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Research Article

Knowledge and Self-Management Practices of Type 2 Diabetes Mellitus Patients at Kibagabaga District Hospital

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Abstract

Background: Type 2 Diabetes Mellitus (T2DM) is a growing global public health concern. In Rwanda, its prevalence continues to rise, yet limited information exists regarding patients' diabetes-specific knowledge and self-management practices. *Objective:* This study assessed diabetes-specific knowledge and self-management among patients with T2DM attending Kibagabaga District Hospital. *Method:* A quantitative cross-sectional survey was conducted among 198 patients with T2DM selected through convenience sampling. Data were collected using a self-administered structured questionnaire and analyzed with SPSS version 25.0. *Results:* Of the 198 participants, 63.6% were female, with a mean age of 52.4 years (SD = 11.83). The mean duration since diagnosis of diabetes was 4.5 years. Comorbidities were reported in 33.3% of participants, predominantly hypertension (16.7%). More than half (55.1%, n = 109) demonstrated adequate diabetes-specific knowledge, while 97% (n = 192) showed poor self-management practices. No significant association was found between diabetes-specific knowledge and self-management levels. However, self-management was significantly associated ($p < 0.05$) with social class (Ubudehe category) and the presence of comorbidities. *Conclusion:* Although many patients exhibited fair diabetes-specific knowledge, self-management practices remained poor. Further research is needed to identify barriers to effective self-care, and targeted interventions should be implemented to improve diabetes education and management among patients in Rwanda.

Keywords

Type 2 Diabetes Mellitus, Diabetes-specific Knowledge, Self-management, Kibagabaga District Hospital

1. Introduction

Type 2 diabetes mellitus (T2DM) is a major global public health challenge and one of the leading causes of morbidity and mortality worldwide. Its increasing burden is primarily attributed to rapid urbanization, sedentary lifestyles, and unhealthy dietary habits, [1] According to the International Diabetes Federation (IDF), in 2021, approximately 537 million adults aged 20-79 years were living with diabetes globally, representing about one in ten adults, [2] Among all dia-

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betes cases, 91% are type 2 diabetes mellitus, Additionally, an estimated 541 million adults have impaired glucose tolerance (IGT), which significantly increases the risk of developing T2DM, [3].

Although T2DM affects all regions, the burden is disproportionately higher in low- and middle-income countries (LMICs), largely due to health disparities and limited access to preventive and diagnostic services, [4] The IDF reports that three out of four adults with diabetes live in LMICs. In 2017, more than one million deaths were attributed to diabetes and its complications, making it the ninth leading cause of death globally. Between 1990 and 2017, the number of individuals with T2DM increased by over 100%, rising from 12.3 million to 23.5 million cases, [5].

In Africa, the number of people with diabetes continues to rise sharply and is projected to record the most significant relative increase globally by 2045, [6] In 2017, about 15.6 million adults in Africa were living with diabetes, and 68.1% were unaware of their diabetic status, [7] By 2022, this number had increased to 25 million, according to the latest IDF statistics, [2] Diabetes-related mortality in Africa is particularly high, accounting for 78% of global diabetes deaths, with most deaths occurring among individuals under 65 years, [8] The prevalence of T2DM in Africa is expected to rise by 129% by 2045, reaching approximately 55 million cases, [2].

In Rwanda, the burden of T2DM is also increasing. Findings from the Rwanda National Health Research Registry (RNHRR) estimate the national prevalence to range between 3.1% and 4.3%, with higher rates in urban areas, [9] Among adults aged 15-64 years, prevalence rates are 7.5% in rural and 9.7% in urban populations, while 5-6% of the population presents with impaired fasting glucose, [9] Despite diabetes being recognized for over a century, it remains a major cause of hospital admissions and mortality due to complications arising from poor glycemic control. Contributing factors include alcohol use, smoking, obesity, and poor adherence to treatment, [10].

To mitigate these challenges, self-care and self-management approaches have been promoted globally as essential strategies to improve diabetes control and reduce complications. These approaches empower patients to monitor their blood glucose, adhere to medications, maintain healthy diets, engage in regular physical activity, and seek timely medical attention, [11] Nurses play a central role in patient education and in strengthening patients' self-care capacity to enhance their health outcomes and quality of life, [12] However, despite the recognized importance of patient self-care, there is limited evidence in Rwanda regarding the level of diabetes-specific knowledge and self-management practices among individuals living with T2DM. Understanding these aspects is crucial for designing targeted interventions to enhance glycemic control and mitigate the disease burden on both patients and the healthcare system. This study, therefore, aimed to assess knowledge and self-care management among patients with type 2 diabetes mellitus attending Kibagabaga District Hospital.

2. Methods

2.1. Study Design and Approach

This study employed a quantitative cross-sectional design to assess knowledge and self-care management among patients with type 2 diabetes mellitus attending Kibagabaga District Hospital. A cross-sectional approach was selected because it allows for data collection at a single point in time and is appropriate for determining associations between variables in a defined population.

2.2. Study Setting

The study was conducted at Kibagabaga District Hospital (KDH), located in Kimironko Sector, Gasabo District, Kigali City, Rwanda. The hospital serves as a referral facility for 16 surrounding health centers and provides a wide range of health services through 18 departments. The Non-Communicable Disease (NCD) clinic manages patients with chronic conditions, including diabetes, hypertension, and cardiovascular diseases. At the time of the study, the diabetes clinic followed approximately 315 registered adult patients with diabetes mellitus.

2.3. Study Population and Eligibility Criteria

The study population consisted of adult patients diagnosed with T2DM who were attending regular follow-up visits at the diabetes clinic of Kibagabaga District Hospital during the study period. Participants were included if they were 18 years of age or older, had a confirmed diagnosis of T2DM, were receiving follow-up care at the hospital, and provided informed consent to participate in the study. Patients were excluded if they were under 18 years of age, had mental or cognitive impairments that could limit their effective communication or comprehension of the study procedures, or declined to participate voluntarily.

2.4. Sampling and Sample Size

A non-probability convenience sampling method was used to recruit participants who met the inclusion criteria and were available during the data collection period. This technique was chosen for its feasibility and suitability for hospital-based studies.

The sample size was calculated using Slovin's formula with a 5% margin of error and a 95% confidence interval, based on the total population (N = 315) of diabetic patients attending the clinic. The formula yielded a minimum sample size of 177 participants. To account for a possible 10% non-response rate, the final target sample size was adjusted to 194 participants.

2.5. Study Variables and Measurements

The study focused on two main dependent variables: knowledge about diabetes mellitus and self-care management practices among patients with T2DM. Independent variables included socio-demographic characteristics such as age, gender, marital status, education level, and occupation; clinical factors, including duration of illness and medication use; and lifestyle behaviors, including diet, exercise, smoking, and alcohol consumption.

Data were collected using two standardized and validated instruments. The first was the Diabetes-Specific Knowledge Questionnaire (DSKQ), developed by Garcia et al. (2001) and later validated by Ahmad et al. (2022), to assess patients' understanding of diabetes. The second was the Diabetes Self-Management Questionnaire (DSMQ), developed by Schmitt et al. (2013) and validated by Bernadett et al. (2022), to evaluate patients' self-care behaviors related to diabetes management.

Both tools are freely available and widely used internationally. For this study, they were translated from English to Kinyarwanda by a professional translator and reviewed by bilingual experts to ensure linguistic accuracy and cultural relevance. A pilot test involving 10% of the target population, who were not included in the main study, was conducted to confirm the clarity, reliability, and contextual appropriateness of the instruments.

2.6. Data Collection Procedure

Data collection was conducted after obtaining ethical approvals from relevant bodies. With permission from the hospital administration and the NCD clinic manager, eligible participants were approached during their clinic visits. The study's objectives, procedures, and confidentiality measures were explained before obtaining written informed consent.

Trained research assistants administered the questionnaires through face-to-face interviews to ensure clarity and minimize literacy-related barriers. Each questionnaire item was read slowly and repeated when necessary to ensure full understanding. Completed questionnaires were securely stored for subsequent data entry and analysis. Completed questionnaires were reviewed daily for completeness and consistency before data entry. Data were entered into SPSS version 25.0 for analysis. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize participants' characteristics and responses. The Chi-square test was used to assess the associations between categorical variables, such as demographic factors, and levels of knowledge or self-care practices. A p-value < 0.05 was considered statistically significant. To minimize data entry errors, a double-entry verification process was employed. Data were stored on a password-protected computer and backed up on encrypted cloud storage.

2.7. Ethical Considerations

Ethical clearance was obtained from the University of Rwanda Institutional Review Board (UR IRB), and the Ethics Committee of Kibagabaga District Hospital granted further approval. Participants were informed about the study's purpose, potential risks, and benefits before data collection. Participation was entirely voluntary, and respondents had the right to withdraw at any time without consequences. To maintain confidentiality, no personal identifiers were recorded; instead, unique codes were used to identify individuals. All physical questionnaires were stored in locked cabinets, and electronic data were password-protected. The study adhered to ethical standards for research involving human participants as outlined by the Declaration of Helsinki.

3. Results

A total of 198 participants completed the study questionnaires. The mean age of respondents was 52.41 years (SD = 11.83), with ages ranging from 19 to 77 years. The mean duration since diabetes diagnosis was 4.52 years (SD = 3.34), with the shortest being 1 year and the longest 23 years. This indicates that most participants had been living with diabetes for a relatively short to moderate period.

3.1. Socio-Demographic Characteristics of Participants

The socio-demographic characteristics of participants are summarized in Table 1. The majority of respondents were female (63.6%), and more than half were married (52.5%). Regarding education, 40.4% of participants had completed primary school, while 18.7% had no formal education at all. Most participants (72.2%) were classified in the third *Ubudehe* income category. In terms of occupation, the largest group (38.4%) worked in the private sector, while 26.8% reported being unemployed.

Table 1. *Socio-demographic Characteristics of Respondents.*

Variables		Frequency(n)	Percentage (%)
Gender	Male	72	36.40
	Female	126	63.60

Variables		Frequency(n)	Percentage (%)
Marital status	Married	104	52.50
	Single	18	9.10
	Divorced	36	18.20
	Widow	40	20.20
Education level	No education	37	18.70
	Primary	80	40.40
	Secondary	65	32.80
	University	16	8.10
Social class (Ubudehe category)	Cat 1	6	3.00
	Cat 2	49	24.70
	Cat 3	143	72.20
Occupation	No job	53	26.80
	Student	5	2.50
	Public sector	35	17.70
	Private sector	76	38.40
	Cultivator	29	14.60

3.2. Participants' Responses on Diabetes-Specific Health Knowledge (DSHK) Questions

Table 2 summarizes participants' responses to the DSHK questionnaire. Overall, the findings indicate variable levels of knowledge regarding the causes, diagnosis, management, and complications of type 2 diabetes mellitus.

Most participants (87.9%) correctly identified the two main types of diabetes. Similarly, a large proportion (89.4%) recognized that excessive sugar intake is a risk factor for diabetes. However, knowledge gaps were evident in other areas: over half of respondents (56.1%) were unaware that kidney dysfunction could contribute to the development of diabetes, and 52% were unaware of the role of the kidneys in insulin metabolism and regulation. Notably, only a small fraction of participants (8.1%) understood that their children may have an increased risk of developing diabetes if they themselves have diabetes.

Regarding diabetes diagnosis, most participants demonstrated an adequate understanding; 81.8% correctly identified urine testing as an appropriate method for monitoring diabetes, and 79.8% recognized that a fasting blood sugar level of 210 mg/dL is considered high. Interestingly, a substantial majority (92.4%) reported that diabetes can be cured, indicating a misconception in understanding the chronic nature of the disease.

In terms of diabetes management, 63.1% of participants believed that medication is more important than diet and exercise for controlling diabetes, reflecting gaps in knowledge about comprehensive self-care practices. Participants generally had good awareness of diabetes-related complications: 84.3% knew that diabetes can damage the kidneys, 66.7% recognized the risk of loss of sensation in hands and feet, and 89.4% were aware that sweating and shaking can signal hyperglycemia. In contrast, only 19.7% correctly identified poor circulation as a possible complication.

Table 2. *Responses to Diabetes Specific Health Knowledge questions.*

Question	Response	Freq	Percent(%)	Question	Response	Freq(n)	Percent(%)
1. Too much sugar intake is a cause of	I don't know	6	3.0	13. Medication is more important than diet and	I don't know	25	12.6
	No	15	7.6		Yes	125	63.1

Question	Response	Freq	Percent(%)	Question	Response	Freq(n)	Percent(%)
diabetes	Yes	177	89.4	exercise to control my diabetes	No	48	24.2
2. The usual cause of diabetes is a lack of adequate insulin in the body	I don't know	61	30.8	14. Diabetes often causes poor circulation	I don't know	145	73.2
	No	63	31.8		No	14	7.1
	Yes	74	37.4		Yes	39	19.7
3. Diabetes is caused by the failure of the kidneys to keep sugar out of the body.	I don't know	111	56.1	15. Cuts and abrasions on people with diabetes heal more slowly	I don't know	22	11.1
	Yes	23	11.6		No	2	1.0
the urine	No	64	32.3		Yes	174	87.9
4. Kidneys produce insulin	I don't know	103	52.0	16. Diabetics should take extra care when cutting their toenails	I don't know	65	32.8
	Yes	65	32.8		No	33	16.7
	No	30	15.2		Yes	100	50.5
5. In untreated diabetes, the amount of sugar in the blood usually increases	I don't know	32	16.2	17. A person with diabetes should cleanse a cut with iodine and alcohol	I don't know	145	73.2
	No	31	15.7		Yes	16	8.1
	Yes	135	68.2		No	37	18.7
6. If I am diabetic, my children have a higher chance of being diabetic	I don't know	169	85.4	18. The way I prepare my food is as important as the food I eat	I don't know	32	16.2
	No	13	6.6		Yes	55	27.8
	Yes	16	8.1		No	111	56.1
7. Diabetes is curable	I don't know	15	7.6	19. Diabetes can damage my kidneys	I don't know	23	11.6
	Yes	183	92.4		No	8	4.0
8. Fasting blood sugar of 210 is high	I don't know	27	13.6		Yes	167	84.3
	No	13	6.6	20. Diabetes can cause loss of feeling in my hands, fingers, and feet	I don't know	37	18.7
	Yes	158	79.8		No	29	14.6
9. The best way to check my diabetes is by testing my urine	I don't know	22	11.1		Yes	132	66.7
	Yes	162	81.8	21. Shaking and sweating signal hyperglycemia	I don't know	19	9.6
	No	14	7.1		No	2	1.0
10. Regular	I don't	97	49.0		Yes	177	89.4

Question	Response	Freq	Percent(%)	Question	Response	Freq(n)	Percent(%)
exercise increases diabetic medication need	know						
	Yes	75	37.9	22. Increased urination and thirst signal hypoglycemia	I don't know	62	31.3
	No	26	13.1		Yes	37	18.7
11. Two main types of diabetes, including Type 1	I don't know	22	11.1		No	99	50.0
	No	2	1.0	23. Tight elastic hose or socks are not bad for diabetics	I don't know	144	72.70
	Yes	174	87.9		Yes	15	7.60
12. An insulin reaction is caused by too much food	I don't know	145	73.2		No	39	19.70
	No	14	7.1	24. A diabetic diet consists mainly of special foods	I don't know	19	9.6
	Yes	39	19.7		No	2	1.0
					Yes	177	89.4

3.3. Participants' Specific Health Knowledge Level

The classification of participants' knowledge levels was derived from responses to 24 diabetes-specific knowledge items. Responses were scored as follows: Yes = 3, No = 2, and I don't know = 1, yielding a total possible score of 72. Using a cutoff point of 50, participants scoring below this threshold were categorized as having low diabetes-specific knowledge. In contrast, those scoring 50 or above were classified as having good diabetes-specific knowledge.

As illustrated in Figure 1, 55.1% (n = 109) of participants demonstrated good diabetes-specific knowledge, reflecting a satisfactory understanding of diabetes, including its nature, diagnosis, risk factors, complications, and recommended preventive measures. Conversely, 44.9% of participants exhibited low knowledge levels, underscoring the ongoing need for targeted diabetes education interventions to enhance patients' understanding and self-care capabilities.

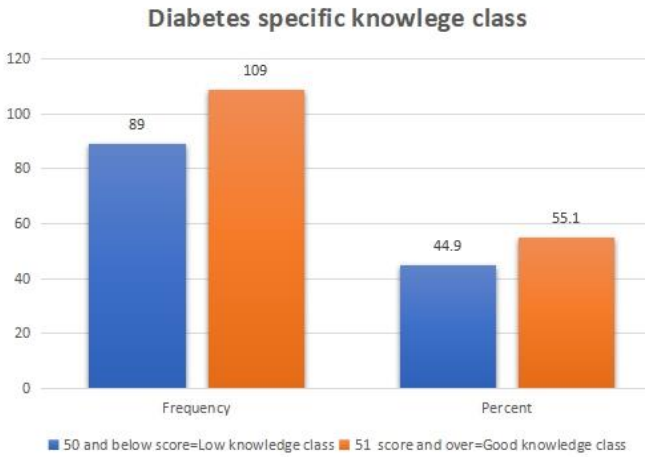

Figure 1. Diabetes Specific knowledge level.

3.4. Participants' Self-Care Practices (DSMQ)

Participants' responses to the DSMQ revealed variability in adherence to recommended self-care behaviors. A substantial proportion reported limited engagement in key activities, such as regular blood glucose monitoring (only 18.7% checked

their blood sugar to a considerable or very much degree) and attending scheduled healthcare appointments (17.7% adhered considerably or very much). Medication adherence was moderate, with 39.9% of participants taking their diabetes medication to a considerable or very much degree, while 42.4% reported lower adherence. Dietary practices showed similar patterns; while a notable portion reported consuming excessive sweets or engaging in food binges, only a small percentage consistently followed nutritional recommendations. Physical activity adherence was low, with only 12.1%-22.1% reporting regular engagement to a considerable or very much degree. Overall, these findings suggest that many participants struggled with consistent self-management across multiple domains, including medication adherence, diet, exercise, and healthcare engagement. This highlights the need for targeted interventions to enhance self-care behaviors and support improved diabetes outcomes among adults in this population.

Table 3. *Responses to Self-care practice Diabetes Self-Management Questions (DSMQ).*

Question	**Response(n,%)**			
Self-care practice item	**Does not apply to me**	**Applies to me to some degree**	**Applies to me to a considerable degree**	**Applies to me very much**
To check the levels of blood sugar	86(43.4)	75(37.9)	10(5.1)	27(13.6)
To choose to eat	87(43.9)	8(34.3)	22(11.1)	21(10.6)
To keep all doctors' appointments'	117(59.1	46(23.2)	23(11.6)	12(6.1)
To take my diabetes medication	84(42.4)	35(17.7)	44(22.2)	35(17.7)
To eat lots of sweets	78(39.4)	14(7.1)	79(39.9)	27(13.6)
To record my blood sugar levels	108(54.5	71(35.9)	9(4.5)	10(5.1)
To avoid diabetes-related doctors' appointments	95(48.0)	25(12.6)	12(6.1)	66(33.3)
To do regular physical activity	141(71.2	33(16.7)	9(4.5)	15(7.6)
To follow the dietary recommendations	140(70.7	30(15.2)	12(6.1)	16(8.1)
To check my blood sugar levels frequently	40(20.2)	50(25.3)	80(40.4)	28(14.1)
To avoid physical activity	64(32.3)	54(27.3)	57(28.8)	23(11.6)
To forget to take medication	36(16.2)	51(25.8)	79(39.9)	32(16.2)
To eat food binges	40(20.2)	53(26.8)	81(40.9)	24(12.1)
To visit my health care provider	115(58.1)	59(29.8)	10(5.1)	14(7.1)
To miss planned physical activity	51(25.8)	48(24.2)	68(34.3)	31(15.7)
My self-care is poor	43(21.7)	47(23.7)	75(37.9)	33(16.7)
My health is stable	84(42.4)	66(33.3)	18(9.1)	30(15.2)

3.5. Participants' Diabetes Self-Management Practice Level

As shown in Figure 2, the vast majority of participants (97%, n = 192) exhibited low levels of *diabetes self-management practices*. This low adherence encompassed critical areas such as regular blood glucose monitoring, dietary choices, engagement in physical activity, and attendance at scheduled medical appointments. These findings suggest that most participants face significant challenges in consistently implementing recommended self-care behaviors, underscoring the need for targeted interventions to improve diabetes management and health outcomes in this population.

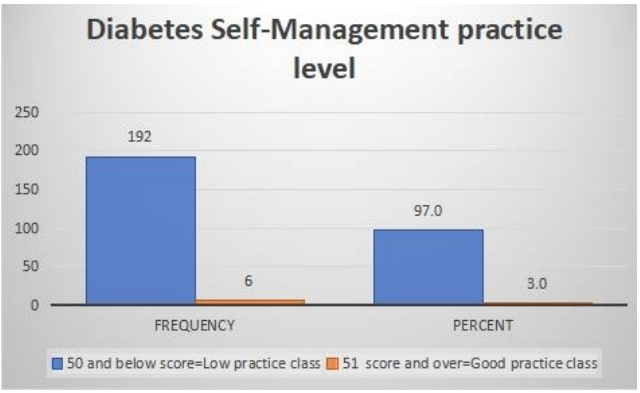

Figure 2. Diabetes Self-Management practice level.

3.6. Association Between Diabetes-Specific Health Knowledge Level and Self-Management Practice Level

Analysis of Table 4 reveals that diabetes-specific knowledge was not significantly associated with self-management practice ($\chi^2 = 2.00$, df = 1, p = 0.157), suggesting that higher knowledge alone does not necessarily translate into better self-care behaviors. Self-management practice also showed no significant association with gender, age, marital status, education level, occupation, or length of diabetes diagnosis. In contrast, social class (Ubudehe category) was significantly associated with self-management practices ($\chi^2 = 5.43$, df = 2, p = 0.04), suggesting that socioeconomic factors influence patients' ability to engage in recommended diabetes self-care behaviors. Additionally, participants with comorbidities were more likely to report higher self-management practice levels ($\chi^2 = 4.51$, df = 6, p = 0.008), suggesting that having multiple health conditions may lead to increased attention to self-care routines. These findings underscore the importance of considering structural and contextual factors, in addition to knowledge alone, when designing interventions to improve diabetes self-management.

Table 4. Association between Diabetes-Specific Health Knowledge Level and Self-management practice level.

Dependent variable vs independent variable	X2 Value	Df	P-Value
Diabetes Specific Health Knowledge level vs self-management practice level	2.00	1	0.157
Self-management practice level vs gender	0.49[a]	1	0.481
Self-management practice level vs age	35.541[a]	46	0.86
Self-management practice level vs marital status	1.10[a]	3	0.776
Self-management practice level vs education level	1.99[a]	3	0.573
Self-management practice level vs social class (ubudehe category)	5.43[a]	2	0.04*
Self-management practice level vs occupation	2.793[a]	4	.593
Self-management practice level vs length of diabetes	21.049[a]	15	.135
Self-management practice level vs having comorbidities	4.512[a]	6	.008*

4. Discussion

The current study found that most participants did not report having comorbidities associated with diabetes. This may reflect timely diagnosis and subsequent adoption of measures to prevent progression or complications of the disease. However, it is essential to note that this study relied on self-reported data, and no clinical tests were conducted to confirm comorbidity status. Additionally, no statistical analyses were performed to identify factors influencing the absence of comorbidities among participants. Regarding treatment modalities, oral medications (in the form of tablets) were the most commonly used by participants, highlighting the need for further research to understand the reasons behind this preference and its implications for diabetes management.

A striking finding was that 93% of respondents did not have a personal glucometer at home, which contrasts with a study conducted in a referral hospital in Rwanda, where 41.1% of participants lacked a glucometer. The lack of home monitoring may limit patients' ability to track blood glucose levels regularly, contributing to suboptimal diabetes control and potentially increasing the risk of complications.

4.1. Knowledge Level Among Patients with Type 2 Diabetes

The study found that over half of the participants demonstrated adequate knowledge about diabetes, including its causes, risk factors, and management. These findings are consistent with a study conducted by Madeleine et al. in Rwanda's Eastern Province, which reported similar levels of patient knowledge. However, the results differ from studies conducted in Pakistan, where only 27.6% of participants had poor diabetes knowledge, and in England, where 58% of patients knew how to prepare their diet and 71% understood its composition. In contrast, a study in Nepal found that only 14.7% of patients were aware of the appropriate diets for diabetes. Given that self-care management in our research was generally low. That literature often links knowledge to practice, suggesting that strategies to enhance diabetes knowledge, as a pathway to improving self-care behaviors, are warranted.

4.2. Self-Care Management Among Patients with Type 2 Diabetes

Our findings indicate that self-care management among participants was generally low, which is concerning because inadequate self-care can result in poor glycemic control and increase the risk of diabetes-related complications. These results align with a study in Bangladesh, which reported poor self-management in over 70% of participants, and with research in Ethiopia, where only 49% of over 11,000 participants practiced adequate self-care. Similarly, a study by Chali et al. reported that only 45.6% of diabetic patients engaged in proper self-management. However, our results differ from a study in Nepal, where 89.9% of participants adhered to exercise recommendations and 74.8% maintained adequate foot care, suggesting that contextual and systemic factors may influence self-care behaviors across settings.

4.3. Association Between Knowledge and Self-Care Practice

In this study, self-management practice was significantly associated with socioeconomic class (Ubudehe category) and the presence of comorbidities, but not with diabetes knowledge, education, gender, or occupation. This finding differs from studies in Iran and India, where higher education and health literacy were linked to better self-care behaviors. Similarly, a study in Pakistan reported that patients with higher education levels adhered more closely to medication and glycemic control recommendations. Our findings suggest a discrepancy between knowledge and actual self-care practices in this population, highlighting the need for further research to explore barriers that prevent patients from translating knowledge into practice in non-communicable disease units in Rwanda.

4.4. Strengths and Limitations of the Study

This study was limited by its cross-sectional design and single-site setting, which restricts the generalizability of findings to other health facilities in Rwanda. Additionally, the use of convenience sampling may introduce selection bias. Future studies should consider multi-site designs and larger sample sizes to strengthen external validity.

5. Conclusion

This study highlights essential gaps in diabetes self-management among adults with type 2 diabetes in Rwanda. While over half of participants demonstrated adequate knowledge about diabetes, self-care practices, including blood glucose monitoring, medication adherence, diet, physical activity, and healthcare engagement were generally low. Knowledge alone did not significantly influence self-management behaviors; instead, socioeconomic status and the presence of comorbidities were associated with higher levels of self-care. Most participants lacked home glucometers, which may further hinder effective disease management and control.

These findings underscore the need for targeted interventions that go beyond education alone, addressing structural, socioeconomic, and contextual barriers to self-care. Strategies should include improving access to monitoring tools, promoting adherence to treatment and lifestyle recommendations, and tailoring programs to patients' socioeconomic realities. Future research should investigate the factors contributing to the disconnect between knowledge and practice, to inform context-specific interventions that improve diabetes outcomes in Rwanda.

Abbreviations

T2DM	Type 2 Diabetes Mellitus
IDF	International Diabetes Federation
IGT	Impaired Glucose Tolerance
LMICs	Low- and Middle-income Countries
KDH	Kibagabaga District Hospital
NCD	Non-Communicable Disease

Author Contributions

Marguerite Mukarugwiza: Data curation, Formal Analysis, Methodology, Writing – original draft, Project administration

Emmanuel Ndahiro Manirafasha: Supervision, Writing – review & editing, Writing – original draft

Liliane Nirere: Resources, Writing – review & editing

Clementine Ingabire: Resources, Writing – review & editing

Conflicts of Interest

All authors declare no conflicts of interest.

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