FACTORS INFLUENCING ADHERENCE TO SELF-CARE PRACTICES AMONG DIABETES PATIENTS IN A SELECTED TERTIARY HOSPITAL, OSUN STATE

Abstract

Aims: Diabetes is a chronic non-communicable disease with many irreversible complications that can be prevented by strict adherence to self-care practice**.** Self-care practice is crucial and highly imperative in all-round management of diabetes as it is often regarded as the cornerstone of diabetes care. Therefore, this study aims to investigate the factors influencing adherence to self-care practices among diabetes patients attending endocrinology clinic in a tertiary hospital, Osun State, Nigeria.

Study Design: This study adopted a descriptive research design carried out among diabetes patients attending outpatient endocrinology clinic of Obafemi Awolowo University Teaching Hospital, Ile-Ife, Osun State between July and September 2021.

Methodology: Sample size was calculated using Cochran formula and total number of sample used were two hundred and eight (208) diabetes patients attending outpatient endocrinology unit, Obafemi Awolowo University Teaching Hospital, Ile-Ife, Osun State. Samples were selected using convenient sampling technique for a period of six (6) weeks. A self-developed structured and two (2) adapted questionnaire; Patient's Diabetic Knowledge Questionnaire by Schmitt et al (2013) and Level of adherence to self-care practice scale by Morisky et al. (1986) with reliability

Comment [Y1]: This is not present in the method section of this manuscript, It has to be present with section of sample size and sampling technique

Comment [Y2]: Not present in the method part. Should be present with justification under section of sample size and sampling technique

index of 0.863 were used to collect data from the respondents. Data collected were analyzed using descriptive statistics of frequency, percentage, mean and standard deviation while inferential statistics of Pearson product moment correlation and regression were used to test stated hypotheses at 0.05 level of significance.

Results: The result from the study revealed good knowledge of diabetes mellitus and diabetes self-care practices among the respondents. The results also revealed high level of adherence to diabetes medication, diet, physical activity, blood glucose testing, follow-up and foot care. Factors influencing the level of adherence with diabetes self-care practices include cost of treatment, longer year of being diagnosed, good relationship between healthcare team, level of education, good family and social support. There is also a significant relationship between knowledge of diabetes mellitus and adherence with physical activity ($r = 0.210$; $P = 0.02$) and blood glucose testing ($r = 0.203$; $P = 0.003$). However, there is no significant relationship between knowledge of self-care practices and adherence to self-care practices; socio-demographic characteristics of age ($r = -0.040$; $P = 0.568$), education ($r = 0.112$; $P = 0.107$) and adherence to self-care practices.

Conclusion: The study concluded that there is high level of knowledge about diabetes and diabetes self-care practices as well as adherence to diabetes self-care practices, therefore, health care providers should continue to monitor self-care practices among diabetes patients so as to achieve positive health outcome and reduce morbidity and mortality associated with diabetes mellitus.

Keywords: Factors, Diabetes, Patients, Adherence, Self-care practices

1. INTRODUCTION

Diabetes Mellitus (DM) is a rising global health challenge with serious public health implications and the condition is estimated to be the seventh and the ~~eight~~ eighth ~~-~~leading cause of death world-wide and disability respectively [1]. ~~According to [2],~~ it was estimated that up to 463 million people between ages 20-79 years are living with diabetes mellitus worldwide, of which approximately 79% are living in low- and middle-income countries including Nigeria [2]. DM is associated with high mortality, morbidity, and disability, high economic costs, and loss of quality of life, this often creates a significant burden on the individual and family [1]. In addition to the health burden, diabetes-related expenditures incur heavy costs on individuals, health care systems and governments [3] [4] [5] [6]. The prevalence of diabetes is linked to factors including unhealthy lifestyle, sedentary lifestyle, lack of physical exercise, unhealthy eating habits, and unhealthy weight gain [7] [8] [9]. Furthermore, diabetes patients are prone to acute illnesses including cardiovascular diseases, stroke, nerve damage, foot ulcers, kidney diseases and failure, blindness and pre-mature death, as a result of poor glucose control [10][11].

The high morbidity and mortality recorded with diabetic patients are associated with inconsistent and insufficient self-care practices as diabetes management involves a series of behaviours that encompasses dietary changes, lifestyle modifications, foot care and pharmacological therapy [12][13][14][15][16]. The self-care routines identified by the American Association of Diabetes Educators in 2007 include healthy eating, regular exercises, self-monitoring of blood glucose, regular use of medications, good problem-solving skills, healthy coping, and risk reduction strategies [17]. Self-care of diabetes is crucial and highly imperative in the all-round management of diabetes and is often regarded as the cornerstone of diabetes care. However, poor adherence to self-care practices persists as a major health challenge globally [12][18]. In other words, self-care is essential in keeping diabetes under control which includes activities such as

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imbibing a healthy eating habit, exercising regularly, adequate foot-care, self-monitoring of blood glucose, and strict adherence to medication [13] [19].

Diabetes self-care practices need to be persistent to achieve a reduction in diabetes complications and improve quality of life. The annual increase in severity of diabetes has been linked to lack of practice of proper self-care, while good self-care practices also reduce the risk of co-morbidities [17][20][21]. Although living with diabetes affects all aspects of a patient's life, it is possible for the patient to have a normal life if they perform self-care activities designed to control their symptoms and avoid long-term complications [22][23][24]. The goal of self-care is to achieve a good glycemic control and to reduce or eliminate the development of early or late complications of diabetes [25]. Therefore, failure of diabetes patients to adhere to self-care practices over time will increase the incidence of complications from uncontrolled blood sugar [26].

Self-care practice among diabetes patients is often associated with various individual and environmental related factors that either promote or impede good self-care practice [27]. [27] found that diabetes patients' adherence to self-care practices is heightened as they increase in age. Alsomali [28] reported that culture, religion, gender, stigma, social support and the health-care environment have influence on diabetes patients' adherence pattern to self-care activities. Moreso, self-care practices are largely influenced by educational level, psychological status, family or spousal support, attitude to treatment, and challenges of communication with physicians which in turn affects their glycemic control [29]. These factors invariably influence the level of adherence of diabetes patient to self-care practices, therefore, this study aims to investigate the factors influencing adherence to self-care practices among diabetes patients attending endocrinology clinic in a tertiary hospital, Osun State, Nigeria

1.1 Objective of the Study

1. Assess the level of knowledge of diabetes among diabetes patients in the selected tertiary hospital.
2. Assess the level of knowledge of self-care practices among diabetic patients in the selected tertiary hospital.
3. Determine the level of adherence to self-care practices among diabetic patients in the selected tertiary hospital.
4. Determine the factors that influence adherence to self-care practices among diabetes patients attending the selected teaching hospital.

1.2 Hypotheses

1 H_o: There is no significant relationship between knowledge of diabetes and adherence to self-care practices

2. H_o: There is no significant relationship between knowledge of self-care practices and adherence to self-care practices
3. H_o: There is no significant relationship between age and adherence to self-care practices
4. H_o: There is no significant relationship between level of education and adherence to self-care practices

2. METHODOLOGY

2.1 Research Design

This study adopted a descriptive research design carried out among diabetes patients attending outpatient endocrinology clinic of Obafemi Awolowo University, Ile-Ife, Osun

Comment [Y7]: Generally in the method section in addition to what has been mentioned, the following are very crucial;
1. Study population
2.Study setting and period
3. Sample size determination and sampling technique

State between July and September 2021. The study was carried out at endocrinology unit of Obafemi Awolowo University Teaching Hospitals Complex, a tertiary healthcare institution with facilities for training, research and quality service delivery in Osun State. The clinic operates from 8:00am to 4:00pm on week days

Comment [Y8]: This should be divided into two as;
1.Research setting and period and
2.Research design or give common heading as research design , setting and period.

2.2 Data Collection

Data were collected using self-developed structured questionnaire and two (2) adapted questionnaires (Patient's Diabetic Knowledge Questionnaire) by [30] and Level of adherence to self-care practice scale by [31]. Data was collected from two hundred and eight (208) respondents attending endocrinology clinic of Obafemi Awolowo University, Ile-Ife, Osun State.

Comment [Y9]: Content of the questionnaire should be clearly stated. Plus how the data was collected should be clear

2.3 Data Analysis

Data collected were analysed using EPI Info statistical package for social sciences version 21 and the result was presented using descriptive statistics of frequencies, percentages, mean and standard deviation while inferential statistics of Pearson Product Moment Correlation and regression were used to test stated hypotheses at 0.05 level of significance.

2.4 Ethical Consideration

Permission was obtained from the ethical committee of Babcock University, Ilishan-Remo with reference number NHREC/24/01/2020. Permission was subsequently obtained from the head of Endocrinology of Obafemi Awolowo University Teaching Hospital where the study was carried out. Informed consent was obtained from each respondent and they were given the right to make informed decision and the freedom to withdraw from the study without any penalty**.**

3. RESULT ~~PRESENTATION~~

Table 1 revealed that majority (67.8%) of the respondents were female aged 70 years and above (32.2%), married (63.5%) and are of Yoruba ethnic group (58.7%). More than half (50.5%) of the respondents had tertiary education as their highest educational qualification, 31.7% of the respondents earned between ₦21,000-₦40,000 on monthly basis. More than three-fourth (82.2%) have been diagnosed of diabetes for about 1-10 years.

Table 2 revealed that almost half (48.1%) of the respondents had good knowledge of diabetes mellitus followed by 30.3% with moderate knowledge and 21.6% with poor knowledge.

Table 3 also revealed that majority (73.6%) of the respondents had good knowledge about self-care practices while 26.4% had poor knowledge.

Table 4 revealed that majority of the respondents had high level of adherence to medication (58.2%), diet (56.3%), blood glucose monitoring (44,2%), follow-up visit (49.5%) and foot care (44.2%) while 45.2% had moderate level of adherence to physical exercise.

Table 5 revealed that the factors influencing adherence to self-care practices were general cost of treating diabetes (RII = 0.86), longer the years of being diagnosed with diabetes, the more I understand that I must take care of myself (RII = 0.83), good relationship between the healthcare team (RII = 0.82), capability of taking care of myself (RII = 0.82), level of education and / or diabetes knowledge plays an important role in practising self-care (RII = 0.81), good family/ social support greatly influences me to better self-care management (RII = 0.81). Age has given me better experience in maintaining self-care (RII = 0.78), the complexity and time-consuming nature of some of the self-care practices often discourages me from practicing them (RII = 0.78), and religious belief plays a significant role in maintaining a good self-care practice (RII = 0.74)

Comment [Y10]: Better to have sub-titles under the results section as;
1.Sociodemographics of the study participants,
2.Participants knowledge on diabetes mellitus,
3. Participants knowledge on diabetes self care,
4. Determinants of adherence to diabetes self care practice

Comment [Y11]: More than may not be appropriate for this figure. It is near to half

Table 6 revealed a significant relationship between knowledge of diabetes and adherence to self-care practices. There is a statistically significant correlation between knowledge of diabetes and physical activity ($r = .210^{**}$, $P<.05$), self blood glucose testing ($r = .203^{**}$, $P<.05$) and practice of foot care ($r = .146^{*}$, $P<.05$). On the other hand, the table revealed no correlation between knowledge of diabetes and practice of medication intake ($r = .050$, $P>.05$), knowledge of diabetes and diet intake ($r = .013$, $P>.05$), knowledge of diabetes and follow-up ($r = .120$, $P>.05$) and knowledge of diabetes and foot care ($r =146$, $P> .05$).

Table 7 revealed no significant relationship between knowledge of self-care practices and adherence to self-care practices. There was no statistically significant relationship between knowledge of self-care practices and adherence to these practices. Knowledge of self-care practices and medication practice ($r = .046$, $P > .05$). Knowledge of self-care practices and diet ($r = .021$, $P > .05$), knowledge of self-care practices and physical activity ($r = .118$, $P > .05$), knowledge of self-care practices and blood glucose testing ($r = .111$, $P > .05$). Knowledge of self-care practices and follow up ($r = .019$, $P> .05$) and knowledge of self-care practices ($r =.134$, $P > .05$). This means that knowledge of self-care practices does not automatically imply good adherence practices. The null hypothesis is therefore accepted and the alternative hypothesis rejected.

Table 8 revealed no significant relationship between age ($r = -.040$, $P>.05$), education ($r = -.112$, $P>.05$), and adherence to self-care practices. The null hypothesis is therefore accepted and the hypotheses alternative rejected. It further implies that age and level of education does not automatically translate into self-care practices among diabetic patients attending the selected tertiary hospital.

Table 1: Socio-demographic Information

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Parameters	Classification	Frequency	Percentage
Gender	Male	67	32.2
	Female	141	67.8
	Total	**208**	**100.0**
Age	20-29	1	.5
	30-39	10	4.8
	40-49	29	13.9
	50-59	52	25.0
	60-69	49	23.6
	70 and above	67	32.2
	Total	**208**	**100.0**
Marital status	Single	13	6.3
	Married	132	63.5
	Divorce	24	11.5
	Widow/Widower	39	18.8
	Total	**208**	**100.0**
Ethnicity	Yoruba	122	58.7
	Hausa	23	11.1
	Igbo	34	16.3
	Others	29	13.9
	Total	**208**	**100.0**
Highest Educational qualification	Primary	43	20.7
	Secondary	49	23.6
	Tertiary	105	50.5
	No education	11	5.3
	Total	**208**	**100.0**
Average Monthly Income	5,000-20,000	45	21.7
	21,000-40,000	66	31.7
	41,000 – 60,000	27	13.0
	61,000 - 80,000	30	14.4
	81,000 - 100,000	15	7.2
	Above 100,000	25	12.0
	Total	**208**	**100.0**
Number of Diagnosis	1-10	171	82.2
	11-20	27	13.0
	21-30	10	4.8

	Total	**208**	**100.0**

Table 2a: Level of knowledge of diabetes ~~-~~mellitus among ~~diabetic patients~~ the study participants

Survey items	Yes	No	Neutral	Mean ± SD	RII	Ranking
There are two main types of diabetes: type 1 (insulin dependent) and type 2 (non-insulin dependent)	115(55.3)	19(9.1)	74(35.6)	1.26±0.62	0.63	1st
Diabetes often causes poor circulation	116(55.8)	21(10.1)	71(34.1)	1.24±0.62	0.62	2nd
Diabetes can cause loss of feeling in the hands, fingers and feet	145(69.7)	8(3.8)	55(26.4)	1.23±0.50	0.62	3rd
In untreated diabetes, the amount of sugar in the blood usually increases	147(70.7)	9(4.3)	52(25.0)	1.21±0.50	0.61	4th
A fasting blood sugar level of 210mg/dl is too high	133(63.9)	16(7.7)	59(28.4)	1.21±0.57	0.61	5th
Diabetes can damage my kidney	115(55.3)	25(12.0)	68(32.7)	1.21±0.64	0.61	6th
The usual cause of diabetes is lack of insulin in the body	153(73.6)	10(4.8)	45(21.6)	1.17±0.49	0.59	7th
Cuts and abrasions on diabetics heal more slowly	149(71.6)	15(7.2)	44(21.2)	1.14±0.52	0.57	8th
Eating too much sugar and other sweet foods is a cause of diabetes	153(73.6)	14(6.7)	41(19.7)	1.13±0.50	0.57	9th
A diabetic diet consists mostly of special foods	142(68.3)	22(10.6)	44(21.2)	1.11±0.55	0.56	10th
Diabetes can be cured	90(43.3)	49(23.6)	69(33.2)	1.10±0.74	0.55	11th
Regular exercise will increase the need for insulin or other diabetic medication	104(50.0)	42(20.2)	62(29.8)	1.10±0.70	0.55	12th
Shaking and sweating are signs of high blood sugar	129(62.0)	29(13.9)	50(24.0)	1.10±0.61	0.55	13th
Tight elastic hose or socks is bad for a diabetic	109(52.4)	42(20.2)	57(27.4)	1.07±0.69	0.54	14th
Frequent urination and thirst are signs of low blood sugar	114(54.8)	41(19.7)	53(25.5)	1.06±0.67	0.53	15th

The best way to check my diabetes is by testing my urine	91(43.8)	57(27.4)	60(28.8)	1.01±0.75	0.51	16th
	Weighted Mean = 1.15				**0.57**	

Table 2b: Summary of Level of Diabetes Knowledge

Knowledge classification		Frequency	Percentage
	Poor	45	21.6
	Moderate	63	30.3
	Good	100	48.1
	Total	**208**	**100.0**

Comment [Y13]: What is the measurement for knowledge level? What score corresponds to poor knowledge, moderate knowledge and good knowledge?

These things should be defined in the method section

Table 3a: Level of knowledge of diabetes self-care practices

Self-care practices	Yes	No	Neutral	Mean ± SD	RII	Ranking
Regular physical activity is prerequisite for maintaining normal weight and optimal blood glucose level	150(72.1)	13(6.3)	45(21.6)	1.15±0.51	0.58	1st
It is important that I check my feet regularly	152(73.1)	12(5.8)	44(21.2)	1.15±0.50	0.58	1st
It is necessary to get low level exercise (such as walking on a daily basis)	132(63.5)	23(11.1)	53(25.5)	1.14±0.59	0.57	3rd
It is not safe to alter the doses of prescribed medications	153(73.6)	15(7.2)	40(19.2)	1.12±0.50	0.56	4th
Keeping a record/diary of my blood sugar levels, weight and blood pressure helps me to take quick action when necessary	151(72.6)	15(7.2)	42(20.2)	1.13±0.51	0.56	4th
The way I prepare my food is as important as the food I eat	139(66.8)	22(10.6)	47(22.6)	1.12±0.56	0.56	4th
Cheeking foot wears regularly is necessary to avoid harming the feet	151(72.6)	18(8.7)	39(18.8)	1.10±0.51	0.55	7th
Checking the blood sugar levels regularly helps keep tract of my condition	153(73.6)	17(8.2)	38(18.3)	1.10±0.51	0.55	7th
Having more portion of protein, vegetables and fruits than carbohydrates is more	154(74.0)	16(7.7)	38(18.3)	1.11±0.50	0.55	7th

beneficial for control of diabetes						
Medication is more important than diet and exercise in controlling diabetes	116(55.8)	39(18.8)	53(25.5)	1.07±0.66	0.53	10th
	Weighted Mean Score = 1.12				**0.56**	

Table 3b: Summary of knowledge of self-care practices

Knowledge of Self-care practices		**Frequency**	**Percentage**
	Poor knowledge	55	26.4
	Good knowledge	153	73.6
	Total	208	100.0

Table 4a: Level of adherence to self-care practices

	Never	**Sometimes**	**Always**	**Mean ± SD**	**RII**	**Ranking**
Medication						
I take my diabetes drugs everyday	11(5.3)	42(20.2)	155(74.5)	2.69±0.57	0.90	1st
I take the prescribed medications the same time everyday	13(6.3)	66(31.7)	129(62.0)	2.56±0.61	0.85	2nd
I take the prescribed medications even when I am sick	17(8.2)	83(39.9)	108(51.9)	2.44±0.64	0.81	3rd
I do not alter the prescribed dose of my drugs due to illness or forgetfulness	29(13.9)	86(41.3)	93(44.7)	2.31±0.70	0.77	4th
Diet						
I include more vegetables and fruits in my diet	15(7.2)	56(26.9)	137(65.9)	2.59±0.62	0.86	1st
I strictly follow the dietary recommendation given by my diabetes specialist	17(8.2)	75(36.1)	116(55.8)	2.48±0.64	0.83	2nd
I buy food from vendors	18(8.7)	77(37.0)	113(54.3)	2.46±0.65	0.82	3rd
I eat at regular intervals	28(13.5)	77(37.0)	103(49.5)	2.36±0.71	0.79	4th
Physical Activity						
I exercise for up to 30 minutes three times in a week	56(26.9)	84(40.4)	68(32.7)	2.06±0.77	0.69	1st
I exercise regularly as recommended	53(25.5)	103(49.5)	52(25.0)	2.0±0.71	0.67	2nd
Blood Glucose Testing						
I check my blood sugar levels with care and attention	39(18.8)	71(34.1)	98(47.1)	2.28±0.76	0.76	1st

I check my blood sugar level when I attend the clinic	38(18.3)	74(35.6)	96(46.2)	2.28±0.75	0.76	1st
I keep a record of my blood sugar level when I attend the clinic	39(18.8)	81(38.9)	88(42.3)	2.24±0.74	0.75	3rd
I frequently compare the values of my blood sugar record	45(21.6)	76(36.5)	87(41.8)	2.20±0.77	0.73	4th
Follow-Up						
I keep my clinic appointment regularly	23(11.1)	59(28.4)	126(60.6)	2.50±0.69	0.83	1st
I maintain a diabetic record which consist of blood sugar level, blood pressure and weight	49(23.6)	48(23.1)	111(53. 4)	2.30±0.83	0.77	2nd
I undergo general health check-up regularly	44(21.2)	61(29.3)	103(49.5)	2.28±0.79	0.76	3rd
I consult my diabetes specialist even when there is no problem	49(23.6)	85(40.9)	74(35.6)	2.12±0.76	0.71	4th
Foot Care						
I wear correct fitting shoes.	25(12.0)	90(43.3)	93(44.7)	2.33±0.68	0.78	1st
I inspect my foot wears regularly for foreign object	31(14.9)	75(36.1)	102(49.0)	2.34±0.72	0.78	1st
I promptly take care of skin abrasions on my feet	31(14.9)	83(39.9)	94(45.2)	2.30±0.72	0.77	3rd
I observe my feet daily for cuts or injury	36(17.3)	84(40.4)	88(42.3)	2.25±0.73	0.75	4th
I dry the spaces between my toes after washing my feet	36(17.3)	90(43.3)	82(39.4)	2.22±0.72	0.74	5th

Table 4b: Summary of Level of adherence to self-care practices

	Level of Adherence			
	High	**Moderate**	**Low**	**Total**
Medication	121 (58.2%)	69 (33.2%)	18 (8.7%)	208 (100)
Diet	117 (56.3%)	71 (34.1%)	20 (9.6%)	208 (100)
Physical activity	60 (28.9%)	94 (45.2%)	54 (26.0%)	208 (100)
Blood glucose monitoring	92(44.2%)	76 (36.5%)	40 (19.2%)	208 (100)
Follow-up	103 (49.5%)	63 (30.3%)	42 (20.2%)	208 (100)
Foot care	92 (44.2%)	84(40.4%)	32 (15.4%)	208 (100)

Table 5: Factors influencing adherence to self-care practices

	Strongly Agreed	Agreed	Disagreed	Strongly Disagreed	Mean ±SD	RII	Ranking
The general cost of treating diabetes is a challenge for me	111(53.4)	85(40.9)	7(3.4)	5(2.4)	3.45±0.68	0.86	1st
The longer the years I have been diagnosed of diabetes, the more I understand that I must take care of myself	99(47.6)	87(41.8)	11(5.3)	11(5.3)	3.32±0.80	0.83	2nd
Good relationship between I and the healthcare team has helped me to maintain good self-care practices.	92(44.2)	92(44.2)	11(5.3)	13(6.3)	3.26±0.82	0.82	3rd
I believe that I am capable of taking care of myself	100(48.1)	82(39.4)	14(6.7)	12(5.8)	3.30±0.83	0.82	3rd
My level of education and or diabetes knowledge plays an important role in practising self-care	94(45.2)	84(40.4)	17(8.2)	13(6.3)	3.25±0.85	0.81	5th
Having good family/ social support greatly influences me to better self-care.	91(43.8)	91(43.8)	14(6.7)	12(5.8)	3.25±0.82	0.81	5th
Age has given me better experience in maintaining self-care.	80(38.5)	92(44.2)	21(10.1)	15(7.2)	3.14±0.87	0.78	7th
The complexity and time-consuming nature of some of the self-care practices often discourages me from practicing them	74(35.6)	98(47.1)	21(10.1)	15(7.2)	3.11±0.86	0.78	7th
My religious belief plays a significant role in maintaining a good self-care practice	82(39.4)	63(30.3)	34(16.3)	29(13.9)	2.95±1.06	0.74	9th

Table 6: Relationship between knowledge of diabetes and adherence to self-care practices

Adherence practices	N	r	P value	Remark

Medication intake	208	.050	.472	Not Significant
Diet	208	.013	.901	Not Significant
Physical Activity	208	.210**	.002	**Significant**
Blood Glucose Testing	208	.203**	.003	**Significant**
Follow-Up	208	.120	.085	Not Significant
Foot Care	208	.146*	.035	Not Significant

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 7: Relationship between knowledge of self-care practices and adherence to self-care practices among diabetic patients attending the selected tertiary hospital.

Adherence practices	N	r	P value	Remark
Practice medication intake	208	-.046	.510	Not Significant
Diet	208	.021	.844	Not Significant
Physical Activity	208	-.118	.091	Not Significant
Blood Glucose Testing	208	-.111	.112	Not Significant
Follow-Up	208	-.019	.786	Not Significant
Foot Care	208	-.134	.054	Not Significant

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 8: Relationship between age and education and adherence to self-care practices among diabetic patients attending the endocrinology clinic of the selected tertiary hospital.

Adherence practices	N	r	P value	Remark
Age	208	-.040	.568	Not Significant
Education	208	.112	.107	Not Significant

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

4. DISCUSSION ~~OF FINDINGS~~

The findings from the study revealed that majority of the respondent had good knowledge about diabetes mellitus and self-are practices This findings corroborates the result of [32] that majority

of their respondents had either moderate or above moderate knowledge of diabetes mellitus. In line with the study findings, [33] Also reported good knowledge of diabetes mellitus among their participants. In contrast to the findings from the study, [34] reported average knowledge on diabetes mellitus as well as [35] who reported low level of knowledge among diabetes patients. Moderate knowledge of diabetes mellitus was reported by [36]. However, the knowledge of diabetes sometimes did not commensurate with the proficiency of self-care among the participant, this study thus concluded that knowledge of diabetes does not reflect in the expected expert level of proficiency of self-care practice. In addition, [37] reported poor knowledge in all the three knowledge categories, total knowledge of diabetes, general knowledge of diabetes and knowledge of insulin use with major knowledge gaps identified in insulin use, glycemic control and diet. [38] Also reported that lack of awareness of diabetes pathophysiology and self-care practices among diabetes patient is a major challenge in health care seething therefore better knowledge can improve glycemic control and better self-care practices. [39] stated an increased knowledge of diabetes mellitus in respect to concepts of the disease, pathophysiology and treatments with significant increased knowledge on physical activity, foot care and nutrition in controlling blood sugar.

The findings revealed high level of knowledge about diabetes self-care practices such as regular medication use, dietary regulation, blood sugar monitoring, follow-up visit and foot care however, moderate knowledge was recorded on physical activity. The findings revealed a high level of Knowledge of Self-care Practices among diabetic patients with relatively importance as the participant indicated that the most practice knowledge of self-care was regular physical activity which is prerequisite for maintaining normal weight and optimal blood glucose followed by necessity to get low level exercise such as walking on a daily basis, regular adherence to the

doses of prescribed medications, Keeping a record/diary of blood sugar levels, weight and blood pressure check to take quick action when necessary, checking foot wears regularly to avoid harming the feet and checking of blood sugar levels regularly to keep tract of diabetes condition

This result was in tandem with the result of [40] who found out that most participants knew the importance of self-management practices especially healthy eating, exercise, taking medications, and healthy coping with stress to control diabetes mellitus and prevent its complications. However, healthy eating, self-monitoring of blood glucose and physical activity recommendations were inadequately practised [41]. Good knowledge about diabetes self-care like regular medication use, glycemic control and diet restriction were reported in many studies among diabetes patients [42][43][44]. According to [45], most diabetes patients were not aware of the principle of dietary management and the food-exchange system as well as the importance of foot care. Most of the participants properly adhered to the anti-diabetic medications but generally lack proper information/knowledge about the importance of self-management practices of foot care and managing diabetes during sick days and how such practices should be implemented. More so, [46] state that type 2 diabetes patients are deficient of sufficient knowledge on the understanding of DM, risk factors of DM, targeted level of blood glucose, hypos, ketoacidosis, food exchange system, and basic rules of foot care

The findings from the study revealed high level of adherence to diabetes self-care practices as majority of the respondents take diabetes drugs and prescribed medications regularly the same time everyday even when sick without altering the prescribed dose the drugs due to illness or forgetfulness. Majority of the respondents adhere mostly to diets as self-care practices was by including more vegetables and fruits in their diet, strictly follow the dietary recommendation given by diabetes specialist, trying not to buy food from vendors, eating at regular intervals.

Also, majority of the respondents adhere to physical activity as self-care practices by doing exercise for up to 30 minutes three times in a week, monitor blood glucose with care and attention, keep a record of blood sugar level when attending the clinic, frequently compare the values of blood sugar record. The result further revealed that majority of the respondents adhere to follow-up as self-care practices by keeping clinic appointment regularly, maintaining a diabetic record which consist of blood sugar level, blood pressure and weight, undergoing general health check-up regularly, consulting diabetes specialist even when there is no problem. Furthermore, the result revealed that diabetes patient adhere to foot care as self-care practices by wearing correct fitting shoes, inspecting foot wears regularly for foreign object, promptly take care of skin abrasions on the feet, observing the feet daily for cuts or injury and by drying the spaces between the toes after feet washing. These Findings are similar to the study carried out by [47] which found that adherence to exercise, dietary diversity and medication were sub-optimal and noted that dietary diversity and exercise were more prevalent among patients with higher socio-economic status.

However, the result is in contrast to what [48] found from their study that discovered low level of self-care behaviour among the research population when assessing the predictors of adherence to self-care behaviours among diabetes patients. [49] reported that diabetic patients did not adhere to recommended diet management, self-monitoring of blood glucose and prescribed medication. This shows a substantial low level of adherence to diabetes self-care practices which is in contrast to findings from the study. However, the report of [47] corroborate the findings from the study which revealed that diabetes patients showed high level of adherence to self-monitoring of blood glucose, adherence to medication, dietary advice, physical exercise and avoidance of bad habit like smoking and alcohol consumption. Self-care practices in diabetes patients are crucial

to keep the illness under control and prevent complications. Effective management of diabetes will be a difficult task without adequate understanding of the existing level of practice related to diabetes self-care [47][50][51][52]

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The findings from the study revealed that the significant factors influencing adherence to self-care practices were the general cost of treating diabetes, the longer the years of been diagnosed of diabetes, good relationship between patient and the healthcare team help to maintain good self-management, believe about capability of taking care of self, level of education and or diabetes knowledge important role of practising self-care, Having good family/ social support greatly influences self-care management. Other factors include, age, complexity and time-consuming nature of some of the self-care practices and religious. In addition to the finding from the study, [53] highlighted numerous factors affecting diabetes self-care practices such as experience and skill, motivation, cultural beliefs and values, confidence, habits, functional and cognitive abilities, support from others, and access to care.

Furthermore, [54] reported that being married, overweight, and obese were significantly related to decrease adherence to follow diabetic meal plan, increased diabetes duration was significantly related to increased adherence to follow diabetic meal plan. Increased number of additional chronic diseases was significantly related to decrease in physical exercise participation. Being married and not receiving insulin treatment were significantly related to decreased adherence to self–blood glucose monitoring. Female participants were significantly related to decreased odds of medication adherence, and increased diabetes duration was significantly related to increased odds of medication adherence.

The finding from the study shows that there was no significant relationship between socio-demographic characteristics of age and level of education and level of adherence to diabetes self-care practices. According to [55] who revealed higher level of adherence to self-care activities in terms of blood sugar monitoring and medication taking behaviour in the current setting, but self-care in other domains such as foot care is critically low. Age, education and Socio-Economic status was shown to affect the self-care practice by the patients. A significant positive correlation was found between self-care practices and socio-demographic variables such as age, income. occupation, education, and Socio-Economic status [55]. Moreover, high level of education and formal health education on diabetes were found to be significantly associated with high level of diabetes management self-efficacy for self-care practices as the patients who had high level of self-efficacy to manage nutrition, physical exercise activity and medication were found more adherent to general diet, exercise activity, and medication taking, respectively. [56] stated that diabetes management self-efficacy was associated with high level of education and receiving health education. Self-efficacy was significantly associated with adherence to self-care activities and glycemic control. However, substantial efforts are still needed to empower the patients with self-efficacy and improving adherence to self-care activities through appropriate interventions.

Baral [57] showed that poor self-care practice was likely to occur among illiterate patients and patients with co-morbidities. In addition to this, [49] reported that diabetic patients who were unemployed were 2.4 times more likely to practice blood glucose monitoring than merchants. Those who attended primary education were less likely to adhere to blood glucose self-monitoring than those educated to a tertiary educational level. Respondents within the age group of 40-49 years were 11 times more likely to adhere to their medication than those aged 60-76 years. [47] found that self-care practices of dietary diversity and exercise were all concentrated

amongst patients with higher socio-economic status and dietary diversity was associated with being female, being retired and higher wealth index. Medication adherence was found to be associated with older age groups. Physical activity was found to be associated with tertiary education, being a student and those within higher wealth index. Self-monitoring of blood glucose was associated with being married. Not smoking was associated with being female and being retired. [50] Participant's age, educational level, and practice of self-care behaviours influenced adherence to anti-diabetes medication. Participants aged 70 years and above were less likely to be non-adherent to medication as compared to those below 50 years. Participants with senior high school education were 3.7 times more likely to be non-adherent to medication than those with tertiary education. Participants with tertiary education had an increase in the level of practice of self-management.

5. CONCLUSION

Diabetes is one of the major health problems worldwide that can be effectively managed by good self-care practices like medication adherence, exercise, monitoring of blood glucose, foot care and dietary regulation. High level of self-care practices and adherence have a positive impact on the achievement of glycemic goal among diabetic patients. There this study investigated the factors influencing the adherence to diabetes self-care practices and the findings from the study revealed high level of knowledge of diabetes mellitus and self-care practices, high level of adherence to self-care practices. Significant factors identified from the study include the general cost of treating diabetes, the longer the years of been diagnosed of diabetes, good relationship between patient and the healthcare team help to maintain good self-management, believe about capability of taking care of self, level of education and or diabetes knowledge important role of practising self-care, Having good family/ social support greatly influences self-care management.

Other factors include, age, complexity and time-consuming nature of some of the self-care practices and religious. There was no significant relationship between socio-demographic factors of age and level of education, level of knowledge of diabetes, self-care practices such as medication, foot care, follow up care and level of adherence with self-care practices. It is therefore concluded that diabetes patients can be motivated to adhere to self-care practices by continuously reinforcing the importance of these activities by health care providers.

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Comment [Y17]: Journal name should be Abbreviated following appropriate rules

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