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Barriers and Facilitators to Glycemic control among Patients with Type 2 Diabetes Mellitus at Mbale regional referral hospital, Uganda: A Qualitative study guided by the Health Belief Model

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Research Article

Keywords: Barriers, facilitators, Glycemic control, Type 2 Diabetes Mellitus, Health Belief Model, Sub-Saharan Africa, Eastern Uganda

Posted Date: August 10th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10177386/v1

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Additional Declarations: No competing interests reported.

Abstract

Introduction:

Diabetes Mellitus (DM) continues to represent a significant and escalating global public health challenge, accounting for over 1.5 million deaths in 2021.

Purpose

This study explored the perceived barriers and facilitators to glycemic control among patients with Type 2 Diabetes Mellitus (T2DM) at Mbale Regional Referral Hospital (MBRRH) in Eastern Uganda.

Methods and materials

: A descriptive qualitative study was conducted at the diabetic clinic of MBRRH from May to June 2024. Fifteen participants, including Patients with T2DM (n = 10) and health workers (n = 5), were purposively selected. Data were collected through in-depth and key informant interviews using semi-structured interview guides, recorded and transcribed verbatim. Thematic saturation was achieved during the 15th interview. Data were analyzed using a hybrid thematic approach informed by the six constructs of the Health Belief Model (HBM).

Results

Of the 10 in-depth interview participants, the majority were female (n = 7) and aged over 50 years (n = 8). Eleven subthemes, corresponding to the six themes of the Health Belief Model (HBM), were identified and classified as barriers or facilitators. Key barriers identified were low risk perception, stockout of antidiabetic medicines, herbal medicine use, financial constraints, fear of complications, drug adverse effects, and Dietary challenges. Facilitators were clinical advice, family support, education, and self-confidence.

Conclusions

Glycemic control is multifaceted and heavily influenced by interconnected socioeconomic, behavioral, cultural, and health-system factors at MBRRH. Multi-strategic primary health care interventions that address medicine stockouts, financial barriers, dietary challenges, diabetes education, and social support systems are urgently needed in Eastern Uganda.

1.0 Introduction

The Global burden of Type 2 Diabetes Mellitus (T2DM) in 2024 was estimated at 588.7 million cases, with 24 million cases in Africa (1). Africa has a prevalence of Diabetes Mellitus (DM) among those aged 20 to 79 years estimated at 4.2% in 2024 (2). Uganda has a pooled prevalence of DM estimated at 7.1%, which is higher than the regional prevalence and represents a gradual increase over the 2023 Non-Communicable Disease risk factor STEPS survey (3). In 2024, 216000 deaths were attributed to Diabetes in Africa, with the region having the largest budget expenditure on DM in the World(2). Despite advancements in the treatment of Diabetes Mellitus (DM), Uganda still faces challenges in its management, with studies across the country indicating that suboptimal glycemic control remains high, ranging from 70% to 84% (4). Health facilities in rural parts of the country still experience persistent gaps in the management of DM which include limited health worker training in diabetes and its management, and stock outs of antidiabetic medicines(5), Eastern Uganda particularly Mbale, has a relatively high prevalence of poor glycemic control which is estimated at 70%, persistent poor glycemic levels predisposes patients with DM to long term complications of diabetes, yet there is insufficient data regarding the barriers and facilitators faced by diabetic patients in management of their glycemic levels(4). Therefore, this study aims to explore the perceived barriers and facilitators to glycemic control among Adult patients with T2DM attending the Mbale Regional Referral Hospital (MBRRH) in Eastern Uganda.

2.0 Methods and materials

2.1 Study design

A Descriptive qualitative design guided by the Health Belief Model (HBM) was used. The HBM model, initially developed to explain health behavior, has six constructs: perceived risk, perceived severity, perceived benefit, perceived barriers, clues to action, and self-efficacy (6)

Perceived risk, severity, barriers, self-efficacy, and cues to action influence diabetes self-care practices. These factors interact with social demographic factors, including education level and occupation, which influence behavior and lead to either poor or good glycemic control. Perceived risk assess the extent to which patients feel they can experience poor glycemic control, perceived severity looks at how serious they think diabetes related complications are to them, perceived benefits looks at the benefits attached to adhering to self-practices, perceived barriers assesses the challenges faced, clues to action examines internal and external influences to adhering to self-care behaviors, and self-efficacy assesses the effectiveness of adhering to self-care behaviors as shown in Fig. 1 below.

Insert Fig. 1 **here.**

2.2 Study setting

The study was conducted at MBRRH, located approximately 222 km from Kampala, Uganda's capital city. The diabetic clinic currently serves over 3,000 clients from the Elgon region and neighboring districts.

The clinic operates every Tuesday and Thursday, providing services to patients with type 1 Diabetes Mellitus (T1DM) and type 2 Diabetes Mellitus (T2DM).

2.3 Study population

Adult patients with T2DM living in Mbale and attending the diabetic clinic at Mbale Regional Referral Hospital between May and June 2024, as well as health workers who provide care to diabetic patients, constituted the sample.

2.3 Selection criteria

Adult T2DM patients ≥ 18 years, having T2DM for at least 6 months, and who were receiving care at the clinic. Adult T2DM patients for at least six months with liver disease, acute complications of DM such as Diabetic Ketoacidosis, and those who did not consent were excluded from the study.

Health workers who had provided medical care at the diabetic clinic for at least 6 months were selected.

2.4 Sample size and Sampling strategy

We purposively selected 10 patients with T2DM among those receiving care and 5 health workers involved in providing care at the clinic. A review of medical records guided selection to ensure representation of individuals with consistently poor glycemic control and those with good glycemic control. The responses were recorded in both Lugisu and Luganda and transcribed verbatim. Data collection continued until the 15th interview, at which point thematic saturation was achieved. Data saturation was determined when no new codes were coming from successive interviews.

2.5 Data collection tools

The researchers developed a semi-structured interview guide based on the six constructs of the HBM of behavioral change, namely perceived risk, perceived benefit, perceived barriers, perceived severity, cues to action, and self-efficacy (7).

2.6 Data collection methods

Data were collected through 10 in-depth interviews exploring the lived experiences of patients with T2DM, followed by 5 key informant interviews to obtain expert opinions from health workers directly involved in care and treatment regarding the perceived barriers and obstacles patients face in achieving good glycemic control. Data were collected by a team of three research assistants under the direct supervision of the Principal Investigator

2.7 Study rigor

The study ensured that the four core dimensions of credibility, dependability, confirmability, and transferability were achieved, as outlined by Gumbayi (8). Credibility was achieved through prolonged interaction with the data during the analysis, triangulation of research participants with both patients and health workers interviewed, peer debriefing where two Research assistants coded the data and then met

to verify their codes and themes of similar transcripts, and then if there was no agreement, the principal researcher also coded the transcript until when they came to a consensus on the codes and subthemes. Dependability was ensured through a thick description of the participants' responses. Confirmability was enhanced by properly documenting all steps in the research process to maximize traceability. Transferability was ensured by purposively selecting participants of different ages, sexes, and durations of Diabetes to ensure fair representation of their individual characteristics. I approached this study from the perspective of a health worker and researcher. As a pharmacist and public health professional, I possess knowledge of diabetes, its management, and the determinants of prognosis. To minimize bias during the process, we used participant quotes to represent their perspectives. We conducted a peer debriefing, in which research assistants coded the data and later discussed the codes and subthemes that emerged from the findings.

2.8 Data analysis

Data were analyzed using NVivo, following a hybrid thematic analysis that allowed for new codes to emerge from the data and predetermined themes from the HBM model. The researchers first immersed themselves in the data by repeatedly reading the transcripts to ensure a deep understanding of the participants' perspectives. Meaningful segments of text were identified and assigned initial codes. These codes were then grouped into subthemes based on shared meanings and finally categorized into six broad themes derived from the HBM: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

3.0 Results

3.1 Social demographic characteristics of the respondents.

Among the participants in the in-depth interviews, 70% (n = 7) were female, while 30% (n = 3) were male. More than half of the respondents (60%; n = 6) were over 50 years old. Most of the participants, 80% (n = 8), were married, and more than half, 70%(n = 7), were peasants. Among those selected for key informant interviews, three were male medical officers, while the other two were nurses, as shown in Table 1 below.

Insert Table 1 **here**

Table 1
presents the sociodemographic characteristics of the In-depth interview participants.

Demographic characteristic	Category	Frequency	Percentage
Age			
	≥ 50	6	60%
	< 50	4	40%
Sex			
	Male	3	30%
	Female	7	70%
Marital status			
	Not Married	2	20%
	Married	8	80%
Employment			
	Formally working	1	10%
	Self employed	2	20%
	Peasant	7	70%
Years spent with Diabetes			
	3–5 years	2	20%
	6–9 years	6	60%
	≥ 10 years	2	20%

3.2 Perceived barriers and facilitators from both patients and health workers were analyzed thematically, and the following sub-themes were identified and classified under the six major themes of the Health Belief Model as shown in Table 2 below.

Insert Table 2 **here**

Table 2
indicates the themes and subthemes

Theme	Subtheme
Perceived risk	Low perceived risk
Perceived severity	Perception of complications
Perceived benefit	Perceived benefit of treatment
Perceived barrier	Stock out of Antidiabetic medicines
	Financial constraints
	Dietary challenges
	Adverse effects of drugs
	Herbal medicine use
Clues to action	Clinical advice
	Family support
	Education about Diabetes
Self-efficacy	self-confidence

Theme 1: Perceived Risk

Sub, Theme 1.1: Low risk perception

Several participants exhibited a low perception of the risk of poor glycemic control. They expressed confidence that their current lifestyle practices, particularly healthy eating habits, were sufficient to maintain or prevent elevated blood glucose levels. Others reported strong reliance on faith, believing that God would protect them from adverse health outcomes associated with diabetes. These beliefs reduced their perceived susceptibility to poor glycemic control despite long-term living with the condition. However, variation in awareness was observed: a few participants recognized that blood glucose levels could fluctuate over time, as illustrated by respondent ten.

*I don't believe my blood sugar levels will increase; in my view, they should be decreasing because I eat a lot of fruits and vegetables. I believe God will help me to overcome that (*P10, Male, 52, Diagnosed for 12 years).

My informants similarly reported that most patients with type 2 diabetes did not perceive themselves to be at risk of poor glycemic control, attributing this to limited awareness of the disease and its complications.

Exactly, from the interactions we have with them, most of them are not aware of the things they have to do, and I think when they go there our colleagues prescribe drugs and be telling them be taking this and this, you have diabetes but they do not give them the information concerning the condition and how best it can be managed and because sometimes you can give someone the drug by the adherence is an issue but also dietary modification is another issue, so drugs alone may not be of great benefit without the information and other surrounding factors (Participant 11, Male, 28, Medical Doctor)

Theme 2: Perceived Severity.

Subtheme 2.1: Perceived severity of complications

Most participants were aware of the serious consequences associated with poor glycemic control. These included loss of consciousness, organ damage, prolonged hospitalization, and long-term complications such as visual impairment, kidney dysfunction, and general body weakness. Some participants also described personal experiences of illness-related complications.

*When the blood sugar rises, you may find that you are unconscious, and when you wake up, you find yourself admitted to the hospital. You may also find that the eyes are affected, and you cannot see very well (*P9, Female, 56, Diagnosed for 8 years).

*WWhen blood sugar levels rise, the whole body is affected, leading to general weakness. It also affects your eating and drinking by draining all your energy. Even I have been affected, and currently I am not having a workforce since all my blood vessels are now clogged, and I feel my kidneys are not well (*P10, Male, 52, Diagnosed for 12 years)

Theme 3: Perceived Benefit

Subtheme 3.1: Perceived benefit of treatment.

Most participants acknowledged the importance of adhering to prescribed treatment, including medication use and dietary modifications, in controlling blood glucose levels. They reported that following medical advice helped stabilize their condition and prevent deterioration.

They all help keep my sugar levels from rising, and the medicine works if I follow the instructions carefully. If I eat foods with less sugar and more vegetables, and prepare meat properly by removing fat, it will all help me. Also, eating a lot of green foods and sour foods helps me (P7, Female, 46, Diagnosed for 6 years).

Yes, the medicine works on me because I have been sick for a long time and have been using that medicine up to now, and I don't go for other alternatives (P1, Male, 48, Diagnosed for 6 years)

Theme: Perceived Barriers

Subtheme 4.1: Stock out of Antidiabetic Medicines

Participants reported difficulties in accessing antidiabetic medications due to frequent stock-outs at health facilities, which negatively affected treatment adherence, leading to poor glycemic control.

"*You may go to the hospital expecting to get the medicine, and you find it is not there, and then go back home since you do not have the money to buy the medicine, so the blood sugar keeps rising, and by the time you get the money to buy the medicine, the blood sugar has already shot high*". (P7, Female, 46, Diagnosed for 6 years).

"The medicines they are taking are going well, but the challenge they get is when our medicines get out of stock in the hospital because they tell me it is expensive outside, that is for Type 2, and the one for Type 1 is okay for them since they are provided, and they have an organization (P12, 42, Registered Nursing officer).

"**Subtheme 4.2: Dietary challenges.**

Some participants reported challenges in adhering to dietary recommendations due to cultural food practices and limited access to recommended foods. Health workers also acknowledged difficulties in enforcing dietary modifications among patients.

Firstly, regarding food, they also told me not to eat any food except bananas and green vegetables, so I decided not to eat for some time until my sugar levels dropped very low, to about 3. That's when the health workers advised me to eat a small portion of each food" (P9, Female, 56, Diagnosed for 8 years).

There are some people on the issue of the diet there are foods which you cannot stop them from eating, someone will tell you I will give you an example of Muslim some of these Somalis, the other week I was with them when I told them wheat products are very dangerous to Diabetic patients and they told me no how do you tell me not to eat chapati, mandazi so those are their daily stuff and it's hard to explain to them to abandon some of these foods although they have high carbohydrate levels, so diet modification is also a challenge because some foods are also part of people's lives and it's very hard to tell the to do away with some of these foods (Participant 11, Male, 28, Medical Doctor)

Subtheme 4.3: Financial constraints

Financial limitations affected participants' ability to access medication and transport to health facilities. Some participants reported interrupting treatment due to the inability to afford drugs when they were not available at public facilities.

Sometimes, to come to the hospital, we have to travel far, and it also requires transportation. At times, you may not find the drugs at the hospital, just like us who use the injection. You find yourself, especially those who live in the village, finding it hard to look for transport and money to buy drugs. At times, the drugs you have are already used up, and you may also spend the rest of the day without administering the drug because of money issues. (P7, Female, 46, Diagnosed 6 years ago)

The affordability of some of these drugs, as you are aware, some of these antidiabetic drugs are not always assured, and so once these drugs are done, some of these guys stay for some weeks without getting medications. When you ask them, they tell you they cannot afford them. Two, I came back to the facility. They told me to buy, but I don't have the money, so they wait until the government supplies; that's when they can come back and get these drugs" (P12, 42, Registered Nursing officer).

Subtheme 4.4: adverse effects of Antidiabetic medications.

Some participants reported experiencing adverse effects from medications, which led to reluctance or discontinuation of treatment in some cases.

Except this time, when I came here to the hospital, they had to put me on injections when my blood sugar had risen to about 22, and that's when the health workers decided to put me on the injection. This year, since June, I have been put on the injection, my whole body has been swelling, and this time, I will tell the health workers not to put me on the injection. (P8, Female, 49, Diagnosed for 5 years)

When the doctors prescribe medicine for me and some of it is not available at the hospital, I always go to a private pharmacy to buy it. The last time, they wrote for me the medicines that made me feel unwell, and I told them I would leave those medicines. (P4, Female, 51, Diagnosed for 3 years).

Subtheme 4.5 Herbal medicine use

Participants reported the use of herbal remedies influenced by peers and family members, which in some cases interfered with adherence to prescribed treatment.

*Once they lied to me and I used herbal medicine, but it did not work well for me, and another very bitter herb, but all the time I used this herb, my blood sugar levels remained the same. After taking the herb, I used to check my blood sugar levels, but they remained high. (*P10, Male, 52, Diagnosed for 10 years).

*One time, I delayed seeking medication because I was taking herbal medicine, and ever since I survived, I don't miss appointments because in every situation the medics always find a way to either change medication so that I feel better. (*P8, Female, 49, Diagnosed for 5 years)

Theme 5: Clues to Action

Subtheme 5.1: Clinical advice

Participants reported receiving health education and counseling from health workers, which guided their dietary practices and lifestyle modifications.

When we come here at the hospital they tell us to leave somethings because of Diabetes so they teach us a lot about food and they tell us to reduce sources we eat especially during the night that we should not eat a lot of foods and also during day while eating try to eat little and certain foods such as posho, cassava and

*potatoes are not good for people with Diabetes and if you are to eat them make sure for foods like posho you add a lot of source like greens (*P10, Male, 52, Diagnosed for 10 years)

The health workers are the ones who teach us, and we learn a lot about how we can manage our blood sugar levels, such as how to eat, how to walk, and sometimes you may end up stepping on sharp objects, which may bring you problems (P6, Female, 44, Diagnosed for 3 years)

Subtheme 5.2: Family support

Family members played an important role in reminding participants about medication adherence and clinic visits, as well as providing financial support.

We have people who have responsible partners and can talk to their colleagues and tell them, " Hey, you have this condition. Hence, you need to see the Doctor; you have to follow up on your reviews. This also helps. Some of them tell me they have the village health workers they normally visit them and ask them when did they last check their glucose levels, have you gone to see the hospital so that also helps to some of these patients and as I said some of these patients whenever they do not have complications they are reluctant, they think that they are now okay (P15, Male, 35, Medical officer).

For the past three years of my sickness, my children or my relatives have usually told me to take my medicines properly. (P4, Female, 51, Diagnosed for 3 years).

Subtheme 5.3: Health education on Diabetes.

Health workers emphasized the importance of continuous education to improve patients' understanding of diabetes management and complications.

We need health education for both the community and the patients. The community needs to know what DM all is about. The community is not very aware, and even some members who are coming from these people are not aware, because we also need home visiting if we can. Then we can also do some radio talk shows, even in schools. (P 13, Male, 40, Senior housing officer).

I think the main stem to that is we go back to health education, these patients have to be educated about their conditions, their possible complications, they must be educated about lifestyle medications, I think that plays the biggest role in trying to help some of these patients, otherwise the issue of only giving medications without the health education they need has not achieved much (P 14, Female, 38, Nursing officer).

Theme 6: Self-Efficacy

Subtheme 6.1: Confidence in self-care management

Participants demonstrated confidence in managing their condition through self-care practices such as physical exercise, medication adherence, and insulin administration.

"*For me, I wake up early in the morning every day at around 5:00 am, and I do road work and physicals, and after I do some light work, that gives me a feeling inside that my blood sugar levels will not increase since I have done some exercises. As I told you earlier, participating in physical exercises, taking medicines, and praying make me confident that I can control my blood sugar levels*" (P7, Female, 46, Diagnosed 6 years).

"*I administer my injection very well and swallow my tablets, and the health workers have taught us well. I administer this drug myself and take metformin in the morning and in the evening, the same*". (P3, Female, 49, Diagnosed for 7 years).

4.0 Discussion of the findings

4.1 Barriers to Glycemic Control

The majority of participants with T2DM perceived themselves to be at low risk of suboptimal glycemic control. While some participants recognized the severity of complications like organ failure and stroke, they lacked a clear understanding of the specific triggers for blood sugar fluctuations. This is consistent with findings by Tripathi et al. in India (5) and Liu et al. in the United States, both of whom demonstrated that low perception compromised patients' behavior towards Diabetes self-care practices (10). This gap in perception negatively influenced self-care management practices among patients with T2DM, leading to suboptimal glycemic control.

Financial hardships emerged as a profound barrier, as both health workers and patients reported that the majority of their clients lacked the funds to buy medicines and sometimes even transportation. This aligns with Ganetsky et al., who found that financial hardships among patients with T2DM affected their adherence to self-care practices, including medication adherence (11). The above findings are also consistent with those of Kayange et al., who conducted their study in Tanzania (12). Other studies in Saudi Arabia by Kulintang et al. have demonstrated that high costs associated with Diabetic care, including medication costs, impact adherence to self-care practices, leading to poor glycemic control (13).

According to participants in this study, most foods recommended by health workers were either inaccessible or conflicted with deep-seated cultural and religious practices. As also reported by Kumar et al. across their study in India (9), the social nature of eating makes it difficult for patients to maintain a separate "diabetic diet" when living in large, extended families, especially in resource-constrained settings. A Study conducted across Jordan also noted that the majority of patients with T2DM do not follow their dietary plans for several reasons, including their social, cultural, religious, and individual backgrounds (14). Woodward et al. also found that cultural norms in the USA influenced patients' adherence to their recommended dietary guidelines (15). This study suggests that Patients with T2DM may fail to adhere to dietary recommendations due to food scarcity: recommended foods, such as vegetables, are not available in their localities during some seasons, and others may be unable to afford them, as reported by Mokaya et al. in Kenya (16).

Recurrent drug stockouts were identified as a significant systemic barrier, as antidiabetic drugs were frequently out of stock at the hospital pharmacy, prompting participants to source medicines from private clinics and pharmacies, which were usually more expensive. Birabwa et al. have similarly identified stockouts of antidiabetic drugs across rural facilities in Eastern Uganda(5). Another study by Kumar et al. among geriatric patients in India found that a lack of supplies, such as medicines and laboratory reagents, prevented patients with T2DM from adhering to their treatments, contributing to poor glycemic control (17). Frequent stockouts of antidiabetic drugs in the public health facilities have also been reported in Saudi Arabia by Kulintang et al (13). This may be attributed to poor coordination among health facilities and pharmaceutical distributors, which affects procurement planning and leads to inaccurate demand forecasting and prolonged lead times (18).

Adverse effects due to Antidiabetic drugs contributed to poor glycemic control, according to participants. This aligns with findings from Masupe et al., who reported side effects in diabetic patients that reduce treatment adherence (19). Dumale et al. have also reported that medication side effects were frequently reported by patients with T2DM in Saudi Arabia, hindering their adherence (13). Antidiabetic drugs are known to cause adverse effects ranging from mild actions like gastrointestinal disturbances to life-threatening effects, including lactic acidosis. This study suggests that patients experiencing adverse effects may fail to adhere to their medications, leading to suboptimal glycemic control.

Due to frequent stockouts of drugs in facilities, participants resorted to relying on herbal medicines. This is consistent with studies by Demsie et al (20) and Deshimo et al (21) in Ethiopia among Adults with diabetes that documented poor outcomes due to reliance on herbal medicines. The suboptimal glycemic outcomes could be attributed to unpredictable therapeutic effects, lack of standardized dosing, or even herb-drug interactions. This also could be due to fact that patients may also face challenges in accessing care at facilities due to long waiting times as suggested by Birabwa et al and end up taking herbal drugs as coping mechanism (5), and also given the high cost of antidiabetic drugs in the private sector reported in Eastern Uganda by Obakiror et al (22), which could also drive patients towards taking herbal medicines as they may not afford conventional drugs.

Patients demonstrated fear and concerns about the long-term complications of diabetes, which affected their mental status. This aligns with findings by Liang et al in China, who attributed emotions to fear (23). Diaz et al also demonstrated that fear of complications was linked to abnormal responses in Spain, including psychological distress (24). However, Rajkumar et al. found that perceiving the complications of diabetes can lead to better glycemic control, as patients are inclined to adhere to their treatments to avoid those complications and deterioration (25). However, our findings suggest that fear of complications may lead to psychological distress in patients, which can, in turn, biologically stimulate the body, triggering the release of glucocorticoid hormones such as cortisol, thereby mobilizing glucose from storage and worsening glycemic control.

4.2 Facilitators to achieving Glycemic control

Clinical advice from health workers in this study was identified as a powerful catalyst for positive behavior change, aligning with Mokaya et al. in Kenya (16). Patients demonstrated trust in health information from their health workers, which positively drives their compliance. Health workers sharing this information about diabetes management with patients can raise patients' awareness and improve the patient-health worker relationship, leading to the adoption of healthy self-care practices, which may improve their glycemic control.

Family social support was reported to influence adherence through direct financial contributions from close family members and emotional support. This aligns with findings by Tripathi et al (5) in India showing that empowering participants through social interactions was pivotal to sustaining self-care practices(4). Social support is also reported by Masupe et al to influence interactions through family cohesion (19). Diabetes, being a chronic condition associated with stress, provides psychological support to mitigate daily stress arising from the disease.

The provision of education to patients with T2DM on self-care practices was emphasized by both health workers and patients in this study as indispensable. Kumar et al. demonstrated that providing patients with T2DM with knowledge was pivotal to ensuring they understood their treatment instructions and adhered to self-care practices in India (17). Tripathi et al. have also highlighted that patients who are knowledgeable about their condition can follow instructions well and adhere to self-care practices (5). This finding suggests that patients with T2DM can consistently adhere to self-care practices if they receive appropriate, meaningful information about their disease, including dietary plans.

Participants in this study reported that understanding the benefits of their treatment, including medications and dietary restrictions, positively influenced their self-care practices. These findings align with Funnell et al., who linked self-care practices to perceived usefulness of performing those behaviors (26). Rosenstock also agrees that for patients to follow instructions consistently, they must begin by recognizing the benefits of performing that behavior (6). This implies that perceiving the benefits of treatment may motivate patients to adopt self-care practices, as they understand the importance of their treatment and dietary plans and are willing to take an active role in their own management.

5.0 Conclusions

This study identified health system, socioeconomic, and behavioral factors influencing glycemic control among patients with T2DM. Medication stock out, dietary challenges, financial constraints, adverse drug effects, and herbal medicine use were major barriers, whereas social support, clinical advice, education, and self-efficacy facilitated glycemic control. Multilevel interventions targeting both patients and the health system are needed in Eastern Uganda.

5.1 Study limitations and strengths

The health belief model guided this study, and data were triangulated using perspectives from both health workers and patients, enhancing the credibility of the findings and representing a major strength.

The major limitation was that the study was conducted at a single site, the Mbale regional referral hospital. This affects the transferability of the findings, but it was minimized through purposive sampling, which included participants of different ages, areas of residence, glycemic status, and sex.

Abbreviations

T2DM
Type 2 Diabetes Mellitus
T1DM
Type 1 Diabetes Mellitus
DM
Diabetes Mellitus
MBRRH
Mbale Regional Referral Hospital
HBM
Health Belief Model

Declarations

Ethical approval and consent to publish

We obtained ethical approval from Busitema University Research and Ethics Committee with reference number BUFHS-2023-112, which was valid from 05/12/2023 to 05/12/2024. Informed consent was sought from each participant throughout the study, and ethical principles were followed in accordance with the Declaration of Helsinki. Consent to publish was obtained from the participants.

Statement on conflict of interest

All the researchers declared no conflict of interest in this study.

Competing interests

All the researchers declared no competing interests in the study.

Funding

This study received funding from the German government under the DAAD in-country scholarship program.

Author Contribution

DL : Conceptualised the research , developed the methodology , wrote the initial draft , and edited the manuscript YG : Supervised the research and edited the draft SR : Prepared figure 1 and edited the draft BW : Edited the draftRK : Supervised the research , developed the methodology and edited the draft .

Acknowledgement

We acknowledge the Germany government and Management of Mbale University for support and guidance during this research

Data Availability

All the data analyzed during this study are available upon reasonable request.

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Figures

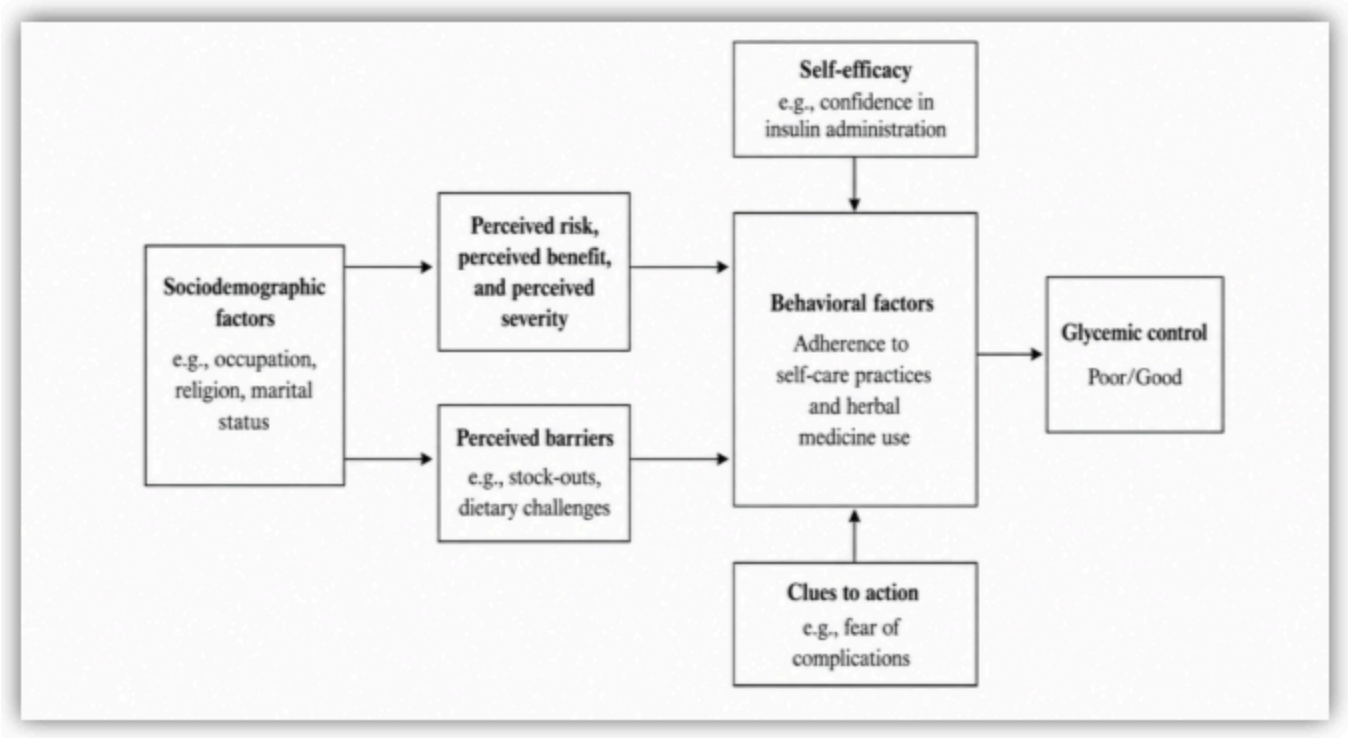


Figure 1

Health Belief Model. Adopted and modified from Behr (2021)