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KNOWLEDGE, PRACTICES AND CHALLENGES TO DIABETES SELF-CARE MANAGEMENT AMONG TYPE 2 DIABETES MELLITUS PATIENT'S AT LIMBE REGIONAL HOSPITAL

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ABSTRACT

Background: Type 2 diabetes mellitus (T2DM) requires continuous self-care to support glycemic control and reduce complications. This study assessed knowledge, self-care practices, and challenges among patients with T2DM attending Limbe Regional Hospital.

Methods: A hospital-based descriptive cross-sectional study was conducted at Limbe Regional Hospital from February to June 2026. A convenience sampling technique was used to recruit participants. Data was collected using a structured questionnaire and analyzed using Microsoft Excel 2010 and SPSS version 20. The findings were presented in frequency distribution tables and also in charts.

Results: The study revealed that 68.9% of participants demonstrated adequate knowledge of Type 2 Diabetes Mellitus, while 31.1% had inadequate knowledge. Additionally, 61.0% of participants demonstrated good self-care management practices, whereas 39.0% had poor self-care management practices. The major challenges affecting self-care management included the high cost of diabetic medications and monitoring equipment, financial constraints affecting dietary adherence, inadequate physical activity, forgetfulness in taking medications, inadequate knowledge, and lack of family or social support.

Conclusion: The majority of participants demonstrated adequate knowledge and good self-care management practices regarding Type 2 Diabetes Mellitus. However, financial constraints and other barriers continue to hinder optimal self-care management. Strengthening diabetes education, improving access to affordable diabetes care, and enhancing family and community support are essential to improve self-care practices and reduce diabetes-related complications.

Key words: knowledge, practices, challenges, self-care management, T2DM, patient, Limbe Regional Hospital

INTRODUCTION

Diabetes mellitus is one of the most prevalent chronic non-communicable diseases globally and constitutes a major public health challenge. According to the World Health Organization, diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels resulting from defects in insulin secretion, insulin action, or both. Among the different types of diabetes, Type 2 Diabetes Mellitus (T2DM) accounts for approximately 90–95% of all diabetes cases worldwide [1]. The condition is commonly associated with sedentary lifestyles, obesity, unhealthy dietary habits, aging, smoking, alcohol consumption, and genetic predisposition.

Globally, the prevalence of diabetes has increased dramatically over the past few decades. The International Diabetes Federation estimated that about 537 million adults aged 20–79 years were living with diabetes in 2021, and this number is projected to rise to 643 million by 2030 and 783 million by 2045 [2,3]. Diabetes is associated with severe complications such as cardiovascular diseases, diabetic foot ulcers, neuropathy, nephropathy, retinopathy, stroke, and premature death. These complications contribute significantly to increased healthcare costs, reduced quality of life, and high mortality rates.

Self-care management refers to the daily activities individuals undertake to control their illness, maintain good health, and prevent complications. Diabetes self-care practices include adherence to prescribed medications, healthy dietary habits, regular physical exercise, blood glucose monitoring, proper foot care, stress management, and regular hospital follow-up visits [4].

Knowledge regarding diabetes and its management plays an important role in influencing self-care behaviours among diabetic patients. Adequate knowledge enables patients to understand the nature of the disease, recognize symptoms of complications, comply with medications, and adopt healthy lifestyles. Patients who possess sufficient knowledge about diabetes are more likely to practice effective self-care behaviours, resulting in improved glycemic control and reduced complications [5]. Conversely, inadequate knowledge may contribute to poor adherence to treatment recommendations and poor disease outcomes. Despite the importance of self-care management, studies conducted in many developing countries have reported poor self-care practices among diabetic patients. Many patients fail to adhere to recommended

dietary plans, medication schedules, physical activity, and blood glucose monitoring [6].

In sub-Saharan Africa, the burden of diabetes continues to rise rapidly due to urbanization, nutritional transition, and changing lifestyles. African countries face additional challenges including weak healthcare systems, inadequate diabetes awareness programs, shortage of trained healthcare personnel, and limited diagnostic facilities [7]. In Cameroon, diabetes has become an important public health concern. Studies have shown increasing prevalence rates of Type 2 Diabetes Mellitus in both urban and rural communities [8,9,10]. The increasing burden of diabetes in Cameroon has placed pressure on healthcare institutions and families because of the long-term nature of the disease and its complications.

Although healthcare professionals provide education and counselling services to diabetic patients, many individuals still struggle with self-care management. Challenges such as high cost of medications, limited access to glucometer, poor dietary compliance, financial constraints, low literacy levels, and inadequate social support negatively influence diabetes management. This study therefore seeks to assess the knowledge, practices, and challenges of self-care diabetes management among Type 2 Diabetes Mellitus patients in Limbe Regional Hospital.

MATERIALS AND METHODS

Study Area and Setting

This study was carried out at Limbe Regional Hospital. Limbe Regional Hospital is one of the major referral healthcare institutions in the South-West Region. It provides preventive and curative services, including internal medicine, surgery, pediatrics, maternity, laboratory services, outpatient consultations, and chronic disease management. The facility runs a specialized diabetic clinic that offers medical consultation, treatment, counseling, follow-up care, and health education on diabetes. The diabetic clinic receives a large number of Type 2 Diabetes Mellitus patients from Limbe and from surrounding communities.

Study Design and Duration

A hospital-based descriptive cross-sectional study design was conducted among patients with T2DM for 5 months from February 2026 to June 2026 at the outpatient diabetic clinic, medical and surgical ward of Limbe Regional Hospital.

Study Population

The study population consisted of T2DM patients attending follow-up care at the diabetic clinic of Limbe Regional Hospital.

Sampling technique

Participants were selected using a convenience sampling technique.

Sample Size Determination

The sample size was determined using Cochran's formula for cross-sectional studies in an infinite population.

$$\frac{n = Z^2 \times p \times (1-p)}{d^2}$$

Where:

n = minimum sample size

Z = 1.96 (standard normal deviation at 95% confidence interval)

P = 0.10 (estimated proportion, based on previous similar studies)

$q = 1 - p$

d = margin of error (0.05)

$$\frac{(1.96)^2 \times 0.10 \times 0.90}{(0.05)^2}$$

$$= 135 \text{ participants}$$

Substituting the values gave a minimum sample size of 135, which was rounded up to 140 participants to compensate for possible non-response and incomplete questionnaires.

Eligibility Criteria

Diabetic patients with at least 3 consecutive months of follow-up visits at the diabetic clinic were included. Diabetic patients in critical conditions were excluded.

Data Collection and Techniques

Data was collected using a structured self-administered questionnaire. The questionnaire was developed based on the information from the literature review and had 4 different sections;

Section A: It consists of information such as: Age, sex, Marital status, educational level, Duration of diabetes

Section B: This section had questions that assessed participants' knowledge of the causes of diabetes, symptoms, medication adherence, diet, exercise, blood glucose monitoring, complications, and foot care

Section C: Contained questions that assessed participants' practices of medication intake, dietary habits, physical exercise, blood glucose monitoring, foot care, and clinic attendance

Section D: Questions identified barriers affecting self-care management such as:

Validity and Reliability of the Instrument

Validity

The questionnaire was reviewed by experts in diabetes care and Public Health to ensure content validity.

Reliability

A pre-test was conducted among 10 diabetic patients attending the CDC cottage Tiko diabetic clinic. Necessary modifications were made before the main study.

Data Management and Analysis

Questionnaires were checked for completeness, coded, and entered into the Statistical Package for Social Sciences (SPSS) version 20 for analysis. Descriptive statistics (frequencies, percentages, means, and standard deviations) were use to summarize the data. Bivariate analysis was done using Chi square test to determine association between socio-demographic variables and self-care practices. Statistical significance was set at $p < 0.05$.

Ethical Considerations

This study was approved by the Ethical Review Board of the Regional Delegation of Public Health, South West Region of Cameroon. Participation was voluntary, and participants had the right to withdraw at any time without penalty. Confidentiality was maintained by using codes instead of names, and all data were kept secure and used only for research purposes.

RESULTS

Data collection flow-chart

In this study 140 questionnaires were administered to participants out of which 3 were lost and 2 excluded due to significant missing information. A total of 135 questionnaires were finally retained for analysis giving a total response rate of 96.4% (Figure 1).

Sociodemographic characteristics of patients with Type 2 Diabetes Mellitus

Participants age ranged from 30 to 68 years, with a median age of 44 (IQR: 38, 52) years and a mean age of 45.6 ± 8.9 years. The majority of the participants (37.0%) were aged between 42–47 years. Also, most participants were female (57.8%). Regarding marital status, the majority of the participants were married (51.9%). Concerning educational level, most participants had attained a secondary level education (40.0%), while the majority resided in urban areas (62.2%).

With respect to duration since diagnosis with Type 2 Diabetes Mellitus (T2DM), most participants (44.4%) had been diagnosed for 1–5 years. Furthermore, the majority of participants were employed (60.0%) (Table 1)

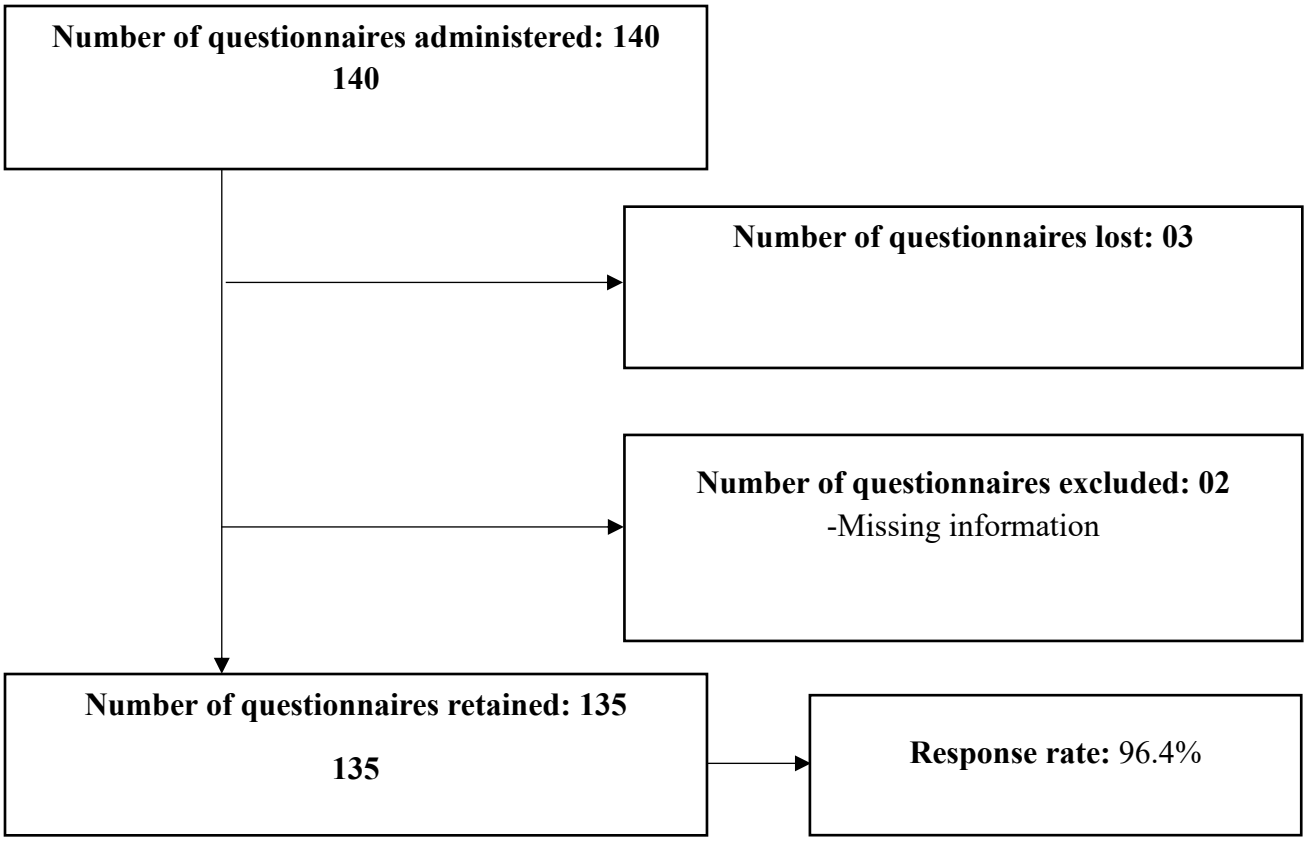


Figure 1: Data collection flow-chart

Table 1: Sociodemographic characteristics of patients with Type 2 Diabetes Mellitus

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	30–35	28	20.7
	36–41	39	28.9
	42–47	50	37
	≥48	18	13.3
	Total	135	100
Sex	Male	57	42.2
	Female	78	57.8
	Total	135	100
Marital status	Single	29	21.5
	Married	70	51.9
	Divorced	18	13.3
	Widowed	18	13.3
	Total	135	100
Educational level	No formal education	12	8.9
	Primary education	27	20
	Secondary education	54	40
	Tertiary education	42	31.1
	Total	135	100
Residence	Urban	84	62.2
	Rural	51	37.8
	Total	135	100
Duration since diagnosis with T2DM	Less than 1 year	19	14.1
	1–5 years	60	44.4
	6–10 years	36	26.7
	More than 10 years	20	14.8
	Total	135	100
Employment status	Employed	81	60
	Unemployed	54	40
	Total	135	100

Knowledge of self-care management among patients with Type 2 Diabetes Mellitus

Majority of participants (51.1%) correctly identified Type 2 Diabetes Mellitus as a chronic metabolic disease characterized by hyperglycemia resulting from lack or deficit of insulin. Most participants (57.8%) also correctly stated that the main problem in Type 2 Diabetes Mellitus is that the body does not use insulin properly or does not make enough insulin.

Regarding blood sugar monitoring, the majority of participants (60.0%) correctly identified the recommended fasting blood sugar level for most people with diabetes as below 7.0 mmol/L (126 mg/dL).

Concerning symptoms of hyperglycemia, most respondents (64.4%) correctly identified excessive thirst, frequent urination, and unexplained weight loss as common symptoms of high blood sugar.

Furthermore, the majority of participants (68.1%) correctly stated that the primary goal of managing Type 2 Diabetes Mellitus daily is to maintain blood sugar levels within a target range to prevent complications. Most participants (71.9%) also knew that prescribed medications should be continued exactly as directed by the doctor even when blood sugar levels appear normal.

Additionally, the majority of respondents (66.7%) correctly identified drinking a sugary drink or taking glucose tablets immediately as the best action during symptoms of low blood sugar. Most participants (74.1%) equally knew that persistently high blood sugar levels over many years could damage the eyes, kidneys, and nerves (Table 2).

Overall knowledge

The overall knowledge score on T2DM ranged from 2 to 8, with a median score of 6 (IQR: 5, 7) and a mean score of 5.9±1.4. The majority of participants (68.9%) demonstrated adequate knowledge of T2DM (Figure 2).

Table 2: Knowledge of self-care management among patients with Type 2 Diabetes Mellitus

Variable	Category	Frequency (n)	Percentage (%)
Meaning of T2DM	Fasting plasma glucose 126mg/dl	29	21.5
	Chronic metabolic disease characterized by hyperglycaemia	69	51.1
	High sugar in the body	37	27.4
	Total	**135**	**100**
Main problem in T2DM	Body does not produce insulin at all	25	18.5
	Body does not use insulin properly or does not make enough	78	57.8
	Too much sugar in food	32	23.7
	Total	**135**	**100**
Recommended fasting blood sugar level	Below 7.0 mmol/L	81	60
	Above 10.0 mmol/L	31	23
	Around 2.0 mmol/L	23	17
	Total	**135**	**100**
Symptoms of hyperglycaemia	Difficulty speaking	19	14.1
	Excessive thirst, frequent urination, weight loss	87	64.4
	Headache	29	21.5
	Total	**135**	**100**
Primary goal of T2DM management	Cure the disease completely	18	13.3
	Maintain blood sugar within target range	92	68.1
	Stop exercise and diet	25	18.5
	Total	**135**	**100**
Action regarding prescribed medication	Stop medication until sick again	16	11.9
	Continue medication as prescribed	97	71.9
	Double the dose next day	22	16.3
	Total	**135**	**100**
Action during low blood sugar symptoms	Drink sugary drink immediately	90	66.7
	Go to sleep	18	13.3
	Skip next meals	27	20
	Total	**135**	**100**
Complications of prolonged high blood sugar	Damage to eyes, kidneys, nerves	100	74.1
	Makes body stronger	14	10.4
	No long-term changes	21	15.6
	Total	**135**	**100**

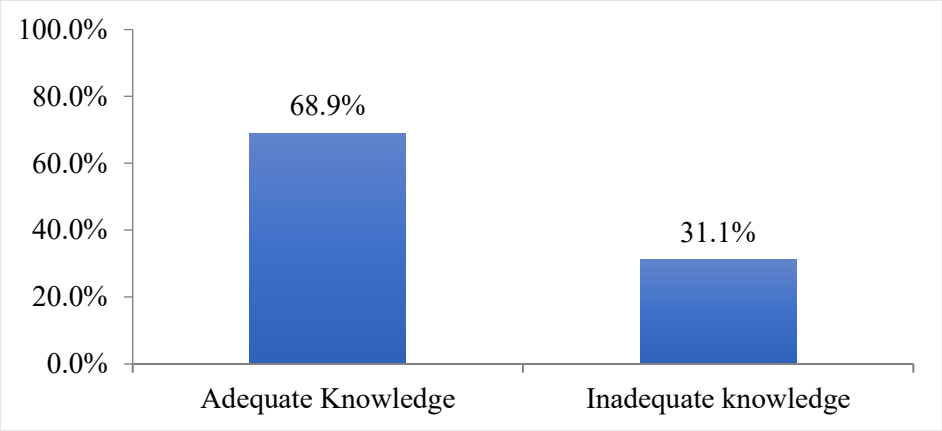


Figure 1: Overall knowledge of T2DM

Practices of self-care management among patients with Type 2 Diabetes Mellitus

Most of the participants were moderate regarding strictly following healthy eating plans recommended by healthcare providers (39.2%). Most respondents were also moderate on making conscious efforts to avoid sugary drinks and foods with added sugar in their daily life (41.8%).

Regarding physical activity, the majority of participants disagreed that they engage in at least 30 minutes of physical activity on most days of the week (35.9%). However, most respondents agreed that they take their diabetes medications exactly as prescribed without skipping doses (44.4%).

Furthermore, the majority of participants were moderate regarding regular blood sugar monitoring at home or at the clinic as advised by healthcare providers (40.5%). Similarly, most respondents were moderate regarding regular blood sugar monitoring practices (39.9%).

Additionally, the majority of participants disagreed that they inspect the bottoms of their feet daily for cuts, sores, redness, or blisters (37.3%). Most respondents also disagreed that they always carry a source of sugar with them in case of symptoms of low blood sugar (39.2%).

Concerning follow-up attendance, the majority of participants agreed that they attend all scheduled follow-up appointments at the diabetes clinic to monitor their condition (45.8%).

Table 3: Practices of self-care management among patients with Type 2 Diabetes Mellitus

Statement	SD n (%)	D n (%)	Moderate n (%)	A n (%)	SA n (%)
I strictly follow the healthy eating plan recommended by my healthcare provider	16 (10.5)	34 (22.2)	60 (39.2)	31 (20.3)	12 (7.8)
I make conscious effort to avoid sugary drinks and foods with added sugar	15 (9.8)	33 (21.6)	64 (41.8)	30 (19.6)	11 (7.2)
I engage in at least 30 minutes of physical activity on most days	24 (15.7)	55 (35.9)	43 (28.1)	23 (15.0)	8 (5.2)
I take my diabetes medications exactly as prescribed	10 (6.5)	18 (11.8)	39 (25.5)	68 (44.4)	18 (11.8)
I regularly check my blood sugar levels as advised	18 (11.8)	31 (20.3)	62 (40.5)	31 (20.3)	11 (7.2)
I regularly check my blood sugar levels as advised	17 (11.1)	34 (22.2)	61 (39.9)	30 (19.6)	11 (7.2)
I inspect the bottoms of my feet every day	27 (17.6)	57 (37.3)	38 (24.8)	22 (14.4)	9 (5.9)
I always carry a source of sugar in case of low blood sugar	28 (18.3)	60 (39.2)	33 (21.6)	23 (15.0)	9 (5.9)
I attend all scheduled follow-up appointments at the diabetes clinic	11 (7.2)	24 (15.7)	35 (22.9)	70 (45.8)	13 (8.5)

SD: Strongly disagree, D: Disagree, A: Agree, SA: Strongly agree

Overall practice

The overall practice score on self-care management ranged from 14 to 39, with a median score of 28 (IQR: 24, 32) and a mean score of 27.6±5.3. Overall, 61.0% of participants demonstrated good self-care management practices (Figure 3).

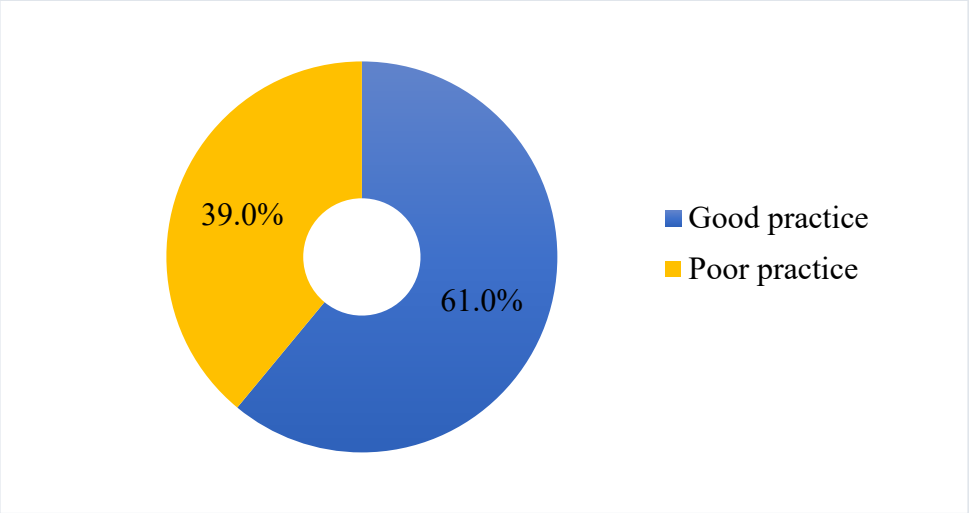


Figure 2: Overall self-care management practice

Association between sociodemographic characteristics and overall self-care management practices among patients with Type 2 Diabetes Mellitus

There was a statistically significant association between educational level and overall self-care management practices among patients with Type 2 Diabetes Mellitus (χ^2=11.62; p=0.009). Participants with tertiary education demonstrated better self-care management practices compared to those with lower educational levels.

Similarly, duration since diagnosis with Type 2 Diabetes Mellitus was significantly associated with overall self-care management practices (χ^2=10.48; p=0.015). Participants who had lived with diabetes for 6–10 years and above demonstrated better self-care practices compared to those recently diagnosed.

Furthermore, residence was significantly associated with self-care management practices (χ^2=6.92; p=0.008), with urban residents demonstrating better self-care management practices compared to rural residents.

Additionally, there was a statistically significant association between overall knowledge of self-care management and overall self-care management practices (χ^2=18.74; p<0.001). Participants with adequate knowledge demonstrated significantly better self-care management practices compared to those with inadequate knowledge (Table 4).

Table 4: Association between sociodemographic characteristics and overall self-care management practices among patients with T2DM

Variable	Category	Poor Practice n (%)	Good Practice n (%)	χ^2	p-value
Age group (years)	30–35	15 (53.6)	13 (46.4)	4.28	0.233
	36–41	17 (43.6)	22 (56.4)		
	42–47	18 (36.0)	32 (64.0)		
	≥48	10 (55.6)	8 (44.4)		
	Total	60 (39.2)	93 (60.8)		
Sex	Male	25 (43.9)	32 (56.1)	1.12	0.29
	Female	35 (44.8)	43 (55.2)		
	Total	60 (39.2)	93 (60.8)		
Marital status	Single	14 (48.3)	15 (51.7)	3.96	0.266
	Married	28 (40.0)	42 (60.0)		
	Divorced	9 (50.0)	9 (50.0)		
	Widowed	9 (50.0)	9 (50.0)		
	Total	60 (39.2)	93 (60.8)		
Educational level	No formal education	9 (75.0)	3 (25.0)	11.62	**0.009**
	Primary education	14 (51.9)	13 (48.1)		
	Secondary education	23 (42.6)	31 (57.4)		
	Tertiary education	14 (33.3)	28 (66.7)		
	Total	60 (39.2)	93 (60.8)		
Residence	Urban	27 (32.1)	57 (67.9)	6.92	**0.008**
	Rural	33 (47.8)	36 (52.2)		
	Total	60 (39.2)	93 (60.8)		
Duration since diagnosis with T2DM/years	<1	12 (63.2)	7 (36.8)	10.48	**0.015**
	1–5	28 (46.7)	32 (53.3)		
	6–10	11 (30.6)	25 (69.4)		
	>10	9 (23.7)	29 (76.3)		
	Total	60 (39.2)	93 (60.8)		
Employment status	Employed	30 (37.0)	51 (63.0)	0.78	0.377
	Unemployed	30 (41.7)	42 (58.3)		
	Total	60 (39.2)	93 (60.8)		
Overall knowledge level	Inadequate	38 (77.6)	11 (22.4)	18.74	0.023
	Adequate	22 (21.2)	82 (78.8)		
	Total	60 (39.2)	93 (60.8)		

P values <0.05 are statistically significant

Challenges affecting self-care management practices among patients with Type 2 Diabetes Mellitus

In the study, the majority of participants reported that the high cost of diabetic medications and monitoring equipment was a major challenge affecting self-care management practices (72.5%). Most respondents also reported difficulty maintaining recommended dietary plans due to financial constraints (68.0%).

Furthermore, the majority of participants indicated that lack of regular physical activity due to busy schedules or poor health affected their self-care practices (61.4%). Most respondents equally reported forgetting to take medications regularly as a challenge to effective diabetes self-management (58.8%). Additionally, the majority of participants reported inadequate knowledge on proper diabetes self-care practices as a challenge affecting disease management (54.9%). Most participants also indicated that lack of family or social support negatively affected adherence to self-care practices (52.3%) (Figure 4).

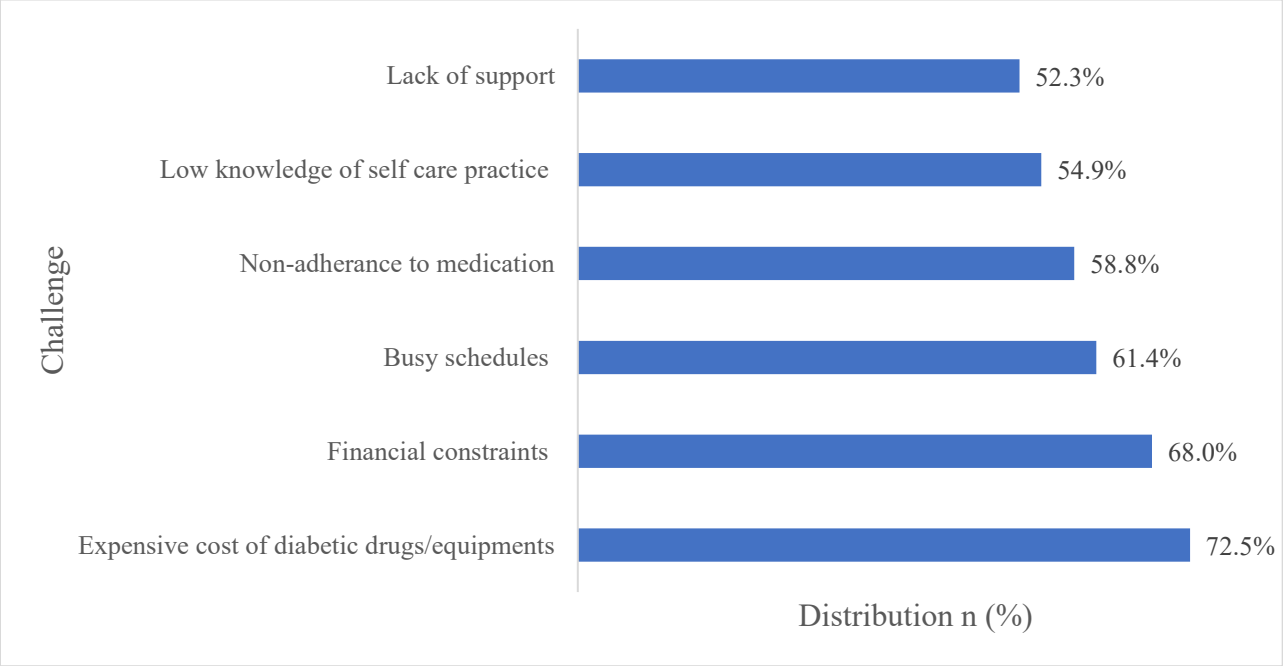


Figure 4: Challenges affecting self-care management practices among patients with Type 2 Diabetes Mellitus, *Multiple responses were allowed resulting to total > 100%*

DISCUSSION

The findings showed that 68.9% of participants had adequate knowledge of Type 2 Diabetes Mellitus (T2DM) self-care management, including blood glucose monitoring, medication adherence, recognition of hyperglycemia and hypoglycemia, and maintaining target blood sugar levels. Similar findings were reported in Kenya (65.3%) and Cameroon (67.5%) [11,12,13], while higher knowledge levels were documented in Nigeria (81.4%) and lower levels in Ethiopia (49.8%) [14,15,16]. These differences may reflect variations in diabetes education, healthcare access, and literacy. Despite generally good knowledge, important gaps remained regarding emergency signs and long-term complications, indicating the need for comprehensive patient education beyond medication adherence.

Overall, 61.0% of participants demonstrated good self-care management practices. These findings were comparable to reports from Rwanda (58.7%) and Cameroon (60.4%) [17,18], but lower than Ethiopia (74.2%) and higher than Senegal (46.5%) [19]. Educational level, duration of diabetes, residence, and knowledge were significantly associated with better self-care practices. Participants with tertiary education, longer disease duration, urban residence, and adequate knowledge were more likely to adhere to recommended self-care behaviours. These findings emphasize that health literacy and continuous diabetes education are important determinants of effective self-management and improved health outcomes among individuals living with T2DM.

Financial and behavioral barriers were the major factors limiting effective diabetes self-care. The most frequently reported challenges were the high cost of medications and monitoring equipment (72.5%), financial difficulty maintaining recommended diets (68.0%), inadequate physical activity (61.4%), forgetfulness (58.8%), poor knowledge (54.9%), and lack of family support (52.3%) [20]. Similar barriers have been reported in Nigeria, Senegal, Rwanda, and Thailand. Financial constraints affected medication adherence, blood glucose monitoring, and dietary practices, while inadequate family support reduced adherence to treatment recommendations. These findings highlight the need for affordable diabetes care, strengthened patient education, and greater family involvement in disease management [21,22].

Limitations of the study

i. The descriptive cross-sectional design collected data at a single point in time, making it impossible to establish causal relationships between knowledge, self-care practices, and the identified associated factors.
ii. Data were collected using a structured questionnaire based on participants' self-reports, which may have been affected by recall bias and social desirability bias. Consequently, some participants may have overreported desirable self-care practices or underreported challenges.

Conclusion

The study revealed that 68.9% of diabetic patients attending Limbe Regional Hospital had adequate knowledge regarding self-care management of Type 2 Diabetes Mellitus. More than half equally demonstrated good self-care practices. Educational level, duration of illness, residence, and knowledge significantly influenced self-care practices among participants. Despite the level of knowledge and practices observed, several barriers including high medication cost, financial difficulties, inadequate physical activity, forgetfulness, poor knowledge, and lack of family support negatively affected effective diabetes self-management.

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