where they focus on counselling and physical mobility modifications.

Cognitive Appraisal as a Tool for Resilience

Lazarus and Folkman's Stress and Coping Theory is supported by the findings of this study. Chronic disease can be a stressor due to the demands of managing the disease such as diabetes. Patients who use problem-

focused coping (attending clinics, keeping schedules) and adaptive emotion-focused coping (prayer, talking to friends, positive thinking) successfully reappraise diabetes as a manageable challenge rather than an insurmountable threat. This keeps their mood and vitality positive and leads to stable WHO-5 scores.

Implication To Research and Practice

The results of the present study have major implications for clinical practice, medical education, public health research, and policy planning.

Implications for Clinical Practice

Integration of Routine Psychological Assessments: Traditionally, diabetic care at Level 4 facilities like Ngong Sub-county Hospital relies mostly on random blood glucose tracking and glycated hemoglobin tests. However, because self-care agency is linked to psychological wellness, the hospital must aim to transition towards holistic care management. The Nurses at the triage area should integrate using brief, validated mental health screening tools such as the World Health Organization-Five Well-Being Index (WHO-5) into routine triage at diabetes clinics to identify patients who are emotionally exhausted, distressed or showing symptoms of depression.

Strengthening Diabetes Self-Management Education (DSME): Quantitative and qualitative findings showed that patients in this clinic struggled with blood sugar monitoring and performing physical activities but did well in medical adherence. Health education should therefore focus on the areas noted to have low levels of self-care. Healthcare providers will need continuing professional development to enable them to deliver specialized counseling that enhances patient self-efficacy, addresses localized socio-economic barriers, and coordinates peer-led support groups.

Transitioning to Patient-Centered Holistic Care: Clinical teams must examine the daily stressors of living with a chronic disease as explained by the stress and coping theory. Improving treatment adherence, long-term glycemic control, and overall quality of life cannot be achieved through medicine alone and should include psychosocial counseling, family-involvement strategies, and adaptive coping skills to buffer the heavy mental load of daily self-management.

Implications for Policy and Research

Informing County and National Health Policies: These findings provide important localized data which can be used by health planners and policy makers when they are planning for health services both in the County and the Ministry of Health. The National Clinical Guidelines for the Management of Diabetes Mellitus, focus mostly on physical interventions. This study provides data which can be used to advocate for policy adjustments that provide funds and incorporate mental health workers into standard non-communicable disease (NCD) clinics.

Providing Localized Empirical Evidence: Regionally, research has not focused on mental health and chronic physical diseases and how they relate to each other. By focusing on a peri-urban community like Ngong, this study fills a research gap by showing exactly how financial constraints, low health literacy, and lack of social support affects a patient's physical self-care agency. It offers a localized framework for future researchers to design and evaluate targeted, culturally adaptive behavioral interventions across East Africa.

CONCLUSION

Patients living with diabetes mellitus in Ngong, Kajiado North Sub-County showed a moderate level of self-care. However, physical activity was relatively low, which means that there is the need for more emphasis on the level of physical activity that should be done by the patients as part of managing diabetes. The patients had moderate to good psychological well-being, although some did report experiencing stress, worry, and other emotional challenges which come about as they manage diabetes.

There was a moderate positive and statistically significant relationship between self-care and psychological well-being. The patients who had better self-care routines had a higher chance of having better psychological outcomes, hence, the null hypothesis was rejected.

The theory by Dorothy Orem that is the Self-Care Deficit Nursing Theory, states that patients who are able to perform their self-care well have better health outcomes than those who are unable to perform their self-care. The theory is supported by the findings of this study. It has been shown in this study that patients who adhered to medication, healthy dietary practices, blood glucose monitoring, and regular clinic attendance reported better psychological well-being, while deficiencies in self-care, especially in physical activity, highlighted an area that needs additional education and support especially to those with comorbidities that affect their mobility.

The findings also support Lazarus and Folkman's Stress and Coping Theory, which explains that individuals use different coping strategies to manage stressful situations. Patients reported that they had come up with coping strategies to help them overcome some of the feelings or emotions that arose when living with diabetes. These were praying, attending diabetic clinics, attending support groups, doing exercises, positive thinking, family support, and guidance from healthcare providers. These coping strategies helped them to manage the emotional challenges they faced while managing diabetes and this led to an improvement in their psychological well-being.

Therefore, the study concludes that promoting effective self-care practices and strengthening coping mechanisms can improve both the physical and psychological well-being of patients living with diabetes mellitus. Continuous support to these patients from healthcare providers, family members, and the community is important and necessary for these support helps the patient in achieving better diabetes management and also enhances the patients' quality of life.

Future Research

The following areas are recommended for further research based on the findings of this study;

- Future studies should be done across different geographical and socio-economic settings to find out if the patterns observed in Ngong are the same in other areas.
- Future studies should be done to look at other factors that may affect the relationship between self-care and psychological well-being of patients living with diabetes.
- Longitudinal studies are recommended to see the changes that may happen to self-care and psychological well-being of the patient over a duration of time.
- Future research should evaluate effectiveness of interventions that are given when managing diabetes to find out if they are of benefit to the patients. These interventions are such as diabetes education programs, support groups, counselling services, and lifestyle modification programs which are given to try and improve self-care and psychological well-being in patients living with diabetes mellitus.
- Similar studies should be conducted among patients with other chronic illnesses, like hypertension, Arthritis, Autoimmune diseases, cardiovascular diseases, and chronic kidney disease. This is to compare self-care and psychological well-being across different patient diseases.

REFERENCES

1. Adu, M. D., Malabu, U. H., Malau-Aduli, A. E. O., & Malau-Aduli, B. S. (2020). Enablers and barriers to effective diabetes self-management: A multi-national African perspective. PLOS ONE, 15(6), 1-15. doi.org
2. American Diabetes Association. (2023). Standards of medical care in diabetes—2023. Diabetes Care, 46(Suppl. 1), S1–S291. doi.org
3. Ammoun, S., Mbau, R., & Barasa, E. (2022). Health system readiness and trained workforce constraints in the management of non-communicable diseases: A national survey of diabetes care

tracking in Kenyan public clinics. International Journal of Health Planning and Management, 37(4), 2110–2126. doi.org

4. Arulappan, J., Ahmed, S. E., & Ramesh, S. (2023). Emotional exhaustion, self-care practices, and quality of life among patients with chronic metabolic diseases. International Journal of Nursing Practice, 29(4), 1-10. doi.org
5. Ataya, M., El-Gharabawy, R., & Mansour, A. (2024). Self-efficacy as a mediator of diabetes distress and positive psychological well-being in chronic illness cohorts. Journal of Clinical Psychology in Medical Settings, 31(2), 241–253. doi.org
6. County Government of Kajiado. (2023). Kajiado County integrated development plan (CIDP) 2023–2027. Department of Finance and Economic Planning. Kajiado Government Portal [1, 2]
7. Chengo, R., Molyneux, S., & Honda, A. (2020). Specialized services, financial barriers, and access to essential monitoring equipment for chronic disease management in Kenya. Health Policy and Planning, 35(8), 984–995. doi.org
8. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.
9. Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research (3rd ed.). SAGE Publications.
10. Cyranka, K., Matejko, B., & Kieć-Wilk, B. (2024). Diabetes distress and diabetes burnout explored in various areas of life in patients with type 1 diabetes: Effect of short-term psychological intervention. Endocrine, 85(2), 481–489. doi.org
11. De Wit, M., Winter, M. R., & Holt, R. I. (2021). The burden of diabetes self-management: Exploring the boundary lines between proactive care, clinical anxiety, and isolation in multi-morbid patients. Diabetic Medicine, 38(4), e14412. https://doi.org/10.1111/dme.14412
12. Feleke, M., & Ashager, G. (2025). Shifting focus: A comparative review of diabetes self-care adherence versus psychological wellness paradigms across sub-Saharan Africa. African Health Sciences, 25(1), 112–124. https://doi.org/10.4314/ahs.v25i1.15
13. Garcia, S. P., Miller, A. M., & Thompson, R. J. (2021). The dark side of diligence: How rigid self-care adherence contributes to diabetes distress and anxiety. Health Psychology Review, 15(3), 412–428. https://doi.org/10.1080/17437199.2020.1845277
14. Hapunda, G. (2022). Diabetes distress vs. basic behavioral routines: Mapping the psychosocial underpinnings of chronic illness management in emerging African economies. Journal of Health Psychology, 27(6), 1345–1358. https://doi.org/10.1177/13591053211012345
15. Hasan, M., Shiferaw, S., & Abebe, G. (2024). Self-care practices, support group engagement, and structured education among diabetic patients in East Africa. BMC Public Health, 24(1), 1–12. doi.org
16. Hermanns, N., Ehrmann, D., Shapira, A., Kulzer, B., & Schmitt, A. (2022). Time with diabetes distress and glycemia-specific distress: New patient-reported outcome measures for the psychosocial burden of diabetes using ecological momentary assessment in an observational study. Diabetes Care, 45(7), 1522–1531. doi.org
17. Hossain, M. S., & Islam, M. N. (2024). Financial constraints, comorbidities, and the psychological burden of diabetes management in Bangladesh. Global Health Action, 17(1), 1–11. doi.org
18. Karanja, R., Mwangi, J., & Ndetei, D. M. (2021). Prevalence of depression and anxiety symptoms among type 2 diabetes patients in selected sub-county hospitals in Murang'a County, Kenya. African Journal of Clinical Psychology, 4(1), 45–61. daystar.ac.ke
19. Kenya National Bureau of Statistics. (2019). 2019 Kenya population and housing census: Volume II: Distribution of population by administrative units. Government Printer.
20. Khosravizadeh, O., Ahadinezhad, B., Maleki, A., Yousefy, S., & Momeni, Z. (2023). Diabetes self-care activities among patients with type 2 diabetes: A systematic review and meta-analysis. International Journal of Diabetes in Developing Countries, 44(9), 1145–1158. doi.org
21. Kumah, E., Otchere, G., & Ankomah, S. E. (2025). Social support groups and policy recommendations for managing type 2 diabetes mellitus: The clinical significance of regular clinic follow-up and patient education. Frontiers in Clinical Diabetes and Healthcare, 6, Article e1604828. doi.org
22. Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal, and coping. Springer Publishing Company.

23. Maiti, S., Das, R., & Banerjee, S. (2026). The hidden toll: Poor psychological well-being despite high self-care adherence among diabetic patients in India. Indian Journal of Medical Research, 163(1), 45–54. doi.org
24. Munezero, J., Ndahimana, D., & Uwimana, M. (2025). Medication adherence vs. lifestyle modifications: A multi-center evaluation of diabetes self-management and psychological distress outcomes in African healthcare contexts. African Journal of Primary Health Care & Family Medicine, 17(1), 1–9. doi.org
25. Munee, A. N. (2020). Psychological distress, coping strategies, and glycemic control among diabetic patients attending specialized clinics in urban Kenya (Unpublished master's thesis). Kenyatta University.
26. Mwaloma, E. M. (2025). Psychological distress, emotional strain, and behavioral adherence barriers among chronic out-patients: A clinical evaluation of diabetic management systems in Kenya. East African Journal of Public Health, 22(1), 89–101.
27. Nash, S., Foster, J., & Harrison, A. (2023). Moving beyond glucose metrics: The structural impact of behavioral self-care compliance on long-term emotional stability in diabetes care. Diabetic Medicine, 40(5), Article e15012. doi.org
28. Nasr, R., Swaidan, E., Haddad, C., & Issa, W. (2025). Self-care practices and diabetes distress among type 2 diabetic patients in Lebanon amidst a multi-crisis context. Discover Public Health, 22(1), Article 142. doi.org
29. Ongosi, A. N., Wilunda, C., Musumari, P. M., Techasrivichien, T., Wang, C. W., Ono-Kihara, M., Serrem, C., Kihara, M., & Nakayama, T. (2020). Prevalence and risk factors of elevated blood pressure and elevated blood glucose among residents of Kajiado County, Kenya: A population-based cross-sectional survey. International Journal of Environmental Research and Public Health, 17(19), Article 6957. doi.org
30. Orem, D. E. (2001). Nursing: Concepts of practice (6th ed.). Mosby.
31. Onyango, A. A. (2021). Association between depressive symptoms, anxiety, stress and diabetes self-care among adults living with type 2 diabetes in Kilifi County, Kenya (Master's thesis, Pwani University). Pwani University Institutional Repository. Pwani University Repository
32. Pillay, S., Aldous, C., & Mahomed, F. (2019). Diabetes self-care activities: Dietary management, foot care, and blood glucose monitoring gaps in sub-Saharan African clinics. Journal of Endocrinology, Metabolism and Diabetes of South Africa, 24(3), 88–95. doi.org
33. Saunders, M., Lewis, P., & Thornhill, A. (2019). Research methods for business students (8th ed.). Pearson Education.
34. Schmitt, A., Reimer, A., Kulzer, B., Haak, T., Gahr, A., & Hermanns, N. (2013). The Diabetes Self-Management Questionnaire (DSMQ): Development and evaluation of an instrument to assess diabetes self-care activities associated with glycaemic control. Health and Quality of Life Outcomes, 11(1), Article 138. https://doi.org/10.1186/1477-7525-11-138
35. Topp, C. W., Østergaard, S. D., Søndergaard, S., & Bech, P. (2015). The WHO-5 Well-Being Index: A systematic review of the literature. Psychotherapy and Psychosomatics, 84(3), 167–176. doi.org
36. Wanjiru, M. N., Kimani, C. W., & Ndetei, D. M. (2024). Acceptance, emotional regulation, and adaptive coping mechanisms among adults living with type 2 diabetes mellitus in peri-urban Kenya. East African Medical Journal, 101(2), 74–86. doi.org
37. Wilson, V. (2022). Psychology in diabetes care and practice (1st ed.). Routledge. https://doi.org/10.4324/9781003260219
38. Winkley, K., Upsher, R., Stahl, D., Pollard, D., Kasera, A., Brennan, K., & Ismail, K. (2020). Psychological interventions to improve self-management of type 1 and type 2 diabetes: A systematic review. Health Technology Assessment, 24(28), 1–232. doi.org
39. World Health Organization. (2022). World mental health report: Transforming mental health for all. https://www.who.int/publications/i/item/9789240049338
40. World Health Organization. (1998). WHO-Five Well-being Index (WHO-5). WHO Regional Office for Europe. https://doi.org/10.1037/t36093-000
41. World Health Organization. (2024, November 14). Diabetes. who.int

42. Young-Hyman, D., de Groot, M., Hill-Briggs, F., Gonzalez, J. S., Hood, K., & Peyrot, M. (2016). Psychosocial care for people with diabetes: A position statement of the American Diabetes Association. Diabetes Care, 39(12), 2126–2140. doi.org
43. Zhang, Y., Wang, X., & Liu, Y. (2024). Financial, lifestyle, and emotional adjustments in chronic illness self-care routines: A cross-sectional analysis. Journal of Behavioral Medicine, 47(2), 189–201. doi.org
44. Zu, G., Wang, Y., & Liu, X. (2024). Effectiveness of nurse-led psychological interventions on diabetes distress, depression, and glycemic control in individuals with type 2 diabetes mellitus: A systematic review and meta-analysis. International Journal of Nursing Studies, 151, Article e104671. doi.org