

Knowledge and Practice of Self-Care Management Among Diabetic Patients in A Tertiary Hospital, South-South Nigeria

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Abstract

Diabetes mellitus remains one of the most prevalent chronic diseases globally, diabetes self-care knowledge and practice remains pivotal in mitigating complications and improving quality of life. This study assessed knowledge and practice of self-care management among diabetic patients attending a tertiary Hospital in South-South, Nigeria. Its goal was to determine knowledge level of diabetic patients about self-care practices. Purposive sampling technique was used on a population of 220 respondents. Sample size of 142 was obtained using Taro Yamene formula. Data were collected with a structured questionnaire and analyzed using frequency, means and percentages. Results showed that knowledge of self-care management was high; regular blood monitoring is a essential, ($m=4.5$, $sd=1.055$); physical activities improves diabetes control ($m=4.1$, $sd=0.974$); stress can affect blood sugar levels ($m=3.6$, $sd=1.098$), also, there is sub-optimal practice of self-care among the respondents; only 35.2% always monitor their blood glucose level, 29.6% often engage in regular physical activities (like walking). 36.6% always follow diabetic meal plan, and 39.4% always attended regular medical check-up. Study concluded that there is high knowledge among respondents while self-care practices among diabetic patients were found to be sub-optimal, particularly in areas such as blood glucose testing and physical activities. However, self-care practice varied among respondents, some demonstrated better adherence to prescribed self-care activities than others. Study emphasized the importance of improving patient education and support to enhance self-care practices among diabetic patients.

Keywords: Diabetes mellitus, self-care practices, medication adherence, physical activity, blood glucose monitoring.

Introduction

Diabetes mellitus remains one of the most prevalent chronic diseases globally, with preventable risk factors contributing significantly to its burden. According to the International Diabetes Federation (IDF) Diabetes Atlas 10th Edition (2021), approximately 537 million adults (20–79 years) were living with diabetes in 2021, a figure projected to rise to 643 million by 2030 and 783 million by 2045. Over 75% of people with diabetes reside in low- and middle-income countries (LMICs), with sub-optimal health care access exacerbating complications and mortality (IDF, 2021). The economic impact is staggering with a global diabetes-related health expenditures costing USD 966 billion in 2021, reflecting 9% of total health

spending worldwide. The World Health Organization (WHO, 2023) highlights that diabetes mellitus directly caused 1.5 million deaths globally in 2019, with LMICs accounting for over 80% of fatalities (WHO, 2023). Alarming, 50-70% of cases in Nigeria remain undiagnosed, leading to preventable complications such as cardiovascular disease, kidney failure, and neuropathy (Ogurtsova, et al., 2022).

Diabetes self-care remains pivotal in mitigating complications and improving quality of life. Self-care strategies—including structured diabetes education; dietary adjustments, physical activity, and medication adherence—prevent 60% of type

2, reduce hospitalization rates by 30%, improve glycemic control and prevents complications when implemented early, particularly in resource limited settings, (WHO, 2023; Shrivastava et al., 2013). Modern self-care frameworks integrate digital health tools, for example, mobile apps for glucose monitoring and telehealth consultations have improved medication adherence by 35% in rural populations (Clifford et al., 2023). The American Diabetes Association (ADA, 2023) highlights seven core self-care behaviors: healthy eating, physical activity, glucose monitoring, medication adherence, problem-solving, risk reduction, and psycho-social support. These practices are critical, as 70% of diabetic complications in sub-Saharan Africa stem from poor self-care (Fekadu et al., 2019).

Knowledge of self-care management constitutes the foundational understanding that empowers patients to navigate their condition. It encompasses far more than basic awareness, requiring a comprehensive grasp of pathophysiology and Goals, Understanding the mechanisms of specific diabetes type (Type 1, Type 2), the significance of chronic hyperglycemia, and the targets for glycemic control (e.g., fasting blood glucose, HbA1c) as defined by current standards (ADA, 2020; IDF, 2023). Also pharmacological management, Knowledge of prescribed medications (names, mechanisms of action, dosages, timing, potential side effects, storage requirements – especially for insulin), and the critical importance of adherence (Ogunsemi et al., 2022; Lounassalo et al., 2020).

Nutritional principles encompassing understanding dietary modifications, carbohydrate counting/management, portion control, healthy food choices consistent with cultural preferences, meal timing, and the glycemic impact of different foods (Evert et al., 2019; ADA, 2023) are necessary. Additionally, it comprises of the role of physical activity by recognizing the benefits of regular exercise, appropriate types and intensities, safety precautions (particularly hypoglycemia prevention during/after activity), and its integration into daily life (Colberg et al., 2016) should be emphasized to the patients. Furthermore, self-Monitoring of Blood Glucose (SMBG); Proficiency in performing SMBG correctly, interpreting results accurately, understanding glycemic patterns, and knowing when and how to respond to out-of-range values (ADA, 2023; Walløe et al., 2024 - Nigerian context). Others include complication prevention and recognition, which aids in Identifying early signs and symptoms of acute complications (hypo-/hyperglycemia) and chronic complications (neuropathy, retinopathy, nephropathy, cardiovascular disease, foot problems), along with evidence-based preventive strategies like meticulous daily foot care (Boulton et al., 2005; IDF, 2021). as well as Sick Day Management and Problem-Solving; knowledge of necessary adjustments to medication, diet, and fluid intake during illness to prevent crises (ADA, 2023). This knowledge, often assessed using validated tools adapted for local contexts (e.g., revised versions of diabetes knowledge questionnaire (DKQ) and Michigan diabetic knowledge test, (MDKT), provides the potential for effective self-management.

Practice of SCM refers to the actual, consistent performance of the behaviors derived from knowledge. It is the tangible manifestation of self-management in daily life, directly impacting glycemic outcomes and complication rates. Key measurable domains include: Medication Adherence as the patient Consistently take oral medications and/or administer insulin injections as prescribed, including correct dose, timing, and technique (Walløe, et al., 2024; Fasanmade et al., 2021). Dietary Adherence by Implementing the recommended dietary plan in real-world settings, managing portion sizes, making healthy food choices consistently, and managing carbohydrate intake (Evert et al., 2019; Uloko et al., 2022). Also regular physical activity by engaging in planned physical activity (e.g., brisk walking) for the recommended duration and frequency most days of the week (Colberg et al., 2016). Self monitoring of blood glucose execution through performing blood glucose checks as frequently as recommended by their healthcare provider and as personal circumstances allow, correctly recording results, and using the data to inform management decisions (ADA, 2023; Walløe et al., 2024). Systematic foot care by performing daily foot inspections, washing and drying feet properly (especially between toes), applying appropriate moisturizer (avoiding interdigital spaces), wearing well-fitting protective footwear, and seeking immediate care for any injuries or abnormalities (Boulton et al., 2005).

Practice is typically measured using scales like the Summary of Diabetes Self-Care Activities (SDSCA), adapted for local relevance. Evidence consistently shows that practice levels are frequently inadequate, particularly concerning diet, exercise, SMBG, and foot care, often lagging behind knowledge (Fasanmade et al., 2021; Uloko et al., 2022). However, processing adequate knowledge does not guarantee optimal practice. A significant and often wide gap exists between what patients know and what they consistently do. The rising tide of diabetes demands effective management strategies centered on patient empowerment through self-care, (ADA, 2023). This necessitates a precise understanding of two core, interdependent variables: the “knowledge” diabetic patients possess about managing their condition and their actual “practices” in performing daily self-care behaviors. While robust knowledge provides the essential cognitive map, it is the consistent and correct practice of self-care that directly dictates glycemic control, prevents devastating complications, and preserves quality of life. Thus this study seeks to assess knowledge and practice of self-care management among diabetic patients in rivers state university teaching hospital.

Objectives of the Study were to

1. Asses the knowledge level of self-care management among diabetic patient in Rivers State University Teaching Hospital.
2. Assess self-care management practices among diabetic patients in Rivers State University Teaching Hospital.

Materials and Methods

Research Design

Cross Sectional Descriptive research design was used to determine the knowledge and self-care management practices

among diabetic patients attending clinics in Rivers State University Teaching Hospital.

Area of Study

This study was conducted in Rivers State University Teaching Hospital (RSUTH), established in March 1925 as a Nursing Home and originally served as a medical facility for the Colonial Masters and senior civil servants. It later became a General Hospital and has since gained status as a “Specialist Health Institution” before it was upgraded to serve as University Teaching Hospital for the College of Medical Services of the Rivers State University. The facility has 375 licensed beds and 731 medical staff members. It has the following departments: Internal medicine, pediatrics, Laboratories, family medicine, Radiology, obstetrics and Gynecology, Anesthesia, Surgery, Ophthalmology, pathology, Ear Nose and Throat, Accident center and the Surgery/Medical Emergency. Some other departments are pharmacy, Finance, Maintenance and General Administration. Diabetic patients receive care both at out and in- patient status in the facility, thus the justification for the choice of the facility for the study.

Target Population

Study population consisted of male and female diabetic patients 18 years and above attending Rivers State University Teaching Hospital. Units used were: Male medical ward-60, Male surgical ward-24, Female medical ward-40, Female surgical ward- 16, General outpatient department-80, giving a total of 220.

Sample Size Determination

Taro Yamane Formula was used to calculate the sample size thus:

$$n = \frac{N}{1 + N(e)^2}$$

n = Sample size

N = Population size

e = Marginal of error

Marginal of error (e) = Level of Confidence = 95%

100% - 95% = 5%

Marginal error = $5 \div 100 = 0.05$

e = 0.05

Therefore Marginal error = 0.05

Population size = 220

Applying the Formula

$$n = \frac{N}{1 + N(e)^2}$$

$$= \frac{220}{1 + 220(0.05)^2}$$

$$= \frac{220}{1 + 220(0.0025)}$$

$$n = \frac{220}{1 + 0.55}$$

$$n = \frac{220}{1.55}$$

$$n = 142$$

Therefore Sample size is 142

Sampling Technique

Multi-stage sampling technique was used:

First Stage: Respondents were stratified into their various units because it was a heterogenous population

Second Stage: To ensure that the selected respondents possessed the desired qualities, equal representation of each unit and reduce the risk of selection bias, proportionate stratified sampling technique was used to calculate the number of respondent for each unit.

Third Stage: simple random sampling technique (balloting) was used to select respondents for each unit.

Instrument for Data Collection

Self-structured questionnaire was used to collect data from respondents, it had three sections, A, B and C. Section A elicited information on demographic data, Section B assessed respondents' level of knowledge on self-care management and section C on self-care management practices among respondents.

Procedure of Data Collection

Data were collected using structured questionnaire developed in line with the study objectives. The ethical approval was sought for and obtained from the facility. Informed consent was also obtained from the respondents to ensure their willingness to participate; questionnaire was designed to be anonymous. Instrument was distributed and retrieved from respondents with the assistance of recruited and trained research assistants, (2 from each unit).

Method of Data Analysis

Data were coded and analyzed using frequency, means and percentages. Frequency tables were used to present a clear and organized summary of the collected data. This approach allowed for a visual representation of the distribution of responses. Measures of central tendency and dispersion were utilized, specifically; the mean (average) and standard deviation (a measure of variability) were calculated. Mean helped to provide a representative value indicating the central tendency of the responses, while the standard deviation provided insight into the spread or variation of the data points around the mean.

Result

Social Demographics of the Respondents

Variable	Frequency (n=142)	Percentage (%)
Age		
18-30	51	35.1
31-45	35	26.7
46-60	32	22.5
60 above	21	14.7
Gender		
Female	79	55.6
Male	63	44.4
Marital Status		
Divorced	19	13.4
Married	45	31.7
Single	66	46.5
Widowed	10	7.0
Educational Level		
No formal education	59	41.5
Primary	37	26.0
Secondary	29	20.4
Tertiary	17	11.9
How long have you been Diagnosed of Diabetes		
Less than 1 year	13	9.1
1-5 years	54	38.0
6-10 years	41	28.8
More than 10 years	34	23.9

From the table above: 35.1% of respondents were aged between 18-30years, 26.7% aged 31-45 years, 22.5% aged 46-50 years, and 14.7% above 60. Of which 55.6% were female and 44.4% were male, 13.4% were divorced, 31.7% were married, 46.5% single, and 7.0% widowed, 41.5 had no formal education, 26.0% primary education, 20.4% secondary, 11.9% tertiary, 9.1% have been diagnosed for less than 1 year, 38.0% 1-5 years, 28.8% 6-10 years, 23.9% more than 10 years

Knowledge of self-care management

S.No.	Statement	SA %	A %	N %	D %	SD %	Mean	STD
1	Regular blood monitoring is essential for diabetes management	86 60.5%	30 21.1%	15 10.5%	6 4.2%	5 4.2%	4.2	1.055
2	A balanced diet helps control blood sugar level	61 42.9%	39 27.4%	26 18.3%	13 9.1%	3 2.1%	4.0	1.081
3	Physical activity improves diabetes control	67 47.1	37 26.0%	29 20.4%	8 5.6%	1 0.7%	4.1	0.974
4	Skipping diabetes medication can worsen health complications	57 40.1%	45 31.6%	30 21.2%	7 4.9%	3 2.1%	3.8	1.025
5	Foot care is important for diabetic patients to prevent infections	63 44.3%	41 28.8%	33 23.2%	3 2.1%	2 1.4%	4.1	0.934
6	Stress management can affect blood sugar levels	41 28.8%	30 21.1%	53 37.3%	13 9.1%	5 3.5%	3.6	1.098
7	Diabetic education I received from health care providers influenced my health care habit	60 42.2%	44 30.9%	25 17.6%	10 7.0%	3 2.1%	4.0	1.035

The table Above shows that 60.5% indicated Strongly Agree with the statement Regular blood sugar monitoring is essential for diabetes monitoring, 21.1% Agree, 10.5% Neutral, 4.2% Disagree and 4.2% Strongly Disagree with Mean score of 4.2±1.055. 42.9% indicated Strongly Agree with the statement “Balanced diet helps control blood sugar levels”, 27.4% Agree, 18.3% Neutral, 9.1% Disagree, 2.1% Strongly Disagree with Mean score of 4.0±1.081. 47.1% indicated Strongly Agree with the statement “ Physical activity improves diabetes control”, 26.0% Agree, 20.4% Neutral. 5.6% Disagree, 0.7% Strongly Disagree with Mean score of 4.1±0.974. 40.1% indicated Strongly Agree with the statement “skipping diabetes medication can worsen health complications”, 31.6% Agree, 21.1% Neutral, 4.9% Disagree, 2.1% Strongly Disagree with Mean score of 3.8±1.025. 44.3% indicated Strongly Agree with the statement “foot care is important for diabetic patients to prevent infections”, 28.8% Agree, 23.2%Neutral, 2.1% Disagree, 1.4% Strongly Disagree with Mean score of 4.1±0.934. 28.8% Strongly Agree with the statement “stress management can affect blood sugar levels” 21.1% Agree, 37.3% Neutral, 9.1% Disagree, 3.5% Strongly Disagree with Mean score of 3.6±1.098.

Self-care practices among Diabetic patients

Variable	Frequency (n=142)	Percentage (%)
Monitoring Blood Glucose levels		
Always	50	35.2
Sometimes	17	12.0
Never	2	1.4
Rarely	6	4.2
Often	67	47.2
Follow a diabetic meal plan		
Often	42	29.6
Always	52	36.6
Never	3	2.1
Rarely	10	7.1
Sometimes	35	24.6
Regular physical activity (e.g., exercise, walking)		
Always	39	27.5
Never	2	1.4
Sometimes	37	26.0
Rarely	22	15.5
Often	42	29.6
Taking prescribed medication on time		
Always	65	45.8
Never	4	2.8
Often	39	27.5
Rarely	6	4.2
Sometimes	28	19.7

Inspect feet for any signs of injury or infection		
Always	51	35.9
Sometimes	33	23.2
Never	6	4.2
Rarely	27	19.1
Often	25	17.6
Attending Regular Medical Check up		
Always	56	39.4
Never	2	1.4
Often	42	29.6
Rarely	9	6.3
Sometimes	33	23.2

Table shows self-care practices amongst diabetic patients in RSUTH with 35.2% monitoring blood glucose levels always, 12% sometimes, 1.4% Never, 4.2% rarely, and 47.2% often. For adhering to dietary recommendations 29.6% indicated often, 36.6% always, 2.1% never, 7.1% rarely, 24.6% sometimes, 27.5% always performing regular physical activity, 1.4% never, 26% sometimes, 15.5% rarely, and 29.6% often. 45.8% indicated always to taking prescribed medication as instructed, 2.8% Never, 27.5% often, 4.2% rarely and 19.7% indicated sometimes. When asked about how often they check their feet for any signs of injury or infection, 35.9% indicated always, 23.2% sometimes, 4.2% indicated with never, 19.1% rarely, and 17.6% often, 39.4% of respondents indicated to always attending regular medical checkup, 1.4% indicated with never, 29.6% with often, 6.3% with rarely and 23.2% with sometimes.

Discussion of Findings

Knowledge of Self-care Management

The current knowledge of diabetic patients towards self-care practices is generally high with: mean=4.2; sd=1.055 monitor blood glucose always, m=; 0.974 knowledge on physical activities improving diabetes control; and m=3.6;sd=1.098 for appropriate stress management. This finding aligns with those of Letta, et al., (2022) that show a generally positive perception and knowledge among diabetic patients towards self-care practices. This includes regular monitoring of blood glucose levels, adherence to prescribed medication, and engagement in other self-care activities.

Self-Care Practices among Diabetic patients

The diabetic self-care practices carried out among diabetic patients include the following: regular monitoring of blood glucose (always, 35.2%), adherence to dietary recommendations (always, 36.6%), performing daily physical activity (regular physical activities, always 27.5% only), among others. This finding is in agreement with that of others which stated that, while knowledge is foundational, translating it into consistent practice remains a significant challenge. Ani et al. (2021) in their study concluded that self-care practices, especially concerning diet and exercise, were insufficient and directly linked to poor glycemic control.

Conclusion

Study concluded that, knowledge of self-care practices are high, but self-care practices among diabetic patients were found to be suboptimal, particularly in areas such as blood glucose testing.

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