Treatment Compliance Among Patients with Diabetes Mellitus Attending Medical Outpatient Clinic in Ekiti State University Teaching Hospital

Author(s), AFOLAYAN, Sunday Olusola (RN, PGDE, BNSc)
PROF. SALAWU R.A (RN, RNE, BNSc, PhD, FPNP, ADV. MGT, FWACN)

Abstract:

Diabetes mellitus is a group of metabolic that attacks the insulin-producing cells of the pancreas and more than 90% of them are permanently destroyed. Therefore, the study examined treatment compliance among patients with diabetes mellitus attending medical outpatient clinic in EKSUTH, Ado-Ekiti. The study specifically assessed the knowledge of diabetes patients, the level of adherence to diabetes mellitus medication and dietary compliance among diabetic patient attending medical outpatients' clinic in EKSUTH. The study is a non-experimental research that utilized a descriptive design. This research was conducted among diabetic mellitus patient in the outpatient department of Ekiti State University Teaching Hospital, Ado - Ekiti. Convenient sampling technique was used to select 97 participants for the study. The instrument used for data collection was a questionnaire. The validity of the instrument was determined through face and content validity by experts of Nursing and Tests & Measurement. The stability of the instrument was determined using test re-test method which yielded reliability coefficient value 0.81. The research questions raised were answered using mean, frequency and standard deviation. The hypotheses generated were tested using t-test and chi-square

statistical tool at 0.05 level of significance. The findings of the study revealed that most of the diabetic patients had moderate knowledge of diabetes, good adherence to medications and good dietary compliance. It was further concluded that gender and level of education of the diabetic patients did not influenced their treatment compliance. It was recommended among others that the Ministry of Health should strengthen national capacity to collect, analyse and use representative data on the burden and trends of diabetes and its key risk factors.

Keywords: Diabetes Mellitus, Treatment Compliance, Medical Outpatient Clinic**,**

About Author

Author(s):

AFOLAYAN, Sunday Olusola (RN, PGDE, BNSc)
Department of Medical-Surgical/Adult Health Nursing,
School of Nursing Science,
Babcock University, Ilishan-Remo, Ogun State, Nigeria.

And

PROF. SALAWU R.A (RN, RNE, BNSc, PhD, FPNP, ADV. MGT, FWACN)
Department of Adult Health Nursing,
School of Nursing Science,
Babcock University, Ilishan-Remo, Ogun State, Nigeria.

Introduction

Diabetes is a long-lasting metabolic condition marked by high blood glucose (or blood sugar) levels, which can cause catastrophic damage to the heart, blood vessels, eyes, kidneys, and nerves over time. Type 2 diabetes, which affects mostly adults, arises when the body grows resistant to insulin or does not produce enough of it. Type 2 diabetes has become much more common in countries of all income levels during the last three decades. Type 1 diabetes sometimes referred to as juvenile diabetes or insulin-dependent diabetes, is a chronic disease in which the pancreas generates little or no insulin on its own. Access to cheap diabetes medication, such as insulin, is crucial for persons with the disease (WHO, 2019).

Diabetes affects around 422 million people globally, the majority of whom live in low- and middle-income countries, and diabetes is directly responsible for 1.6 million fatalities per year. Over the last few decades, both the number of cases and the prevalence of diabetes have significantly increased. Diabetes is becoming more common over the world, and Nigeria is not immune. Another study showed that the prevalence increased with maternal age 3.3% in the age group of 15 to 24 years, 4.2% in those aged 25 to 34 years with a spike to 17.6% in the age group of 34 to 44 years and an average prevalence of 4.2% (Ashaye et al, 2018).

Diabetes, in any form, can cause difficulties in various sections of the body and raise the chance of dying early. Kidney failure, leg amputation, eyesight loss, and nerve damage are all possible risks. Diabetes increases the risk of heart attacks and strokes in adults by two to three times. Poorly controlled diabetes during pregnancy raises the chance of fetal mortality and other problems (WHO, 2018).

These signs and symptoms can be found in millions of people all around the world living with diabetic's retinopathy, which occurs because of long-term accumulated damage to the blood vessels in the retina, and it is responsible for nearly 3% of global blindness. Diabetic nephropathy is one of the most common causes of kidney failure. Diabetes causes reduced blood flow and nerve damage in the feet, which can lead to foot ulcers, which can lead to infections and complications, requiring limb amputation and causing serious and life-long health challenges.

Currently, there is no way to avoid type 1 diabetes. There are effective methods for preventing type 2 diabetes, as well as the complications and early death that all types of diabetes can cause. These include policies and practices that promote excellent health for everyone, regardless of whether they have diabetes, such as exercising frequently, eating healthily, avoiding smoking, and regulating blood pressure and lipids (Sarwar, et al, 2017).

An early diagnosis is the beginning point for living well with diabetes; the longer a person goes without being recognized and treated for diabetes, the worse their health outcomes are likely to be. In primary health care settings, easy access to basic diagnostics, such as blood glucose testing, should be offered. Patients will need to see a

professional on a regular basis for problems assessment or treatment. Regardless of the type of diabetes a patient has, a variety of cost-effective therapies can help them improve their outcomes. Blood glucose control, achieved through a mix of diet, physical activity, and, if necessary, medication; blood pressure and cholesterol control to lower cardiovascular risk and other problems; and routine screening for damage to the eyes, kidneys, and feet to promote early treatment.

Patients are also educated about the need to engage in the regular physical activity and the need for a diet with low calorie and high fiber. Lifestyle modification is tailored to the patient's needs. Treatment is continued through the primary health-care services provided at the clinic. All patients are referred once in 3 months for a repeat check of their blood sugars, annually for a check of creatinine and screening for diabetic retinopathy. Through various methods of education such as street plays and pamphlets people are taught about the signs, symptoms, diagnosis, and complications of diabetes, the need for life-long regular treatment, dietary restrictions, and regular physical activity. Patients who are visited in their homes by the peripheral workers, counseled and encouraged to continue treatment (Chukwunonso & Nnamdi, 2016).

In view of the above, the examined treatment compliance among patients with diabetes mellitus attending medical outpatient clinic in EKSUTH, Ado-Ekiti. The study specifically:

1. assessed the knowledge of diabetes patients in the outpatients' clinic of EKSUTH;
2. determined the level of adherence to diabetes mellitus medication among patients in EKSUTH; and
3. examined dietary compliance among diabetic patient attending medical outpatients' clinic in EKSUTH.

Research Questions
1. What is the knowledge of diabetes patients in the outpatient clinic of EKSUTH?
2. What is the level of adherence to diabetes mellitus medication among patients in EKSUTH?
3. What is the dietary compliance among diabetic patient attending medical outpatients' clinic in EKSUTH?

Research Hypotheses
H_o1: There is no significant difference between the two genders with Type II diabetes patients attending EKSUTH on treatment compliance

H_o2: There is no significant relationship between the level of education and treatment compliance among outpatient diabetic patients in EKSUTH.

Methodology
This study is a non-experimental research. It utilized a descriptive design to assess the treatment compliance among diabetic mellitus patients in Ekiti State University Teaching Hospital, Ado - Ekiti. This research was conducted among diabetic mellitus patient in the outpatient department of Ekiti State University Teaching Hospital, Ado - Ekiti. Ado-Ekiti is the

capital city of Ekiti State, one of the states in southwest Nigeria, located on the latitude 7.6124°N and longitude 5.2371°E world atlas).

There are two days for diabetic patient in Ekiti State University Teaching Hospital, Ado-Ekiti (Monday & Thursday every week). An average of 129 patients was recorded for period of six months which are attending on clinic day. Convenient was therefore used to select participants.

The target population for this study comprises all diabetic mellitus patients attending outpatient clinic department, male surgical ward, female surgical ward, male medical ward and female medical ward of Ekiti State University Teaching Hospital, Ado-Ekiti. In selecting an appropriate sample size, the Leslie Kish formula was adopted to calculate the sample size.

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

Where, $Q = 1 - P$

N = Population

n = sample size

e = alloweable error (0.05)

$$= \frac{129}{1 + 0.05^2}$$

$$= \frac{129}{1 + 129(0.0025)}$$

$$= \frac{129}{1.32}$$

$$= 97$$

Ward & Patient	No of Nurses on the wards	Proportion sampling	Sample size
0PD=50	13	$\frac{13}{129}$ x 97	9.97
MSW=13	33	$\frac{33}{129}$ x 97	24.81
FSW=11	27	$\frac{27}{129}$ x 97	20.30
MMW=12	31	$\frac{31}{129}$ x 97	23.31
FWM=10	25	$\frac{25}{129}$ x 97	18.70
TOTA=97	129		97

KEY NOTE: *OPD=Outpatient department; MSW=Male surgical ward; FSM=Female surgical ward; MMW=Male medical ward; FMW=Female medical ward*

There are two days for diabetic patient in Ekiti State University Teaching Hospital, Ado-Ekiti (Monday & Thursday every week). An average of 129 patients was recorded for period of six months which are attending on clinic day. Convenient was therefore used to select participants.

The instrument used in this study was a questionnaire. The questionnaire is made up of four major sections. Section A includes questions that assess the socio-demographic data of the respondents; Section B includes questions on the level of knowledge based on low knowledge,

moderate knowledge, high knowledge questions. Section C includes questions on cost of medications based on Agree, Disagree and Undecided question. Section D includes the dietary compliance based on, Sometimes, Often and Always questions.

The validity of the instrument was determined through face and content validity by experts of Nursing and Tests & Measurement who ensured that the items answers the objectives and also ensure that the instrument is appropriate for the study.

The instrument was pilot-tested on ten diabetic patients in Federal Teaching Hospital Ido-Ekiti. The stability of the instrument was determined using test re-test method. It was administered on two occasions within an interval of 2 weeks. The data collected were correlated using Pearson Product Moment Correlation statistics which yielded reliability coefficient value 0.81.

After the permission has been granted by the Ethical and Research Committee of EKSUTH, two nurses working at the diabetes clinic were co-opted and trained for the purpose of the study. All the outpatient diabetic patients were identified and openly addressed. Informed consent was sought from selected respondents in order to ensure that they understand the purpose of the study and their willingness to participate without coercion.

The research questions raised were answered using mean, frequency and standard deviation. The hypotheses generated were tested using t-test and chi-square statistical tool at 0.05 level of significance.

Results

Research Question One: What is the knowledge of diabetes among outpatient clinic in EKSUTH?

Table 1: Knowledge Level of Diabetes Mellitus among Patients

Knowledge Levels	Category of Score	Frequency	Percentage (%)
Low	1-3	5	2.2
Moderate	4-6	48	49.5
High	7-9	44	44.3
Total		97	100
Mean		**6.16**	
Standard Deviation		1.48	

Table 1 explained the knowledge level. The knowledge level was categorized as low knowledge, moderate knowledge and high knowledge, 5(2.2%) respondents were considered to have low knowledge, 48(49.5%) had moderate knowledge while 44(44.3%) had high knowledge of diabetes mellitus. The finding implies that type II diabetes patients attending EKSUTH, Ado Ekiti had moderate knowledge of their disease condition.

Research Question Two: What is the level of adherence to diabetes mellitus medication among patients in EKSUTH?

Table 2: Cost of medication of diabetes mellitus among Patients in EKSUTH

	ITEMS	A	D	U	S.D
1.	When there is no money to purchase my drugs, I don't take herbs as an alternative	88	5	4	0.31
2.	I take my medication at the appropriate time	31	63	3	0.52
3.	When I feel healthy, I still continue my medication	80	13	4	0.41
4.	It is impossible to forget taking medication at times	69	23	5	0.56
5.	Throughout last week, I did not forget to take my medication	63	34	-	0.48
6.	The side effect of those drugs at time did not discourage me from taking my drug	86	9	2	0.40

A= Agree; D= Disagree; U= Undecided S.D= Standard Deviation; N= 97, E.M = 2.0

In Table 2, items 1 – 6 depicted that Type II diabetes patients in EKSUTH had good adherence to medication since all the weighted mean (WM) were above the expected mean (EM) of 2.00. Despite financial incapability of the respondents, they were not lured to alternative medicine (2.97±0.31). In the same vein, the side effect of the diabetes mellitus drugs did not discourage the respondents from deter them from using it (2.87±0.398). Even when the Type II diabetes patients in EKSUTH feel healthy they did not discontinue their medications (2.78±0.41). Taking medication at the appropriate time only suffered some setback; however, the weighted mean was still above the EM of 2.0 with value of (2.29±0.52).

Research Question Three: What is the dietary compliance among diabetic patient attending medical outpatients' clinic in EKSUTH?

Table 3: Dietary Compliance among Diabetes Mellitus Patients in EKSUTH

	ITEMS	S	O	A	S.D
1.	Fruits: Water melon, pineapple, orange, pawpaw, banana, unripe banana.	45	41	11	0.68
2.	Vegetables: Spinach, soko, amunitutu, okro	20	67	10	0.55
3.	High protein: Chicken, meat, bean, soya bean, cowpea.	7	45	45	0.65

Key: S= Sometimes; O= Often; A= Always; N=97; SD= Standard Deviation,

Table 3 indicated the dietary compliance of Type II diabetes patient attending EKSUTH, Ado Ekiti. Items 1 – 3, depicted that Type II diabetes patients in EKSUTH had good compliance to dietary.

Test of Hypotheses

Research Hypothesis 1: There is no significant difference between the two genders with Type II diabetes patients attending EKSUTH on treatment compliance.

Table 4: t-Test Analysis of Score of Male and Female Patients on treatment compliance

Sex	N	Mean	Std. Deviation	Df	T	P
Male	63	2.2698	.62750	95	1.05	0.296
Female	34	2.1176	.76929			

p>0.05, N=97

In Table 4, the male mean was 2.2698 while female was 2.1176, with standard deviation of 0.62750 and 0.76929 respectively. The degree of freedom (df) was calculated to be 95 while t-test value was 1.05 and the P value was 0.296 (p>0.05). Since the p-value was greater than 0.05 level of significance, therefore the hypothesis was not rejected. This implies that there was no significant difference between the two genders with Type II diabetes patients attending EKSUTH on treatment compliance.

Research Hypothesis Two: There is no significant relationship between the level of education and treatment compliance among outpatient diabetic patients in EKSUTH.

Table 5: Chi-Square analysis showing relationship between the level of education and treatment compliance

Educational level	Level of compliance			Total	df	X²	P
	Poor Compliance	Average Compliance	Good Compliance				
No formal Edu	4	5	0	9			
Primary	5	4	0	9			
Secondary	12	9	1	22	10.00	18.06	0.054
HND/Degree	6	37	4	47			
Master	3	5	1	9			
Ph.D	0	1	0	1			
Total	30	61	6	97			

Table 5 shows that the Pearson's chi-square value was 10.00 and the p-value was 0.054 (p>0.05). It was therefore not significant, the null hypothesis postulated to test relationship between educational level of the diabetes mellitus patients and treatment compliance of diabetic patients was not rejected. The implication of the findings is that the education of the diabetes mellitus patients played no important role on their treatment compliance.

Discussion

The study revealed that less than half (49.5%) of the respondents had moderate level of knowledge on the disease condition, only 44.3% had high knowledge on the subject matter. The moderate knowledge recorded might be due to some of factors like poor awareness, lack of knowledge on complications of diabetes mellitus. This finding was in contrast to the study of Alqarni, Alrahbeni, Al Qarni & Al Qarni (2019) where majority (89%) of the respondents

had good knowledge of diabetes mellitus condition. In the same vein, Akanji (2016) revealed that majority of the patients did not have knowledge on diabetes complications this was not aligned with the findings of this study that reported fair knowledge among the sampled patients.

The result on adherence to medication among the respondent indicated that there was good compliance to medication. America Diabetes Association (2017) affirmed that diabetes can be managed well by adherence to prescribed oral hypoglycemic agents (OHAs) and/or insulin. The glycated hemoglobin (A1c) test measures the average blood glucose of patients for the previous 2–3 months and has strong predictive value for diabetes complications. To reduce the risk of long-term complications of diabetes, a reasonable A1c goal for non-pregnant adults is <7%.

The study showed that the diabetic patients had good compliance to dietary. This negated the study of Oyegbade, Abioye-Kuti, Kolawole, Ezeoma and Bello (2017) of which there was unsatisfactory compliance recorded during therapy and glycemic self-control titled awareness and dietary adherence of patient with Type II diabetes mellitus, a cross-sectional study.

The study further revealed that the sex of the respondent did not significantly differentiate in their level of knowledge on diabetes mellitus. This was not in agreement with result of Olatunbosun, Ojo, Fineberg and Bella (2019) that submitted that there was a significant difference in the knowledge level of male and female diabetic patients.

Conclusively, the study revealed that there was no significant relationship observed between academic qualifications of the respondents and level of treatment compliance. Adeniyi, Uloko and Musa (2019) reported that there was a statistically significance observed relationship between academic qualification and treatment compliance among diabetic patients which is in disagreement with findings of this study.

Conclusion

It is concluded that most of the diabetic patients had moderate knowledge of diabetes, good adherence to medications and good dietary compliance. It is further concluded that gender and level of education of the diabetic patients did not influenced their treatment compliance.

Recommendations

Based on the findings from this study, the following are recommended:

1. The government should build the capacity of ministries of health to exercise a strategic leadership role, engaging stakeholders across sectors and society on treatment of diabetes.
2. The government should implement policies and programmes to promote regular exercise and the consumption of healthy and prescribed foods and to discourage the consumption of unhealthy foods, such as sugary sodas.
3. The government should create supportive and social environments for physical activity.
4. The Ministry of Health should strengthen national capacity to collect, analyse and use representative data on the burden and trends of diabetes and its key risk factors.

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