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# Healthcare Access and Glycemic control: Utilization Patterns among Diabetic Patients at Kapkatet Sub-County Hospital, Kericho, Kenya

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## Abstract

Diabetes Mellitus (DM) presents a significant public health challenge, particularly in developing regions such as Kenya, where poor glycemic control remains highly prevalent. This study aimed to investigate healthcare access and utilization patterns in relation to glycemic control among diabetic patients at Kapkatet Sub-County Hospital, Kericho County, Kenya. Despite advancements in diabetes management, many patients struggle to maintain optimal blood glucose levels, increasing their risk of severe complications. A hospital-based cross-sectional study design was employed, with data collected through structured questionnaires and medical record reviews to evaluate socio-demographic, anthropometric, and clinical characteristics. The study sampled 300 adult patients diagnosed with Type 2 Diabetes Mellitus. Descriptive statistics were used to analyze data, summarized using frequencies and percentages. The study was conducted over four months, covering ethical approvals, participant recruitment, data collection, analysis, interpretation, and dissemination of findings. Ethical considerations were rigorously followed, ensuring patient confidentiality, informed consent, and compliance with ethical standards. The study achieved an 83.3% response rate. The findings revealed that while 81.2% of participants had access to diabetes clinics, only 58.4% adhered to regular follow-ups, with cost cited as a barrier by 46.0% despite 72.8% having health insurance coverage (predominantly NHIF at 66.4%), indicating that insurance alone does not fully mitigate financial burdens such as transportation, dietary needs, and medication expenses. The low adherence to follow-ups underscores the necessity for improved

patient education, support systems, and telemedicine integration to address logistical challenges and ensure continuous engagement in monitoring disease progression and treatment adjustments. The study provides valuable insights into the determinants influencing glycemic control among diabetic patients at Kapkatet Sub-County Hospital. The findings highlight the need for targeted interventions, including enhanced patient education, financial support mechanisms, and adherence-focused diabetes management strategies to improve health outcomes in this population.

**Keywords:** *Health care access, utilization patterns, Glycemic control, Kapkatet*

## 1.0 Introduction

Diabetes Mellitus (DM) is a chronic metabolic disorder characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. It is a leading cause of morbidity and mortality worldwide, with complications such as cardiovascular diseases, neuropathy, nephropathy, and retinopathy contributing to the global disease burden (Dinavari et al., 2024). According to the World Health Organization (WHO), over 422 million people are living with diabetes, with the majority residing in low- and middle-income countries (WHO, 2023). The prevalence of diabetes is projected to rise due to increasing obesity rates, sedentary lifestyles, and population aging (Andrew, 2022).

In Kenya, diabetes prevalence is estimated to be between 3.3% and 4.5%, with urban populations exhibiting higher rates due to lifestyle changes (Karanja, 2023). However, poor glycemic control remains a critical challenge, with studies indicating that over 60% of diabetic patients in Kenya have suboptimal blood glucose regulation (Ngugi et al., 2022).

Factors contributing to poor glycemic control include low medication adherence, inadequate dietary compliance, financial constraints, and limited access to specialized diabetes care. A recent survey conducted at selected Kenyan healthcare facilities found that 70% of diabetic patients had HbA1c levels above the recommended 7.0%, reinforcing the need for improved diabetes management strategies (Omondi et al., 2022). Socioeconomic status plays a crucial role, with lower-income individuals experiencing more barriers to diabetes management due to healthcare costs and limited access to nutritious food (Mwangi et al., 2021).

Given these challenges, understanding the determinants of poor glycemic control is essential for developing targeted interventions to improve diabetes outcomes in Kenya. This study focuses on investigating the effects of healthcare access and utilization patterns on glycemic control among diabetic patients at Kapkatet Sub-County Hospital, with the goal of informing healthcare policies and strategies to enhance diabetes care in resource-limited settings.

### 1.1 Problem Statement

Despite Diabetes Mellitus (DM) is a growing public health concern in Kenya, with an increasing burden of complications arising from poor glycemic control (WHO, 2023). Despite the availability of diabetes management services, many patients fail to achieve optimal blood glucose levels, leading to long-term health risks such as cardiovascular diseases, renal failure, and neuropathy (Dinavari et al., 2024). Studies have shown that poor adherence to diabetes care, limited access to specialized treatment, and financial constraints are major factors contributing to suboptimal glycemic control (Ngugi et al., 2022; Omondi et al., 2022). At Kapkatet Sub-County Hospital, there is limited data on how healthcare access and utilization patterns influence glycemic control among diabetic patients. Understanding these factors is critical for developing effective

interventions aimed at improving adherence to treatment, reducing financial barriers, and enhancing overall diabetes management (Mwangi et al., 2021). This study seeks to bridge this knowledge gap by assessing the impact of healthcare access and utilization on glycemic control, providing evidence-based recommendations to improve diabetes care outcomes in resource-limited settings.

### 1.2 Study Objectives

i. To determine the relationship between healthcare accessibility and glycemic control among diabetic patients at Kapkatet Sub-County Hospital.
ii. To assess the influence of healthcare utilization patterns, including frequency of follow-ups and adherence to treatment, on glycemic control.
iii. To evaluate the role of socioeconomic factors, such as health insurance coverage and financial constraints, in diabetes management outcomes.
iv. To identify barriers to effective glycemic control among diabetic patients at Kapkatet Sub-County Hospital.
v. To provide evidence-based recommendations for improving diabetes care and management in resource-limited settings.

### 1.3 Research Hypotheses

**$H_0$:** There is no significant association between healthcare access, utilization patterns, and glycemic control among diabetic patients at Kapkatet Sub-County Hospital.

**$H_a$:** There is a significant association between healthcare access, utilization patterns, and glycemic control among diabetic patients at Kapkatet Sub-County Hospital.

### 1.4 Study Justification

Diabetes is a major public health issue in Kenya, with a rising prevalence and a significant burden on healthcare systems. Effective management of diabetes requires optimal glycemic control, which can be influenced by healthcare access, utilization patterns, and socioeconomic factors. Despite the availability of diabetes clinics and health insurance schemes such as NHIF, poor glycemic control remains a persistent challenge. This study is justified by the need to understand the barriers that hinder effective diabetes management at Kapkatet Sub-County Hospital.

Findings from this study will provide critical insights into the impact of healthcare access on glycemic control, highlighting gaps in service delivery, adherence to treatment, and financial constraints faced by diabetic patients. The results will be instrumental in informing policymakers, healthcare providers, and diabetes care programs on necessary interventions to improve diabetes management. Additionally, the study will contribute to existing literature by offering data-driven recommendations for enhancing diabetes care strategies in Kenya and other resource-limited settings.

## 2.0 The Health Belief Model (HBM)

The Health Belief Model (HBM) serves as the theoretical foundation for this study, explaining how patients' perceptions influence their health behaviors, particularly in relation to glycemic control among diabetic patients at Kapkatet Sub-County Hospital. The model suggests that a patient's decision to engage in diabetes management behaviors such as medication adherence, regular follow-ups, and lifestyle modifications is shaped by their beliefs about the disease and the perceived benefits or barriers to managing it effectively.

The HBM comprises six key components that directly relate to glycemic control:

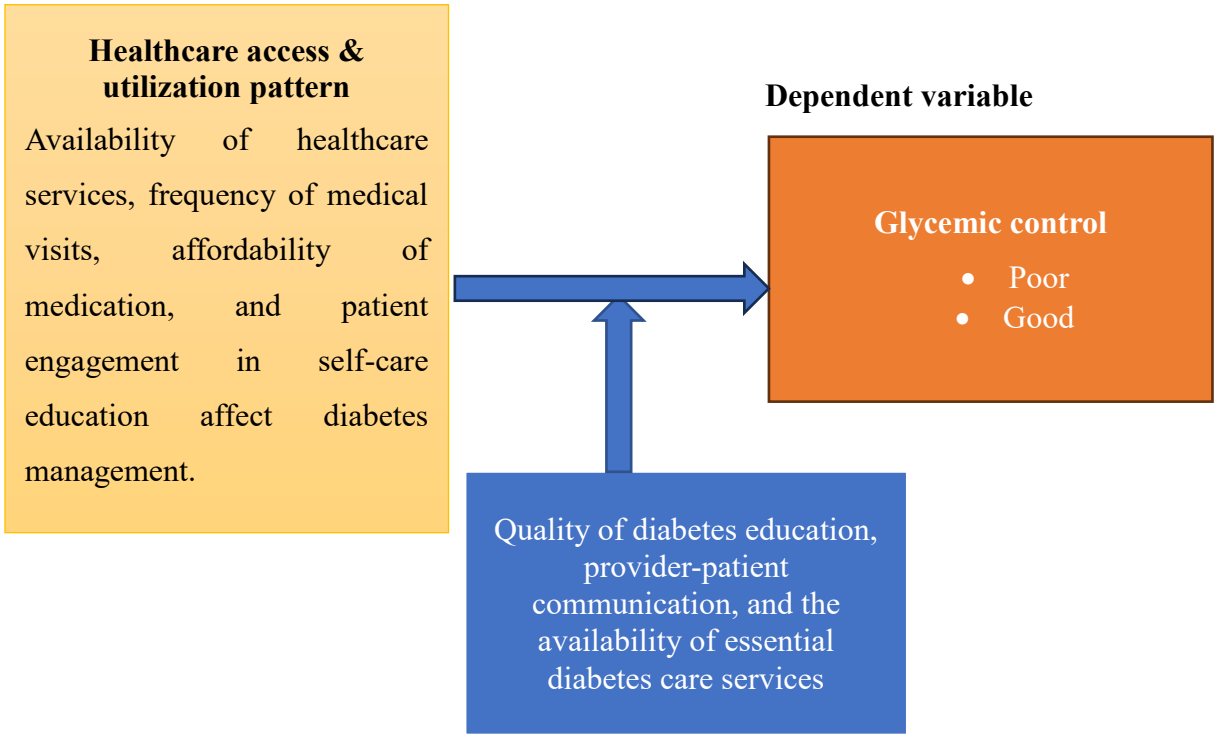
i. Perceived Susceptibility – The extent to which diabetic patients believe they are at risk of complications due to poor glycemic control.
ii. Perceived Severity – The degree to which patients recognize the serious health consequences of uncontrolled diabetes, such as organ damage or hospitalization.
iii. Perceived Benefits – The patients' understanding of the advantages of proper glycemic control, including reduced risk of complications and improved quality of life.
iv. Perceived Barriers – The obstacles preventing adherence to diabetes management, such as financial limitations, limited healthcare access, medication side effects, or lack of social support.
v. Cues to Action – External factors that trigger health-seeking behavior, such as advice from healthcare providers, diabetes education programs, or family encouragement.
vi. Self-Efficacy – The patient's confidence in their ability to effectively manage their condition through self-care, dietary changes, and adherence to prescribed treatment.

Applying the HBM to this study helps in identifying specific psychological and behavioral factors influencing diabetes management. Many patients at Kapkatet Sub-County Hospital may struggle with adherence due to financial constraints, limited healthcare accessibility, or inadequate health literacy.

### 2.1 Conceptual Framework

The conceptual framework for this study illustrates the relationship between various factors influencing glycemic control among diabetic patients at Kapkatet Sub-County Hospital. It is based on the interaction of healthcare access factors, which collectively impact glycemic outcomes.

**Independent variable**



## 3.0 Methodology

*Study design*

This study employed a cross-sectional descriptive design to assess the determinants of poor glycemic control among diabetic patients at Kapkatet Sub-County Hospital. The cross-sectional approach allowed for the collection of data at a single point in time, providing a comprehensive snapshot of demographic, clinical, lifestyle, and healthcare access factors influencing glycemic control. The descriptive nature of the study facilitated an in-depth exploration of the characteristics and patterns observed among diabetic patients, enabling the identification of associations between various factors and glycemic outcomes. While the study does not establish causality, it provides critical insights into key determinants that can inform future interventional research and policy recommendations. Data will be collected using structured questionnaires, validated assessment tools, and medical record reviews to ensure accuracy and reliability. The design ensures the inclusion of a diverse population within the hospital, enhancing the study's applicability to similar healthcare settings in Kenya.

*Study population*

The study was conducted at Kapkatet Sub-County Hospital, a key healthcare facility located in Kericho County, Kenya. This hospital serves as a primary referral center for patients within the sub-county and neighboring regions. It provides comprehensive healthcare services, including outpatient and inpatient care, maternal and child health services, and management of chronic conditions such as diabetes mellitus.

Kapkatet Sub-County Hospital is strategically positioned to cater to a diverse population, including individuals from both rural and peri-urban settings. Many of the patients accessing care at this facility come from socioeconomically disadvantaged backgrounds, which poses challenges in managing chronic diseases like diabetes due to limited financial resources and healthcare access. The hospital has a diabetes clinic that provides routine medical consultations, blood glucose monitoring, health education, and medication prescriptions for diabetic patients.

The selection of Kapkatet Sub-County Hospital as the study site is justified by its high patient load of individuals living with diabetes and the need for localized data to inform evidence-based interventions. The facility's accessibility and structured diabetes care services make it an ideal location to examine factors influencing glycemic control among diabetic patients in this region. The findings from this study will contribute to improving diabetes management strategies not only in Kapkatet but also in other similar healthcare settings across Kenya.

*Data collection methods*

This study employed systematic sampling to select participants from the diabetic patient population attending Kapkatet Sub-County Hospital. Systematic sampling was chosen for its efficiency in ensuring a representative sample while minimizing selection bias. The sampling interval (K) was determined by dividing the total number of registered diabetic patients by the required sample size. A random starting point was selected using a random number generator, and subsequent participants were chosen at regular intervals (K) until the sample size was reached. For example, if the hospital had 1,000 registered diabetic patients and the required sample size was 200, the sampling interval (K) would be $1,000 \div 200 = 5$. This means that after selecting the first participant randomly, every 5th patient in the list was included in the study. This approach ensured an equal and predictable chance of selection for each participant while maintaining a structured

and unbiased recruitment process, enhancing the reliability and generalizability of the study findings.

## 4.0 Findings and Discussion

The study achieved a response rate of 83.3%, with 250 participants successfully completing the survey out of 300 approached. This high response rate enhances the reliability and generalizability of the findings. In terms of healthcare access, 81.2% of participants reported having access to diabetes clinics. However, only 58.4% adhered to regular follow-ups. The cost of diabetes care was identified as a significant barrier for 46.0% of participants. Regarding health insurance, 72.8% of participants had coverage, with the National Hospital Insurance Fund (NHIF) being the predominant provider, covering 66.4% of participants.

This study found that while 81.2% of participants had access to diabetes clinics, only 58.4% adhered to regular follow-ups. Despite having health insurance coverage (72.8%), with the majority (66.4%) utilizing NHIF, 46.0% of participants identified the cost of diabetes care as a barrier. This suggests that while health insurance improves access to care, it does not fully address the financial burdens associated with managing diabetes, such as transportation costs, dietary needs, and out-of-pocket expenses for medications. These findings align with other studies that have highlighted financial barriers to diabetes care even among insured individuals. For instance, Alzheimer et al. (2020) found that insured diabetic patients in rural Kenya still faced significant out-of-pocket costs that affected their ability to adhere to treatment protocols, a finding that parallels the results of this study.

Furthermore, while the need for regular follow-ups is well-documented, the study's results underscore the gap in adherence to these follow-ups. This is consistent with Smith et al. (2019), who noted that adherence to diabetes follow-ups in sub-Saharan Africa often falls below recommended levels due to logistical challenges, poor health literacy, and the high cost of care. In contrast, Khan et al. (2018) found higher rates of follow-up adherence in a sample of diabetic patients with access to regular telemedicine support, suggesting that such services may enhance engagement and continuity of care. Regular follow-ups are essential for monitoring disease progression and making necessary adjustments to treatment plans. This study's finding of low adherence emphasizes the need for enhanced patient education and robust support systems. The importance of education in improving glycemic control has been emphasized in several studies, including Gonzalez et al. (2021), which showed that patient education interventions significantly improved adherence to follow-up care and long-term diabetes outcomes.

The integration of telemedicine services is another critical recommendation. Several studies have shown that telemedicine can reduce barriers to care in resource-limited settings. For example, Ndlovu et al. (2020) highlighted the success of telemedicine in increasing follow-up attendance and improving glycemic control among diabetic patients in rural Zimbabwe, particularly for patients who face challenges such as distance from healthcare centers or limited mobility. This approach could similarly address some of the logistical challenges observed in this study and improve adherence to follow-ups. Overall, while health insurance and healthcare access have improved, significant gaps remain in the financial, educational, and logistical aspects of diabetes care. Addressing these challenges through improved healthcare policies, patient education, and the integration of digital health solutions may help bridge these gaps and improve long-term outcomes for diabetic patients.

## 5.0 Conclusion

This study provides valuable insights into the factors influencing glycemic control among diabetic patients at Kapkatet Sub-County Hospital. Despite high access to diabetes clinics, the findings highlight significant barriers to effective diabetes management, including low adherence to regular follow-ups, financial constraints, and gaps in patient education. Although health insurance coverage plays a critical role in improving access to care, it does not fully address the financial burdens that patients face, which can hinder consistent disease management. The application of the Health Belief Model in this study underscores the importance of addressing patients' perceptions about their disease and treatment. By enhancing education, strengthening healthcare access, and addressing financial barriers, it is possible to improve glycemic control outcomes and overall patient well-being. Future interventions should focus on the implementation of comprehensive education programs, expansion of support systems, and integration of digital health solutions to improve follow-up adherence and self-management. Policymakers and healthcare providers must collaborate to reduce the costs associated with diabetes care, ensuring that all patients, especially those from low-income backgrounds, have the resources and support necessary to manage their condition effectively.

## 6.0 Recommendations

Based on the study findings, the following recommendations are proposed to improve glycemic control among diabetic patients at Kapkatet Sub-County Hospital:

1. Enhancing Patient Education-Implement structured diabetes education programs focusing on disease awareness, medication adherence, and self-management strategies to improve health literacy and empower patients.
2. Improving Access to Care-Strengthen healthcare infrastructure by expanding diabetes clinics, increasing healthcare personnel, and integrating telemedicine to enhance follow-up adherence.
3. Financial Support Mechanisms-Advocate for subsidized diabetes care, including medication and laboratory tests, and expand health insurance coverage to address financial constraints that hinder effective disease management.
4. Community-Based Support Systems-Establish peer support groups and community-based interventions to provide emotional and practical support, improving self-efficacy and adherence to treatment plans.
5. Policy and System-Level Changes-Develop and implement policies aimed at reducing the cost of diabetes care, improving supply chain management for essential diabetes medications, and increasing funding for chronic disease management programs.
6. Strengthening Healthcare Provider Engagement-Train healthcare providers on patient-centered approaches to enhance communication, encourage shared decision-making, and foster stronger patient-provider relationships to boost adherence to recommended treatments.
7. Integration of Digital Health Solutions-Utilize mobile health (mHealth) applications and SMS reminders to enhance follow-up adherence, provide medication reminders, and deliver educational content on diabetes management.

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