Factors influencing Knowledge and Performance of Self-care Practices among Type 2 Diabetes Mellitus Patients in a Teaching Hospital in Nigeria

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Abstract:

Introduction: *There are several factors that influence the levels of knowledge and performance of self-care practices (SCP) among patients with Type 2 Diabetes Mellitus (T2DM) in different parts of the world. The objective of the study was to identify the factors that influence the levels of knowledge and performance of self-care practices among patients with T2DM in a Teaching Hospital.*

Material and Methods: *The study utilized a descriptive cross-sectional design. It was carried out in a tertiary health facility in Ondo State, Nigeria. 132 Participants who were T2DM patients attending endocrine clinic at the hospital were selected for the study using convenience sampling. A structured questionnaire and a self-care performance recall form were used for data collection. Data collected were analyze using descriptive while the hypothesis was done using Binary Logistics Regression at a 0.05% significant level.*

Results: *Results revealed that an individual's belief in innate ability (OR=2.871) and self-efficacy (OR=2.121) were twice more likely to have been more associated with increased level of knowledge of self-care practice. Also, beliefs and attitude about life (OR=2.533) and knowledge of the disease process and severity (OR=2.706) were twice more likely to have been more associated with better performance of SCP.*

Conclusion: *There were poor knowledge of self-care practices and its performance among the participants. Factors that were more associated with increased levels of knowledge and performance of SCP as reported in the study should be strengthened as they positively impact outcomes in patients with T2DM.*

Key words: *Factors, Knowledge, Performance, Self-care Practices, Type 2 Diabetes Mellitus*

1. Introduction

Diabetes mellitus (DM) is one of the greatest global chronic health problems of the 21st century which results mostly from changes in lifestyle like physical inactivity, unhealthy eating habits and exposure to serious stress (International Diabetes Federation, 2020). It is one of the major chronic diseases which pose a great public health concern because of its prevalence and serious burden (Abiodun et al., 2020). The World Health Organization (WHO, 2020), reported type 2 diabetes mellitus to be the most common form of diabetes worldwide. It is noteworthy that the rapid growth in prevalence affects countries that are developing and those that are developed already (WHO, 2018). The number of people with DM in Africa is projected to increase significantly within the next twenty years due to rapid urbanization, adoption of diets that are not healthy, bad exercise patterns and increase in the number of aged people (Alotaibi et al., 2022).

However, in order to normalize blood glucose levels, adequate commitment must be given to self-care management protocols for optimal living (Abiodun et al., 2020). Some of the key self-care practices are; healthy eating, self-monitoring of blood glucose (SMBG), medications adherence, being physically active (exercise), foot and general body care, among others (Yoon et al., 2022; Abebaw et

al., 2016; Abiodun et al., 2020; Alhaiti et al., 2019). There is evidence that performing self-care management activities always effectively improve HRQoL in the immediate and long-term basis among patients with type 2 DM and that measurement of HRQoL is a key component of type II DM management (American Diabetes Association (ADA, 2017; IDF, 2020). It is well established and known fact that adoption of self-care practices is an integral part of diabetes treatment and control (SRC, 2017). Diabetes self-care practices are considered as key aspects and a very important part of glycemic control. Individuals become concerned about their abilities including personal attributes such as courage, skills, knowledge, determination, positive attitudes, will, power as well as optimism to make their health better (Daoud et al., 2014; Ahmed et al., 2016; Alhaiti et al., 2020). Adequate knowledge enhances good glycaemic control of blood glucose levels among DM patients (Ahmed et al., 2016; Abiodun et al., 2020).

However, several factors have been documented in various studies to be influencing these self-care practices in different populations globally (Daoud et al., 2014; Huang et al., 2014; Abdulazeez et al. 2014, Awodele et al. 2015; Odume et al., 2015; Jackson et al., 2015; Iregbu et al, 2016; Mabaso and Oduntan, 2016; Reyes et al 2017; Raimi 2017, Alhaiti et al. 2019; Kong and Cho, 2020; Yoon et al., 2022). These factors have cultural, economic, social, and geographic connotations (Alhaiti et al., 2019), which makes self-care practices differ across the globe. While some of these factors have been widely documented in other regions especially in the developed world, little is known in Nigeria and especially in Ondo State. Hence, this study aims at identifying the factors that influence knowledge and performance of self-care practices among type 2 DM patients in a teaching hospital in Nigeria.

2. Materials And Methods

Design and Study Setting

The study utilized a descriptive cross-sectional design. It was carried out in a tertiary health facility in Ondo State, Nigeria. The hospital is a teaching hospital which is located at the centre of Akure, the capital city of Ondo-State in Ondo-Central Senatorial district, Southwestern, Nigeria. The hospital is involved in the training of Nursing, Midwifery, Physiotherapy, Pharmacy, Audiometry and Medical students as well as residency training programme for medical doctors in different disciplines. The study was carried out from May 2021 to September 2022.

Target Population, Sample Size /Sampling Technique

Participants were T2DM patients who were between the ages of 18 and 95 years attending endocrine clinic at the hospital during the period of study. Cochran's formula was used in calculating the sample size, which yields a sample size of 132. Convenience sampling was used for this study due to the nature of participants so the researcher used respondents that are readily available during the time of data collection.

Instrument for Data Collection

Two instruments were used for data collection; 1. A structured questionnaire and a self-care performance recall form were used for data collection. The questionnaire was divided into four sections; Section A: This section had eight (8) items which were used to collect socio-demographic data of respondents. Section B: This section contained ten (10) items which were used to collect data on knowledge of self-care practices. Section C: This section

contained ten (10) items which were used to collect data on performance of self-care practices. Section D: This section was used to collect data on factors that influenced knowledge and performance of self-care practices among respondents. The items had options 'Yes' and 'No' responses.

2. A structured self-care performance recall form on all the domains (healthy eating, self-monitoring of blood glucose (SMBG), medications adherence, being physically active (exercise), foot and general body care) under consideration in this study was also designed and used to collect data on performance of self-care practices.

Validity and Reliability

Validity of the questionnaire was established through face and content validity criteria by experts in the fields of endocrinology and behavioral science. Each item was critically examined for appropriateness, clarity, scope, and relevance to the subject matter. The reliability of the questionnaire was determined using splithalf reliability test of internal consistency. A pretest was conducted with 13 (10% of the sample size) T2DM patients in another hospital which was not part of the main study. Data collected were analyzed and the Cronbach's alpha values of 0.719, 0.713, and 0.845 were gotten for sections B, C, and D, respectively.

Ethical Considerations

Ethical clearance with (reference number UNIMEDTHA/021018/01 was obtained by the researchers from the Ethics and Research Committee of University of Medical Sciences Teaching Hospital, Akure, (UNIMEDTHA) Ondo State, Nigeria. Interaction with the consultant endocrinologist and nurses first took place and purpose of the study as well as the modalities

for data collection were explained by the researchers. Respondents were sensitized on the objective of the study and all the details were explained to them in the endocrinology clinic to make all of them aware of all that they needed to know about the study beforehand so as to enhance their co-operation. Informed consent was obtained from all the respondents as well before data collection began and they were all assured of data confidentiality. They were also informed that anyone who wished to discontinue his or her participation at any point in time was free to do so without any fear of intimidation.

Methods of Data Collection

Data were collected with the help of research two (2) assistants who are nurses working in the hospital. The assistants were trained on the method of data collection and the objective of the study. The respondents were identified and contacted, in person, at the various outpatient department hospital. After informed consent was got the questionnaire was administered to them. The researcher waited to collect the completed questionnaires. This was done on every clinic day when the respondents were waiting to see their doctors. Questionnaires were distributed one by one, it took each respondent 18 to 25 minutes to complete each one and they were collected immediately. Self-care performance recall form was completed within 30 minutes by each respondent, too. The researcher waited to collect the completed questionnaires. The data were collected for a period of 4 weeks from May 15th to June 20th 2022.

Method of Data Analysis

Out of the one hundred and thirty-two (132) questionnaires distributed, 120 were returned which show 90% returned rate. Reason for participant dropout was due to lack of interest

and forgetfulness despite receiving the questionnaire, some participants may have simply forgotten to fill it out and return it within the specified timeframe. Analysis was done using descriptive analysis; mean frequency and percentage in table and figure, while the hypothesis was done using Binary Logistics Regression at a 0.05% significant level. All analysis was done using Statistical Package for Social Sciences (SPSS) version 26.0.

3. RESULTS

Table 1: Socio-demographic Characteristics of the Participants

Bio data	Profile	Frequency (n)	Percentage (%)
Age	40–59	68	56.7
(Mean= 53±10.62)	60–79	44	36.7
	80 and above	08	6.60
Sex	Male	56	46.7
	Female	64	53.3
Marital Status	Single	03	2.50
	Married	93	77.5
	Divorced	08	6.70
	Widowed	16	13.3
Religion	Christianity	71	59.2
	Islam	47	39.2
	Traditional	02	1.60
Ethnicity	Yoruba	91	75.8
	Igbo	06	5.00
	Others	23	19.2
Educational Status	No Formal Education	10	8.30
	Primary	21	17.5
	Secondary	40	33.3
	Tertiary	49	40.8
Occupation	Civil servant	41	34.2
	Self employed	43	35.8
	Retiree	26	21.7
	Unemployed	10	8.30
Duration of Diagnosis	< 1 year	36	30.0
	1-5 years	51	42.5
	> 5 years	33	27.5
Family History of Diabetes	Yes	74	61.7
	No	46	38.3
	Total	**120**	**100%**

Table 1 reveals the socio-demographic characteristics of the respondents. The mean age was 53±10.62 years with the majority 68 (56.7%) of the respondents within the age range of 40-59 years. It could be deduced that 64 (53.3%) were female, 93 (77.55) were married, and 71(59.2%) of them practiced the Christianity religion. In addition, 91 (75.8%) of the respondents belong to Yoruba ethnic group, 49 (40.8%) had tertiary level of education, and 43 (35.8%) were self-employed. In terms of their medical history, 51 (42.55%) of the respondents were diagnosed with diabetes between 1-5 years, 74 (61.75%) reported family history of diabetes.

Table 2: Level of Knowledge on Self-care Practices

Domains	Level of Knowledge	Frequency (f)	Percentage (%)
Knowledge on Healthy Eating	Poor Knowledge	25	20.8
	Fair Knowledge	57	47.5
	Good Knowledge	38	31.7
	Total	**120**	**100.0**
Knowledge on Adherence to Medications	Poor Knowledge	53	44.2
	Fair Knowledge	22	18.3
	Good Knowledge	45	37.5
	Total	**120**	**100.0**
Knowledge on Exercise	Poor Knowledge	74	61.7
	Fair Knowledge	35	29.1
	Good Knowledge	11	9.2
	Total	**120**	**100.0**
Knowledge on Self-Monitoring of Blood Glucose (SMBG)	Poor Knowledge	41	34.2
	Fair Knowledge	54	45.0
	Good Knowledge	25	20.8
	Total	**120**	**100.0**
Knowledge on General Body and Foot Care	Poor Knowledge	18	15.0
	Fair Knowledge	59	49.2
	Good Knowledge	43	35.8
Total		**120**	**100%**
Overall level of knowledge			
Poor Knowledge		**42**	**35**
Fair Knowledge		**46**	**38.0**
Good Knowledge		**32**	**27**

Table 2 above showed that the respondents were more knowledgeable on issues concerning adherence to medications as 45 (37.5%) had good knowledge, whereas they were least knowledgeable on Exercise as 74 (61.7%) had poor knowledge. The overall level of knowledge on self-care practices showed that only 32 (27%) of the respondents had good knowledge.

Table 3: Level of Performance of Self-care Practices

Domains	Level of Knowledge	(f)	(%)
Performance of Self-care Practices based on Healthy Eating	Poor Performance	36	30.0
	Fair Performance	39	32.5
	Good Performance	45	37.5
	Total	**120**	**100.0**
Performance of Self-care Practices based on Adherence to Medications	Poor Performance	58	48.3
	Fair Performance	39	32.5
	Good Performance	23	19.2
	Total	**120**	**100.0**
Performance of Self-care Practices based on Exercise	Poor Performance	72	60.0
	Fair Knowledge	35	29.2
	Good Performance	13	10.8
	Total	**120**	**100.0**
Performance of Self-care Practices based on Self-Monitoring of Blood Glucose (SMBG)	Poor Performance	53	44.2
	Fair Performance	39	32.5
	Good Performance	28	23.3
	Total	**120**	**100.0**
Performance of Self-care Practices based on General Body and Foot Care	Poor Performance	50	41.7
	Fair Performance	24	20.0
	Good Performance	46	38.3
Total		**120**	**100%**
Overall Performance of Self-care Practices			
Poor Performance		**54**	**45**
Fair Performance		**35**	**29.2**
Good Performance		**31**	**25.8**
		120	**100**

Table 3 above showed that the respondents have the highest self-care practices on General Body and Foot Care as 46 (38.3%) had good performance on this. While the least performance was found on Exercise as the majority 72 (60%) reported poor performance on self-care practices. The overall level of performance of self-care Practices showed that only 31 (25%) of the respondents had good performance.

Table 4: Binary Logistics Regression Showing Factors Influencing Knowledge and Performance of Self-Care Practices

List of Factors	Knowledge		Performance	
	OR	p-value	OR	p-value
Formal education	1.103	0.023	1.131	0.019
An individual's belief in innate ability	2.871	0.059	1.273	0.082
Family characteristics	1.530	0.051	1.494	0.073
Beliefs and attitudes about health and life	1.248	0.007	2.533	0.014
Knowledge of the disease process, severity & SCP	1.515	0.009	2.706	0.018
Social support	1.571	0.005	1.011	0.001
Socio-economic power	1.101	0.001	1.982	0.009
Culture / cultural belief	1.211	0.995	1.736	0.982
Fear of side-effects of drugs	1.011	0.545	1.320	0.009
Self- efficacy	2.121	0.021	1.001	0.015

Note: OR = Odd Ratios

Table 4 presents factors that influenced knowledge of self-care practice and their performance among the participants. The results revealed that an individual's belief in innate ability (OR=2.871) and self-efficacy (OR=2.121) were twice more likely to have been more associated with level of knowledge of self-care practice. Formal education, family characteristics, beliefs and attitude about health and life, knowledge of the disease process and severity, social support, socio-economic power, culture / cultural belief and self-efficacy were factors that influenced the level of knowledge of self-care practice and their performances among participants in this study.

On the other hand, beliefs and attitudes about life (OR=2.533) and knowledge of the disease process, severity and SCP (OR=2.706) were twice more likely to have been associated with performance of SCP. Similarly, other factors were more likely to have influenced SCP.

4. DISCUSSION

A number of factors affect patients' commitment to self-care practices (Reyes et al., 2017). The way the factors are handled and the level of knowledge of self-care practices are keys to performance of self-care practices It was revealed that about one-third (31.7%) of the respondents in the present study demonstrated a good level of knowledge on healthy eating. This is in agreement with the findings of Ahmed et al. (2020), Athira et al. (2020), and Karthik et al. (2020) who reported similar findings in their studies. Findings from the present study showed that respondents were more knowledgeable on issues concerning adherence to medications as (37.5%) had good knowledge, whereas they were least knowledgeable on Exercise as (61.7%) had poor knowledge. The overall level of knowledge on self-care practices showed only 32 (27%) of the respondents had good knowledge. However, the level of good

knowledge (66.7%) reported by Ehwarieme and Idhigu (2020), in a similar study in Benin City, south Nigeria, is far higher than that of the present study.

The poor knowledge reported in the present study could be attributed to their low academic status as less than half of the respondents had tertiary education. Mabaso and Oduntan (2016) opined that knowledge remains the strongest weapon in fighting diabetes mellitus. Adequate knowledge has a great deal of influence on receiving instructions and abiding by them for optimal well-being. Therefore, one of the ways to normalize blood glucose is by eating healthy diets. Healthy eating is very crucial to stability of blood glucose and achievement of overall positive outcome in T2DM care (Thojampa, 2019; Abiodun et al., 2020; and Akpor et al., 2022). The present study has revealed that formal education (OR; 1.103 p 0.023) is associated with level of knowledge on self-care practices among the diabetic's patients. Previous studies have also reported similar findings (Ehwarieme and Idhigu 2020; Tiruneh et al., 2018, 2020; Kong and Cho, 2020; Kien et al., 2021). Therefore, it could be inferred that the level of education coupled with availability of information technologies in the urban setting highly influences patients' knowledge, unlike this study that sampled patients in an urban health facility with higher educational qualifications. Another plausible explanation is that those of a higher academic level (and hence of higher socioeconomic status) have a greater chance of obtaining knowledge from the mass media, books and the internet. In addition, they have fewer barriers in communicating with the healthcare team and may have a good grasp of information. Expectedly, patients with no formal education were the least knowledgeable in this research (Jackson et al., 2015).

Adherence to medication is another important aspect in controlling blood glucose and achieving its stability. A little above one-third of the respondents reported good adherence to their medications, this is similar to the findings of Dinesh, et al. (2016), but contrary to the findings of Molalign et al. (2021) and Karthik et al. (2020), where barely half (49.8%) and over (70%) of the participants reported satisfactory adherence to their medications, respectively. The findings on adherence to healthy eating practice in the present study is in agreement with the findings of Wamueii et al. (2020); Reyes et al. (2017) and Mabaso and Oduntan (2016). These factors should be recognized by patients with T2DM as well as their family members so that all the context of the individual and family self-management theory will be fully maximized on daily basis to prevent or downplay the complications of T2DM by making daily decisions that will improve their quality of life, achieve and sustain good glycemic control and over barriers (Ryan and Sawin, 2009). Furthermore, long duration of illness, that is an individual who has been diagnosed over time and experienced some overt complications might seek help to gain more understanding in the process. It is therefore important to step up trainings on self-management for recently diagnosed patients to prevent the development/reduce the progression of diabetes complications.

Finding from the present study show that the respondents have the highest self-care practices on general body and foot care where 46 (38.3%) had good performance. While the least performance was found on Exercise, the overall level of performance of self-care practices showed that only (25%) of the respondents had good performance. Furthermore, it was reported that only a few reported adherence to healthy eating, good adherence to medications, good

performance of exercise, good performance of self-monitoring of blood glucose and good general body and foot care. These findings were similar to those reported by Ehwarieme et al. (2020) in south Nigeria, where the majority of the respondents (83.4%) have poor practice of diabetic foot care and those of Niguse et al. (2019), where only 25.5% of the patients had good self-care practices. However, these findings differ from those reported by Getie et al. (2020), where participants had good self-care practices. Good self-care practice was associated with having family support, treatment satisfaction, diabetes education, having glucometer, higher educational status, duration of the disease, high economic status, and having good knowledge. Similarly, the findings differ from the studies conducted in Addis Ababa which reported (60.2%) (Alemayehu et al., 2018) in Harar, Eastern Ethiopia (39.2%) (Ayele et al., 2012), and in northern Ethiopia which reported 50.3% good self-care practice (Zewdie et al., 2022). This discrepancy may be due to some improvements in the health care systems (related to the period gap) and variation of cutoff point to classify good and poor self-care, mean, and 50 % of total self-care practices, respectively. Sample size variation may also attribute to this difference. Nevertheless, this study revealed that those who had family support formal education, beliefs and attitude about health and life, knowledge of the disease process and severity, social support, socio-economic power, culture / cultural belief and self-efficacy were more likely to have good self-care practices than those who did not. This is consistent with a study conducted in Addis Ababa (Alemayehu et al., 2018) and Kenya (Lugaya et al., 2017). Individuals who have family support could have better information related to disease, have a chance to be educated, and may have got a good income.

Nonetheless, the percentage of poor self-care practices reported in the present study is higher than that of other studies with 45%, 55% and 60.7% of the participants who had poor self-care practices, respectively (Ayele et al., 2012; Amente et al., 2014; Hailu et al., 2012). Another study conducted in Kenya showed that 59% of the participants had poor self-care practices (Kiberenge et al., 2010). As already noted earlier, the low socioeconomic status as well as the generally economic hardship experience currently in the country could limit respondent's accessibility and affordability of a well-balanced diet as prices of food have skyrocketed. Also, the difference in the techniques used, and the differences in the educational background and strength of diabetic associations and implementation of their principles in the study area may contribute to the variation. The overall poor knowledge of self-care practices reported in this study could also be explained as the reason for the poor self-care practice among the respondents as shown in the binary regression analysis (OR; 2.706; p 0.018). Therefore, the need to intensify awareness campaigns among these groups of people cannot be overemphasized as a good self-care practice is important for patients with diabetes to achieve the desired treatment targets and to contribute meaningfully to the management of their disease.

5.   CONCLUSION

The findings from this study revealed that the overall level of knowledge on self-care practices showed that only 32 (27%) of the respondents had good knowledge, the overall level of performance of self-care practices showed only 31 (25%) of the respondents had good performance. Different factors, formal education, family characteristics, beliefs and attitude about health and life, knowledge of

the disease process and severity, social support, socio-economic power, culture/cultural belief and self-efficacy were factors that influenced the level of knowledge of self-care practice and their performances among participants in this study.

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